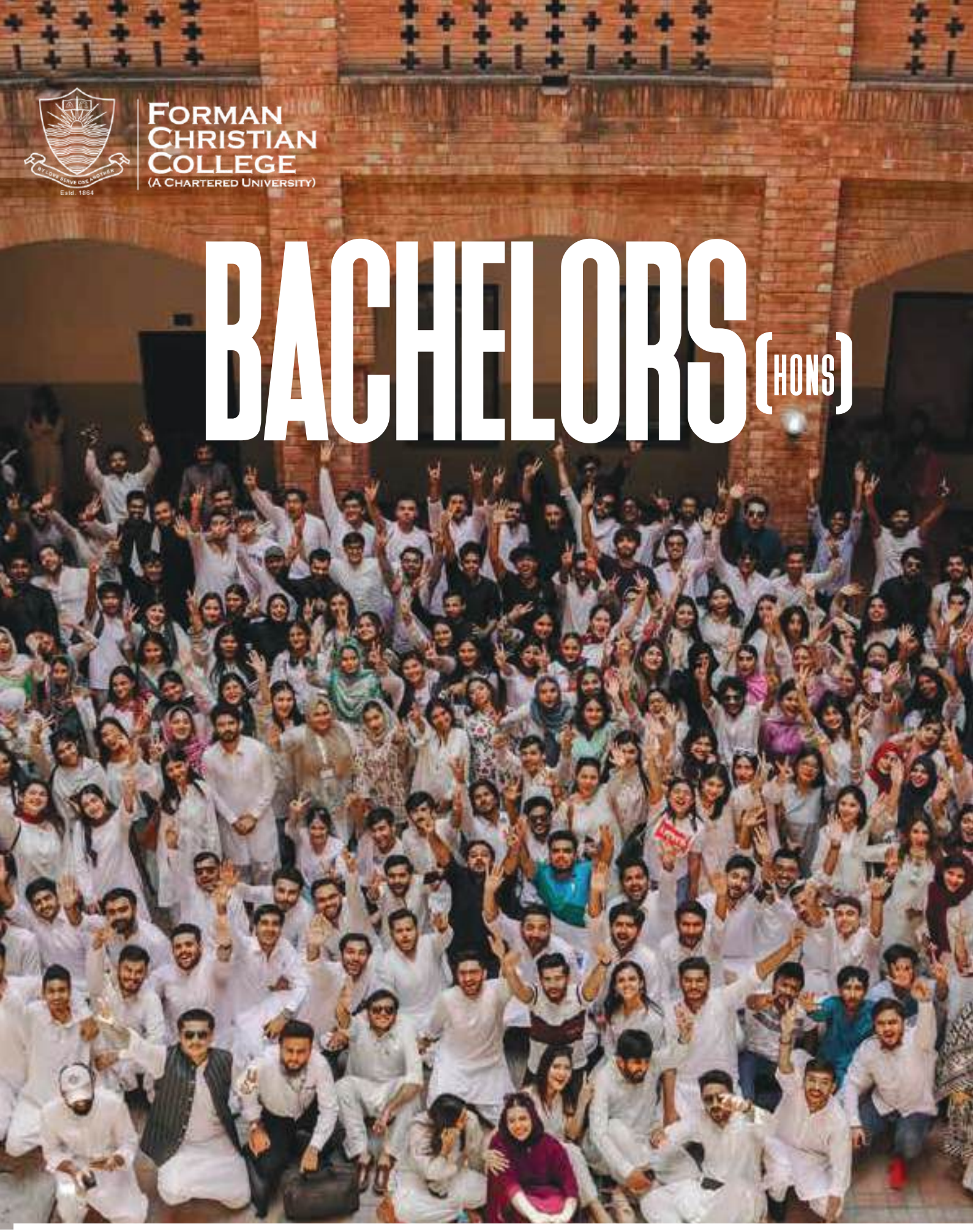
FORMAN CHRISTIAN COLLEGE
(A CHARTERED UNIVERSITY)

BACHELORS (HONS)



Degree Program Catalog

2024-2025

Message from the Rector

Welcome to Forman Christian College (A Chartered University)! At FCCU, our students embark on a transformative journey, striving for academic excellence as well as personal growth. In line with our mission to impart, create, and disseminate knowledge and to develop informed, ethical, and responsible citizens, our four-year American-style Bachelors (Hons) degree program is purposefully designed to foster critical thinking, promote creativity, and develop an enduring commitment to service.

We are proud of our heritage as a private not-for-profit university that has served as a beacon of learning and leadership since 1864. Our alumni have consistently distinguished themselves in various fields including government, education, business, culture, media, diplomacy and beyond. In doing so, they have become agents of change and exemplars of integrity and innovation.

Our faculty members are not simply educators whose role is limited to the classroom; they also serve as mentors, dedicated to helping you achieve success. Working with students both in and out of the classroom, the goal is to ensure a supportive and enriching educational experience. In addition, your Academic Advisor is available to guide you on your academic journey.

Our 108-acre garden campus is designed to enhance your university experience still further. From state-of-the-art academic buildings to comprehensive sports facilities, FCCU provides a "green" environment that nurtures the body, mind and spirit. In addition, the new Jim Tebbe Campus Center which officially opens this fall features a digital library, art gallery, auditorium, dining hall, meeting rooms, lounges, and more, promoting lifelong connections and contributing to a vibrant campus life.

Limited hostel space is available to accommodate both male and female students, especially those coming from remote areas of the country. In this regard, the focus is on first- and second-year students who are new to Lahore and living in this large city for the first time. A newly renovated hostel on the nearby TSA/FCCU "satellite campus" will be of special interest to new students, opening up space for more than 80 female students this Fall.

On the health front, Forman's Mercy Health Center promotes wellness and provides medical care for students, faculty and staff while the Campus Counseling Center, located on the second floor of the Mercy Health Center, provides students with a safe space to share their difficulties and concerns.

Finally, we are motivated by a strong belief that education extends beyond the classroom. In particular, our wide range of co-curricular activities -- including student societies, cultural groups, and sports -- promote holistic student development. We take pride in maintaining a diverse, inclusive, and stimulating environment that not only prepares students for a successful career but also empowers them to make a positive impact on the society surrounding them, starting with their university experience. To "borrow" Martin Luther King's enduring phrase, we seek to build a "*beloved community,*" one that reflects our core values of integrity, excellence, discipline, justice, respect, and service, guided by our timeless motto: "*By love serve one another.*"

Dr. Jonathan Addleton

INTRODUCTION TO FCCU

Introduction to FCCU

Forman Christian College (A Chartered University) has a rich history dating back to its founding in 1864 by Dr. Charles W. Forman, a Presbyterian missionary from the USA. Originally named Lahore Mission College, the institution was officially renamed in 1894 to Forman Christian College in honor of the founder. It started by awarding degrees through Calcutta University but later transitioned to degrees from the University of the Punjab. In 2004, FCCU was chartered as a university and began awarding its own degrees in 2009.

Throughout its early years, the college experienced remarkable growth in enrollment. From a modest start with 18 students in 1886, the college's student body expanded rapidly, reaching 1500 students by the time it was nationalized in 1972. Today, the university section alone enrolls more than 5,000 students.

The college's campus has seen significant development and relocation. The original location was Rang Mahal Mission High School inside the walled city. It moved to its present 108-acre campus along the scenic banks of Lahore Canal in 1940. Several major buildings including Ewing Hall (constructed in 1916) continue to serve the institution's educational mission.

Throughout its history, FCCU has been led by a distinguished lineup of educational leaders and teachers such as Dr. C. W. Forman, Nobel Laureate Dr. Arthur Compton, and many others. This collective leadership has contributed to the college's recognition as one of the finest educational institutions in South Asia. FCCU was the first college in the area in whose laboratories research work of Nobel Prize caliber took place. Dr. Arthur Compton received the Nobel Prize in 1932 for research conducted, in a large part, at FCCU. In 1902, the college was the first in Punjab to admit women. Notable alumni of FCCU include two presidents and two prime ministers of Pakistan, as well as leaders in politics, law, and various other fields. The college's contributions extend to international diplomacy, security, and a wide range of other domains.

Service to the nation is a core part of FCCUs ethos. The college played a pivotal role during significant events, including the conversion of two hostels into United Christian Hospital for refugees during independence, and active involvement in relief efforts during natural disasters like the Kangra Valley earthquake (1905) and the Quetta earthquake (1935). Social service by students was popularized by faculty members like Prof. D. J. Fleming.

In 1972, the college was nationalized by the government but was later returned to private ownership on March 19, 2003. In March 2004, the government granted university status to FCCU. The university entered an exciting new phase in its history in September 2005, launching a four-year Bachelor's Degree Program aligned with world-class standards for accreditation. Since then, FCCU has continued to expand its academic offerings, now featuring over 20 postgraduate programs.

Forman Christian College (A Chartered University) embodies a legacy of excellence, service, and continuous growth, fostering a community of scholars, leaders, and changemakers

Mission

The mission of Forman Christian College (A Chartered University) is to impart, create, and disseminate knowledge and to develop informed, ethical, and responsible citizens who are prepared and committed to learn, lead, and serve; persons who exemplify the FCCU motto, “By love serve one another”.

Vision

Forman’s vision is to be recognized as one of the best liberal arts institutions of higher learning in Pakistan and across South Asia.

Goals

Our institutional goals are as follows:

Empowered learners with strong written, oral and quantitative skills that they can use to evaluate a constant flood of information. The idea is to create in them the ability to think independently and critically, solve problems and continue a lifetime of self-directed learning.

Informed learners who understand global and cross-cultural relationships, value the philosophy and history underlying the nation of Pakistan and are fluent in both their native language and English.

Responsible learners who understand the ethical consequences of actions and are well-groomed to be active citizens who accept their public duty and participate in the decision-making process of a democracy.

Our Commitments

Commitment to Excellence

Forman Christian College (A Chartered University) operates all of its programs in accordance with the highest standards of excellence in education. The educational programs are designed and implemented in accordance with world-class standards of accreditation. The University has begun the process of seeking accreditation with one of the six regional accrediting associations in the USA.

Commitment to Individual Development

FCCU is concerned with the development of the whole person, and therefore encourages the intellectual, spiritual, cultural, social, emotional and physical growth of each student. We seek to prepare students for the basic responsibilities of life, and especially for competent and humane leadership and service. The FCCU experience is designed to help students go beyond the limitations caused by ignorance, narrowness, conformity, self-centeredness and irresponsibility. Our goal is to help individuals achieve excellence in thought and conduct.

Commitment to Core Values

The faculty and staff of FCCU seek to live by, and to teach students, its core values. In a variety of different settings, students are asked to learn and live by the following values beginning with signing a 'Shared Commitment' document that highlights the practice of the

core values on a regular basis.

Integrity: I will speak the truth and keep my commitments. I will take my responsibilities seriously and fulfill them to the best of my ability.

Excellence: I will be steadfast in my pursuit of excellence. I will set high standards in my intellectual life, personal behavior and interpersonal relationships. I will honor the traditions of the University and preserve the beauty of the campus.

Respect for the Dignity of Each Human Being: I will treat others with respect, kindness, generosity of heart and compassion. I will accept and tolerate differences. I will handle disagreements with candor and civility.

Discipline and Accountability for my Actions: I will uphold the policies of the University and follow the rules and regulations. I understand that behavior has consequences. This understanding is an essential component in the development of my self-discipline.

Fairness and Justice: I will be fair in all of my decisions and work towards justice for others.

Service: I will live by the motto “By love serve one another”, knowing that serving others is a way of life that will enrich the community and the nation in which I live.

Community: I will take the concerns of others in the University community to heart. Because we are bound together by common purpose, objectives and values, the welfare of all will be my concern.

Commitment of Faculty to Students

The faculty of FCCU is committed to student learning and to helping students succeed in their studies and be well prepared for a meaningful and productive life after University. Students will form a close personal relationship with one or more members of the faculty, and this close student-faculty contact has been one of the strengths of FCCU throughout its history. Faculty members provide assistance to students, as needed, outside of the classroom, and they do not charge tuition for this help. Indeed, their contract with the University prohibits faculty members from charging tuition for extra assistance.

Commitment to General Education

While FCCU is committed to helping students develop competence in a specific field, it is equally committed to general education. The general education program is designed to provide a foundation for lifelong learning by helping students to develop a love of learning. It prepares students for responsible citizenship by teaching them the lessons of history, by creating awareness of their cultural heritage, by helping them understand the causes of social and political unrest, and the conditions for stable governance and sustainable economic development. Through studies in the humanities, the general education program seeks to help students explore various perspectives on the central concerns of human existence. The general education program is designed to help students assume increased responsibility for their own growth, to master the skills that are necessary to understand and deal with a rapidly changing and increasingly complex world. The program requires students to take courses in each of the following areas of human knowledge: Humanities, Natural Sciences, Social and Behavioral Sciences, Mathematics and Computer Sciences.

Commitment to Career Preparation

Enriched with the enduring qualities of a liberal arts education, FCCU seeks to graduate students who are well-prepared for success in their careers. Through the major field of

study selected by the student, he or she will receive a basic knowledge of a particular field in enough depth to be successful in entry level positions in a career and to advance successfully to increased levels of responsibility on the job.

However, it is impossible to predict what a person will need to know for success on the job twenty years from now, but we do know that in most jobs new knowledge will have to be mastered that does not even exist today. Therefore, it is more important to learn how to learn, how to think, how to solve problems, and how to communicate effectively rather than just to focus narrowly on the content of an academic discipline. The educational program is designed to help students develop these skills.

Commitment to Co-education

The Bachelors (Hons) Degree Programs of FCCU is co-educational. FCCU first admitted women in 1902, and it seeks to provide a learning environment in which both men and women can learn effectively and develop the character traits and personality that will enable them to succeed in later life. The core value of respect for the dignity of each human being is also an important consideration for creating a wholesome and positive atmosphere for learning for both men and women.

Commitment to Lifelong Learning

FCCU seeks to prepare students for a lifetime of self-directed learning. This will be essential for success in a rapidly changing and increasingly complex world. The faculty models this commitment by constantly learning about new knowledge in their academic discipline, and by participation in a variety of professional development programs presented to them by the University management to help them learn new approaches to teaching and learning.

Commitment to Providing an American-style Education

The proceeding commitments reflect the commitment to provide an American-style education. The American system of higher education is widely recognized as the very best in the world and we seek no less than the best for Pakistan. This commitment is an approach to education rather than a statement about the specific content of the curriculum. At FCCU, the role of the faculty and the students, the balance between the breadth and the depth of learning (General Education and a major field of study) and the structure of the program reflect best practices in American higher education.

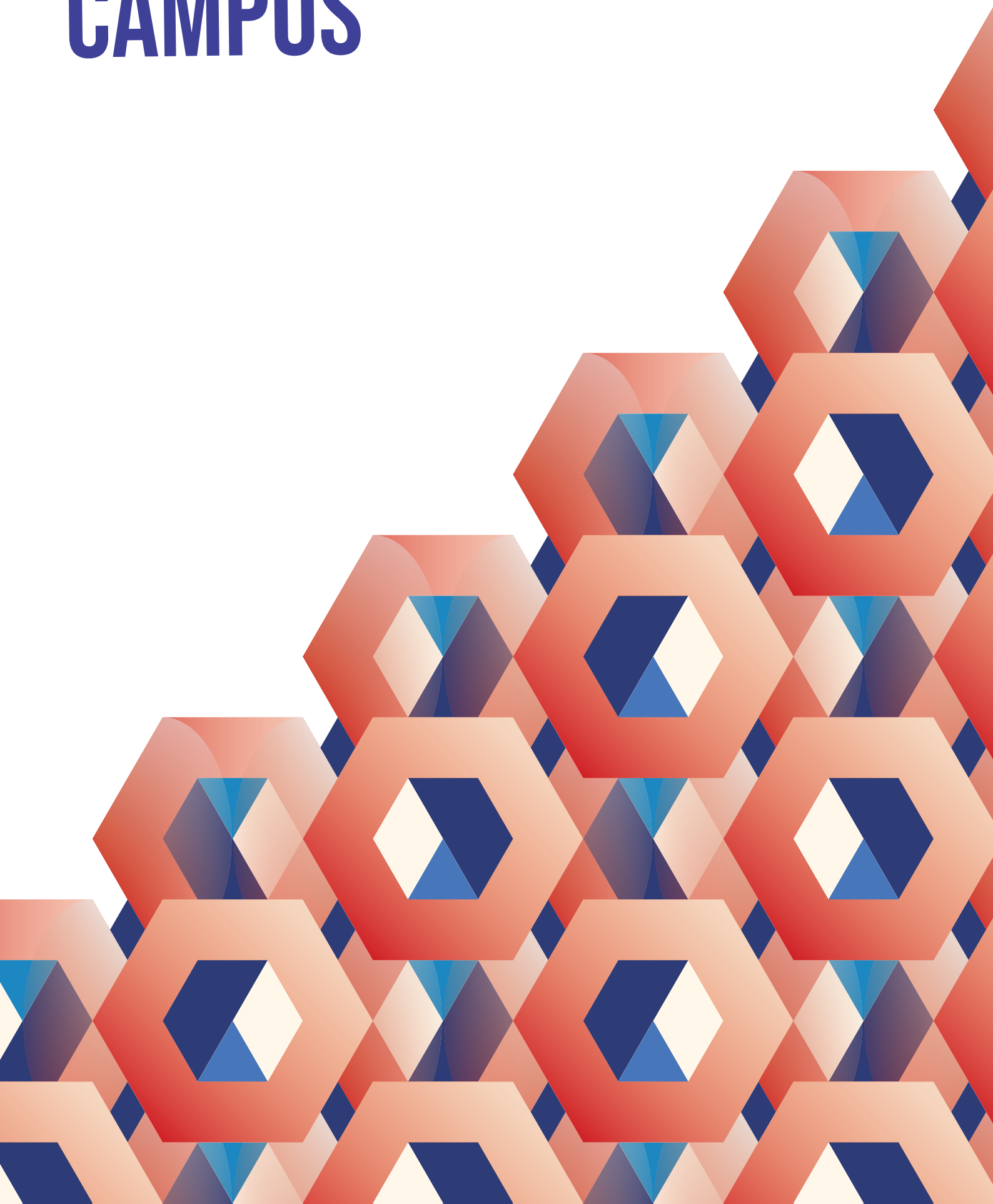
Commitment to Equality of Opportunity

At FCCU, students, faculty and staff are free within the University from all forms of discrimination based upon gender, race, age, ethnicity, nationality, religion or physical disability. Decisions regarding employment and admission to the University are based upon merit. Grades in courses and graduation from the University are based upon the performance of the student in meeting course and graduation requirements.

Financial Integrity

FCCU is a private, not-for-profit educational institution. All tuition and other fee income goes directly to the support of the educational program. Tuition and fees pay only a portion of the educational costs per student. Thanks to the support of donors, the balance of costs is paid from endowment and gift income from individuals, churches, corporations and foundations.

CAMPUS



Campus

Forman Christian College (A Chartered University) has an impressive and well-maintained campus with all the facilities needed to create an environment that is truly academic and conducive to purposeful learning. Centrally located in a beautiful residential area of Lahore, the campus sprawls over 108 acres along the east bank of the canal.

There are two purpose-built buildings for University students. Inaugurated in 2007, the Business and Social Sciences Building houses the Social Science Education and Humanities disciplines including the School of Management. The Armacost Science Building is a modern state-of-the-art science building for the Departments of Chemistry, Pharmacy, Environmental Sciences, Physics, Computer Science, Mathematics, Statistics, and the Kauser Abdulla Malik School of Life Sciences. It was inaugurated in February 2010.

The Ewing Memorial Library has been functioning since 1943 and now contains over 100,000 volumes. It has an automated Library Management System and online and electronic reference services. Students can use the web-based Information Portal to search the library catalog and log in to their accounts to view their activity information. The Digital Library (associated with the Ewing Memorial Library) in the Campus Center has computer and multimedia workstations, printers, study rooms, an information literacy classroom, and a research help desk.

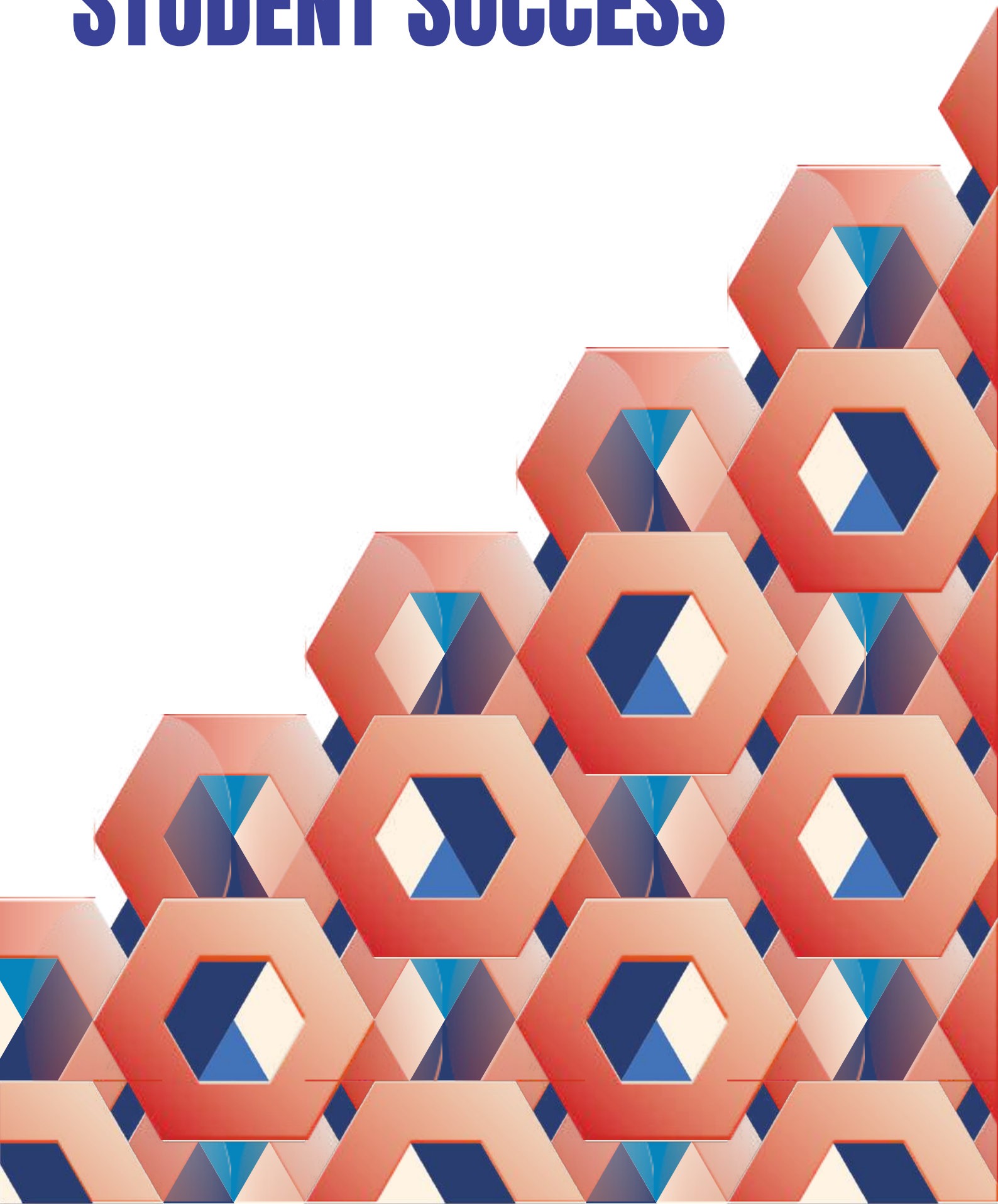
The Jim Tebbe Campus Center is the first of its kind in Pakistan and adds an important new dimension to the university. Measuring more than 180,000 square feet of covered space, this modern state-of-the-art facility is air-conditioned and houses a digital library (known as Friends Library) with more than 400 study carrels, a business incubation center, art gallery, dining room, coffee shop, offices, multiple meeting rooms, large and small auditoriums, several lounges including student lounges, a female lounge, and a faculty lounge, smart bank, campus store and other facilities.

Sinclair Hall houses the largest auditorium of the University (seating 740 people). This is where major events including the annual play and Christmas pageant are held. The Ahmad Saeed Administration Building (N Block) houses administrative offices including the Rector, Vice Rector, and Registrar offices.

The main cafeteria offers a place for students to relax between classes. The Lucas Center houses a basketball court, a gymnasium, and table tennis facilities, along with offices of the Health and Physical Education Department. FCCU has a vast sports ground in the middle of the campus and a running track that goes around it. There is also a 25-meter swimming pool, a baseball field, a gym, a badminton court, four tennis courts and a central cricket pitch on campus.

Out of seven hostels on the campus, three cater exclusively to university students: Shirazi and West Hall for men and the Cheryl Burke Hope Tower for Women. Shirazi and West Halls offer lodging for around 140 men each, while Hope Tower, along with a separate hostel for female postgraduate students, accommodates approximately 400 women. Also, as a result of the FCCU/TSA partnership, accommodation for nearly 100 female undergraduate and graduate students is available at a newly renovated hostel not far from the Forman Campus. All these hostels feature common rooms, mess halls, and spacious outdoor recreational areas.

STUDENT SUCCESS



Student Success

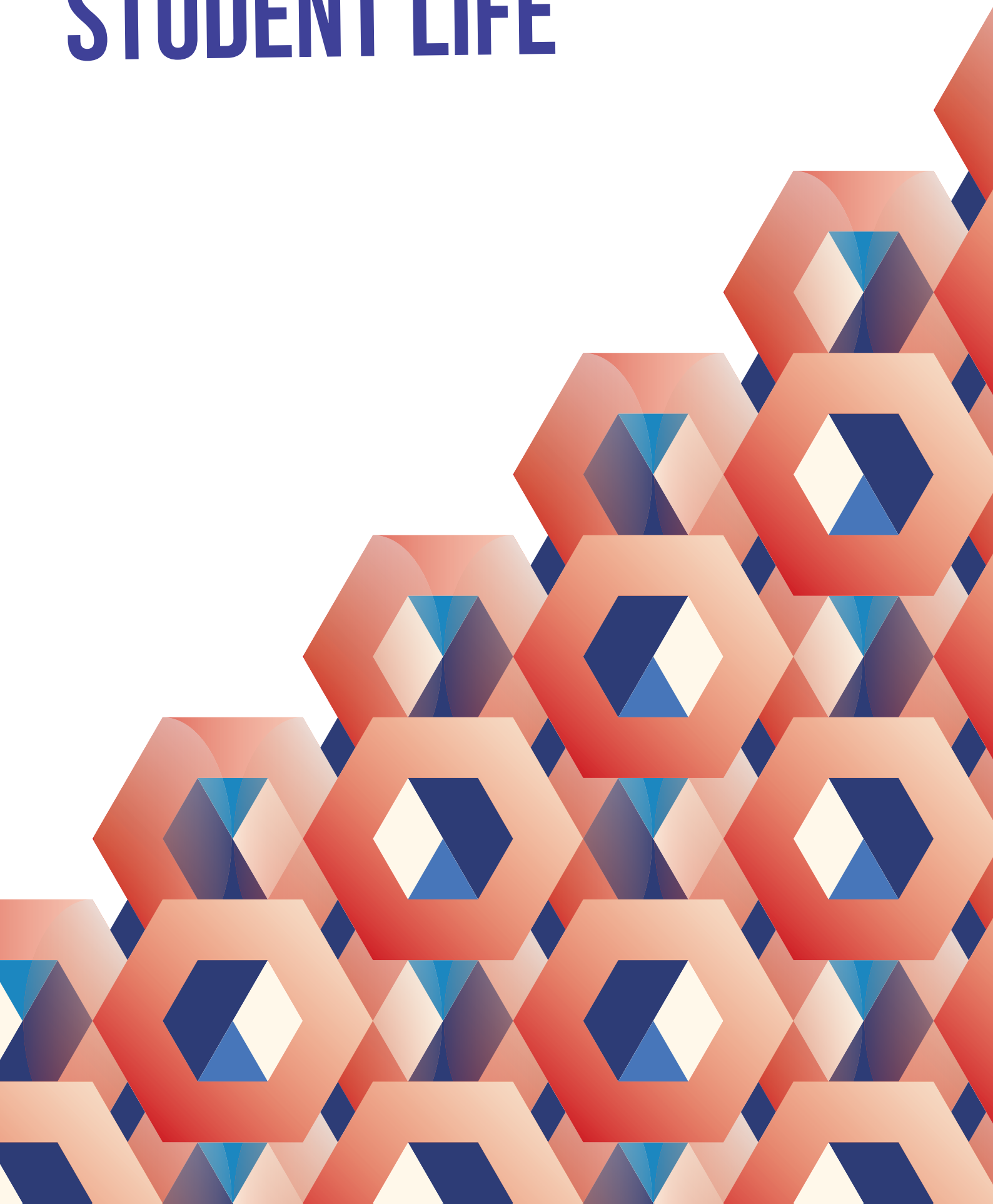
Our Vision for Student Success:

At FCCU, we wholeheartedly believe that the success of our students is at the core of our mission. Our dedicated support system is designed to empower students in their pursuit of self-directed and lifelong learning, ensuring they not only achieve their academic and professional goals but also contribute meaningfully to their family, country, and the global community. We are devoted to fostering an environment where students lead with purpose, embracing responsibility for a sustainable and impactful future. Your journey of success is our shared mission, and we are here to support you every step of the way.

Student Success Definition:

At FCCU, we see student success as a journey towards holistic development – one that integrates academic excellence, personal growth, interpersonal relationships, and social responsibility. Our students embark on a transformative journey of self-directed and lifelong learning, empowering them to achieve their academic, personal, and professional goals. Our aim is to prepare discerning individuals who lead with purpose and responsibly serve their family, country, and global community for a sustainable future.

STUDENT LIFE



Student Life

Learning is not confined to the classrooms and many of the most important lessons learned during the University years are learned through participation in co-curricular and sports programs. Forman Christian College (A Chartered University) Lahore offers a great variety of programs that provide opportunities for students to participate in activities that contribute to their learning and development. Participating in co-curricular activities helps students to understand the importance of critical thinking skills, time management, and academic and intellectual competence.

Residential Life

Residential life strives to provide a safe and supportive residential environment that complements and extends the educational experience of students. An on-campus residential facility is available to students who come from different cities other than Lahore. Due to limited residential facilities, the Residential Life Office allots rooms to freshmen male students for two years (four semesters) and female students for four years (eight semesters) on a first-come-first-serve basis. The hostels are supervised by the Guardians with the assistance of senior students, who serve as Residential Assistants to supervise activities and engage students in co-curricular activities.

Co-Curricular

FCCU is committed to providing holistic education. Classroom learning is supplemented by opportunities for students' intellectual and moral growth through carefully planned literary, academic, cultural, and recreational activities and programs. The Student Activities Office coordinates and promotes activities through student societies. Besides campus-wide societies, all academic departments also have their own student societies. Each society plans and conducts programs throughout the year that enrich the learning experiences of students and provide them with leadership opportunities.

Student societies have their own website: www.fccsocieties.org. The following societies are currently functioning:

ACM FCCU Chapter
The Art Junction
Benade Physics Society
Character Building Society
Dean Geographical Society
Earth Watch Club
Ewing English Society
Forman Biology Society
Forman Dramatics Club
Forman Education Society
Forman Finance Society
Forman Islamic Society
Armacost Psychological Society
Forman Sports Society
Forman Statistics Society
Forman Urdu Society
Formanites Debating Society
FORMUN
Google Developer Student Club
Griswold History Society
IEEE FCCU
International Affairs Society
Leadership Forum
Lucas Economics Society

Forman Journalism Society
Forman Music Society
Forman Pharmaceutical Society
Forman Philosophy Society
Forman Photography Society
Forman Political Science Society
Forman Sociological Society
Omni Life
Rotaract Club FCCU
Salam Mathematics Society
Speers Chemical Society
Women Empowerment Society
Young Entrepreneurial Platform
Young Peace and Development Corps

Religious Life

FCCU is committed to cultivating solid values and strengthening positive character and discipline in its students. For Muslim students, there are two mosques on campus, with Juma prayers offered at the main mosque. The university also convenes Dars-e-Quran classes along with symposiums and discussions, inviting eminent Muslim scholars to deliver talks and engage students in discussions on important religious, social and moral issues. For Christian students a weekly chapel service is offered on Friday. In addition to the weekly chapel program, the university provides regular Bible study groups and opportunities for volunteer service. No classes are scheduled on Friday during Juma or Chapel time.

Sports

The University Sports Office along with the Sports Society organizes, promotes, and conducts various games. The Sports Society oversees a very active intramural sports program with competition in athletics, basketball, cricket, football, baseball, hockey, table tennis, wrestling, lawn tennis and swimming. Players at all skill levels are welcome to participate, and often these competitions and matches are quite competitive. Selection for the University team and participating in inter-varsity competitions are a source of pride for any player.

Cafeterias

Student-faculty-staff social interaction in a more relaxed setting takes place at the cafeteria. The faculty is available to assist students outside the class, and the cafeteria is occasionally an appropriate setting for this interaction. More typically, it is simply a place for students to go for lunch or snacks between classes.

On-Campus Health Services

Mercy Health Center is an on-campus facility focused on promoting wellness and providing medical care for our campus community. The medical team includes a full-time doctor as well as several fully certified nurses. The Health Center has on-going relationships with several nearby hospitals and medical laboratories for cases that require specialized attention. Mercy Health Center provides the following services:

- Treatment of minor injuries and illnesses
- Confidential medical guidance and support
- Health guidance for students living with chronic illness/disability
- Referrals to outside medical care and community resources
- Seminars and small group classes on various healthy living topics

Campus Counseling Center

The Campus Counseling Center, located in the Mercy Health Center, is a facility to help students deal with concerns and difficulties that they may not want to discuss with family, friends or their teachers. It offers an emotional and physical space for the Forman community to share openly and honestly without the fear of judgment. Individual

counseling plans are devised to suit the unique needs of each client. The Campus Counseling Center provides the following services:

- Individual and confidential counseling
- Referrals to other professionals when needed
- Crisis intervention
- Seminars and workshops
- Access to books and articles that deal with mental health and emotional wellbeing

Writing and Communication Center

The Writing and Communication Center at FCCU is dedicated to supporting students in their writing and research endeavors. Recognizing that the demands of university-level writing are specialized and often require additional guidance beyond the classroom, FCCU stands out as one of the few universities in Pakistan with a fully operational writing center. This facility offers personalized, one-on-one tutoring tailored to each student's specific writing needs, facilitated by trained tutors. Students have the flexibility to sign up for appointments or walk in at their convenience to meet with a tutor.

In addition to individual tutoring, the Writing Center hosts workshops led by experts, focusing on various aspects of university-level writing and research. These resources aim to enhance students' skills and confidence in their academic writing.

Discipline

All students are expected to uphold standards of dignity, self-respect, honesty, and courtesy in their conduct. Strict adherence to disciplinary standards is mandatory. The Rector's decisions regarding disciplinary matters are final and legally binding on all students. Proctors are responsible for maintaining discipline, enforcing rules of good conduct, and taking necessary disciplinary actions when required.

Expectations of Conduct

1. **Rules and Regulations:** Students must observe all rules and regulations governing their studies, including both theoretical and practical components, as established from time to time.

2. **Attendance:** Students are required to attend all lectures, laboratory sessions, and academic activities for the courses in which they are enrolled.

3. **Academic Integrity:** Acts of dishonesty and cheating, particularly during examinations, are strictly prohibited and will result in punitive action if proven.

4. **Behavioral Standards**: Students must refrain from any behavior that poses a threat to fellow students, faculty, staff, or any other individuals associated with the University.

Disciplinary Consequences

Students involved in any of the following activities will face serious disciplinary consequences, which may include fines, parental undertakings, suspension, or expulsion from the University for a period of one semester to one year, depending on the severity of the offense:

- Causing, attempting to cause, or threatening physical injury to another person (e.g., fighting).
- Willfully using force against another person, except in self-defense.
- Possession of dangerous objects that may cause harm or injury (e.g., metal rods,

knives, firearms).
- Selling, possessing, or using alcohol, drugs, intoxicants, or controlled substances.
- Possessing or smoking tobacco or using any tobacco products.
- Engaging in hate violence or degrading/inflammatory behavior towards others, including hazing.
- Offering to sell or delivering a controlled substance or a substitute.
- Continued disruption of class or university activities, or repeated defiance of university authorities.
- Intimidation, bullying, or making threats towards university staff or students.

By adhering to these guidelines, students contribute to a safe and respectful learning environment for everyone at the University.

Dress Code

The purpose of the FCCU dress code is to ensure that our students are dressed in a dignified manner. This means that the clothing worn should be clean, neat, modest and reflective of the culture in which we are operating. The FCCU ID card must be visibly displayed at all times on campus

Sexual Harassment Policy

Sexual harassment is unacceptable behavior at Forman Christian College (A Chartered University) and such behavior will be subject to disciplinary action. Harassment refers to behaviors that are intended to be offensive, threatening or disturbing to the recipient. To harass is to persistently annoy, attack, or bother someone.

Sexual harassment is defined as any unwelcome sexual advance, request for sexual favors, or other verbal or physical conduct of a sexual nature that is offensive, embarrassing, intimidating or humiliating. This includes:

- Instances when the harassment has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile or offensive environment
- Instances when submission to the harassment is made either explicitly or implicitly a term or condition of fair treatment

Specific examples include, but are not limited to:

- Touching in an inappropriate way
- Staring or leering
- Requests for sex
- Subtle pressure for sexual activity or sexual innuendos
- Display of sexually explicit picture
- Repeated references to various parts of the body at inappropriate times
- Requests for dates when the other person has made it clear that she or he is not interested
- Hooting, whistles or other suggestive noises or gestures
- Suggestive comments or jokes
- Insults, name-calling or taunts based on a person's gender
- Derogatory graffiti referring to a person's character or making sexual implications
- Sexually explicit emails, text messages, social media communication, etc.
- Spreading rumors about another person's sexual behavior
- Intrusive questions about a person's private life or body

- Any romantic or sexual behavior that you would consider to be inappropriate if directed at a member of your family

Sexual harassment does not refer to compliments or other behaviors that are considered to be socially appropriate.

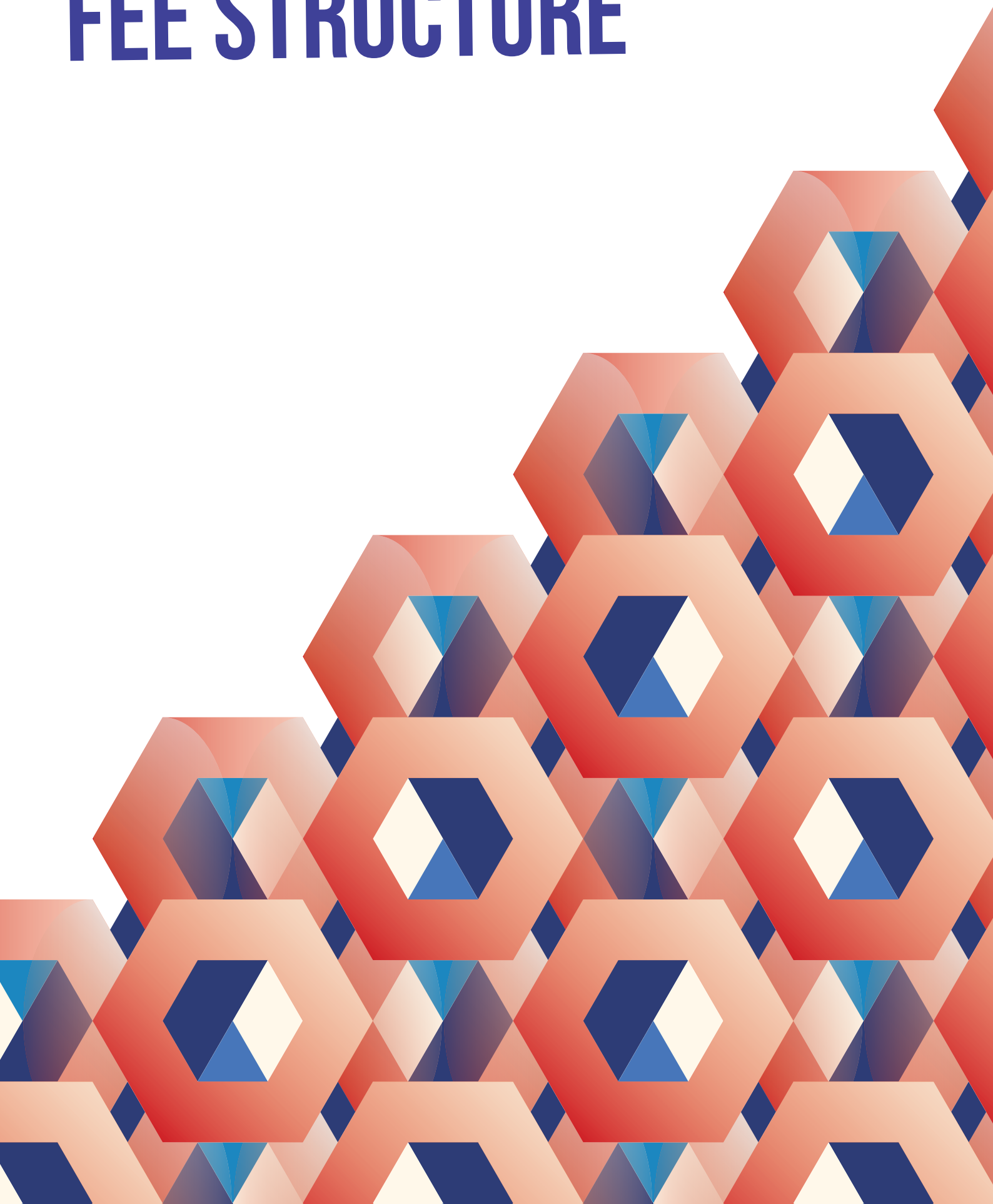
There should be no relationships of a romantic or sexual nature between any faculty or staff member and a student. There is no exception to this. A student should not attempt to initiate such a relationship for any reason. There should be no attempt by a student to gain better grades or access to exams or assignments by encouraging or offering such relationships. Any pursuit of such relationships by a faculty or staff member should be immediately reported to the counselor or the Chief Student Services Officer.

All faculty and staff members are required to report instances of harassment if they are aware of any. Any faculty or staff member encouraging a student not to report such instances will be subject to disciplinary action.

FCCU has adopted the Code of Conduct from the Protection against the Harassment of Women Act of 2010.

The link to that full document can be found at www.aasha.org.pk.

FEE STRUCTURE



Fee Structure

Fees are expected to increase each year depending on inflation and other costs:

- **Billing Cycle:** Billing occurs on a semester basis, with full-time and part-time status impacting the fee structure.
- **Full-Time Students:** Students taking between 12 to 18 credit hours are considered full-time and are charged the full semester fees.
- **Part-Time and Overload Charges:** Students taking 11 credits or less are considered part-time and are charged on a per-credit-hour basis. Overloads above 18 credits are charged on a per-credit-hour basis as well.
- **Payment Deadlines:** All tuition, hostel and other fees must be paid by the date specified by the University which are also published on the university website. Any outstanding balances will result in a business hold on the student's empower account, until dues are cleared. Late payments will result in late fee fines.
- **Hold Clearance and Add/Drop Registration:** Students can get their holds removed and re-register during add/drop. All courses on a student's schedule at the end of add/drop will be charged.
- **Withdrawal:** In case of withdrawal after Add/Drop period, tuition fee will remain charged, and student must pay fee for withdrawn courses.

Additional Course-Related Charges

- **Science Course Fee:** A science course fee will be applied for each 200-level or higher science course taken by students outside the PharmD and Biotechnology (Hons) programs.
- **Media Lab Fee:** A media lab fee will be applied to each course that utilizes the Media Lab facilities.
- **Internship and Student Teaching Practice Fees:** Internship and Student Teaching Practice courses are charged at a different rate than standard courses. Detailed information on these rates can be found in the accounts section of the University website.
- **Applicable Taxes:** Students are responsible for any government and withholding taxes where applicable.

For further information, see the FCCU website.

Tuition Refund Policy

HEC and FCCU refund policies are strictly observed. No refunds are issued for students who drop to part-time status after registration. Tuition and other fees are not refundable under the Higher Education Commission's National Level Refund Policy.

Timelines	Fee Refund Policy
Withdrawals before the semester begins or within the first 7 days of commencement of classes	Eligible for a full fee refund (general security plus any installment of tuition fee paid).
Withdrawals from the 8th to the 15th day of commencement of classes	50% of the first installment will be charged.
Withdrawals on or after the 16th day of classes	Tuition Fee shall be charged as per the installment plan.

- The date on which written notice of leaving the university is given to the admission office will be considered for calculating the timeline for refund of tuition fee. The timeline will be calculated continuously, covering both weekdays and weekends.
- A security fee refund is subject to clearance of all outstanding dues. Admission fee is non-refundable.

Hostel Dues and Charges

- **Installment Structure:** Hostel dues are payable in four equal installments.
- **Initial Payment Requirement:** The first installment of hostel dues must be settled before room allocation.
- **Mess Charges:** Compulsory mess charges for the semester are to be paid in four equal installments while extra mess (voluntary) meal charges are charged on a monthly basis.
- **Leaving the Hostel:** For leaving the hostel during the term, one month's notice should be given to the Residential Life Office. If no notice is given, full occupancy and compulsory mess will remain charged.

Hostel Refund Policy

Hostel dues are charged in three categories: Hostel Registration, Occupancy Charges and Meal Charges.

The Hostel refund policy is:

Hostel/Mess Security	Full refund, if all outstanding dues are cleared.
Occupancy Charges and Compulsory Mess Charges	One month's notice should be given for leaving the hostel. Occupancy and compulsory mess will be charged on the pro-rata basis till the last day of notice period.

- **Application Process:** Refund applications should be submitted to the Accounts Office by the student through Residential Life Office.
- Hostel Registration fee is non-refundable.

Financial Appeals Committee

This committee is comprised of staff members from all related departments and is responsible for hearing appeals involving issues with financial impact for students.

- Appeals on account of hardship do not fall under the purview of this committee but will be forwarded to the Financial Aid or other relevant offices
- The decision of this committee regarding the appeals will be deemed final and binding on both parties

FINANCIAL AID & MERIT SCHOLARSHIPS

Financial Aid and Merit Scholarships

The Financial Aid and Scholarships Office at Forman Christian College (FCCU) was established in 2008 to make higher education accessible to deserving and talented students, focusing on affordability and academic excellence.

Since the launch of the program, FCCU has distributed over rupees 2.5 billion in full and partial scholarships to more than 35,000 beneficiaries. For the academic year 2022-23, FCCU had disbursed funds amounting to over Rupees 337 million to 2316 students. During the academic year 2023-24, FCCU has budgeted to distribute over Rupees 415 million to more than 2300 students.

Undergraduate Scholarships 2024-2025

Merit Scholarships for High Achievers:

Merit Scholarships are offered to high achievers based on their T-Score, which is an aggregate of past academic performance and the Forman Entrance Admission Test (FEAT Accuplacer). The Merit Scholarship award is for program tuition fee only.

- 25% tuition fee scholarship for all candidates with T-Score 69.
- 50% tuition fee scholarship for all candidates with T-Score 70 and above.

Rector and Vice Rector Merit Scholarships for Exceptional Students:

Prospective students with T-Score of 70 and above would be eligible to compete through a rigorous interview process for:

- **Rector's Merit Scholarship** - 100% Tuition Fee waiver for one prospective student.
- **Vice Rector's Merit Scholarship** - 75% Tuition Fee waiver for one prospective student.

Eligible students will be notified through the Financial Aid and Scholarships Office. The Scholarship offer will lapse if not availed on time. Students who want to stay in the contention of being considered for Merit Scholarship, must apply no later than the July FEAT Cycle, and secure admission.

Need-Based Financial Aid

Forman Christian College (A Chartered University) is committed to ensuring that deserving, qualified students do not abandon their educational aspirations due to financial constraints. To support this vision, FCCU allocates a substantial portion of its annual budget to need-based financial aid for students who demonstrate both financial need and academic merit. These financial aid awards are granted on a non-discriminatory, equal-opportunity basis.

Provisional Assessment on Admission Offer:

Candidates with valid admission offers may apply for provisional assessment by visiting the Financial Aid & Scholarships Office with an application form and necessary supporting documents.

Work-Study Program

Work-Study Program (WSP) is intended to facilitate students by providing on-campus employment and professional development opportunities. Students may apply online, and the list of eligible students is shared by the Financial Aid & Scholarships Office with the hiring department for selection of the student(s). A stipend is provided to the beneficiary based on the number of hours worked, which is adjusted against the tuition fee.

All financial aid beneficiaries are encouraged to apply for this program to gain valuable work experience and develop key skills.

Sports-based Scholarships

FCCU offers tuition fee scholarships up to 75% to highly talented and competent players in different sports categories under individual games. The screening process to select a suitable candidate is performed by the Sports Scholarship Committee through trials and interviews. The admission criteria remain the same as for other regular candidates and the following terms and conditions apply:

- Scholarships will primarily be offered for individual games, which include athletics, boxing, bodybuilding, swimming, taekwondo, weightlifting, and team games on a case-to-case basis.
- The winner of the Board of Intermediate and Secondary Education (BISE) tournament(s) will be considered for a scholarship.
- The scholarship will be applied to the tuition fee only for one year and will be renewable based on annual performance.
- For scholarship renewal, students must bring at least one medal by participating in national games, provincial games, and Higher Education Commission (HEC) intervarsity competitions.
- Scholarship recipients must maintain a minimum CGPA of 2.0 and a clean disciplinary record.

FCCU Women Empowerment Scholarship Program

Forman Christian College (A Chartered University) is offering Eight (8) fully funded tuition and hostel fee scholarships (except meals) for the academic year 2024-2025 to meritorious and deserving female students joining our four-year undergraduate program.

The purpose of this scholarship is to prepare women for leadership while also attracting additional students from remote areas of Pakistan to Forman campus by inspiring and enabling women to pursue quality higher education. Interested female students from Khyber Pakhtunkhwa, Baluchistan, Sindh, Gilgit-Baltistan; Chitral and Kalash valley) and Kashmir are encouraged to apply with following terms and conditions:

- Successful completion of admission requirements.
- Must have Domicile issued by the provincial government of Khyber Pakhtunkhwa, Baluchistan, Sindh, Gilgit-Baltistan (Chitral and Kalash) or Kashmir.
- Must be first generation student and family have a demonstrated financial need.

- Demonstrated ability to learn new skills accompanied by the commitment to serve FCCU community while on campus.

After successful completion of FCCU admission test, high scorers will be shortlisted and invited for a selection interview. Preference will be given to meritorious yet deserving first generation students who would otherwise be unable to obtain higher education. Female students from remote areas of Pakistan who are not selected for ten fully funded scholarships are encouraged to apply for Forman's broader need-based Financial Aid program, providing another mechanism that can be used to help support their university education.

Visit Forman's website on financial information to get more information on Zakat Fund, applying for Government scholarships the Punjab Educational Endowment Fund (PEEF), the Baluchistan Educational Endowment Fund (BEEF).

Note:

- The deserving students may apply for need-based financial aid despite availing any other scholarship offered under various programs.
- The total of financial aid and scholarship awards shall not exceed the sum of fees charged to the student in a semester.

Criteria for Continuation of Merit and Need-Based Financial Aid

For merit scholarships the applicant must:

- Maintain a minimum CGPA (Cumulative Grade Point Average) of 3.00 and remain enrolled as a full-time student in each regular semester.
- Maintain a clean disciplinary record, ensuring no disciplinary actions are taken during their time at the University.

To retain eligibility for need-based scholarships, the applicant must:

- Maintain the CGPA required for Good Academic Standing, as outlined in this catalog, and remain enrolled as a full-time student (12 or more credits) in each regular semester.
- Maintain a clean disciplinary record throughout their academic tenure at the University.

Note: Merit and Need-Based Financial Aid is awarded up to 8 regular semesters to meet the minimum graduation requirement.

- Summer and Winter semesters are not covered
- Science, Media lab charge and course packs are not covered
- Students are responsible for government withholding taxes where applicable.

ACADEMIC POLICIES & PROCEDURES

Academic Policies & Procedures

Medium of Instruction

At FCCU, the medium of instruction is English. Students entering the Bachelor's programs with deficiencies in English language proficiency will be required to enroll in pre-university English language courses. These courses are specifically designed to support students in transitioning effectively into the academic demands of the Bachelor's programs.

Class Attendance

Students are expected to attend all classes and laboratory sessions in the courses for which they are registered. Students who miss classes are far less likely to succeed in meeting the requirements of the course. The university's minimum accepted attendance is 67%, however individual teachers may set higher requirements. Each teacher outlines his or her expectations for class attendance in the course syllabus. Teachers are expected to keep accurate records of student attendance. If a student does not attend the percentage set by the instructor on the course syllabus of the class and laboratory sessions, he/she will not be permitted to take the final examination in the course.

Standards of Academic Progress

Forman Christian College (A Chartered University) upholds high standards for student performance, as we believe that excelling in coursework is essential preparation for future leadership opportunities. We encourage our students to strive for excellence and will monitor their academic progress to ensure they are aware of any emerging concerns. Normal progress toward graduation is defined as completing five courses per semester (equivalent to 15 to 18 credits) with a grade of C or higher.

Good Academic Standing, Probation, and Dismissal

At the end of each semester, the Academic Review Committee evaluates the progress of all students to determine their status in "Good Academic Standing." To maintain Good Academic Standing, students must meet the following requirements:

Classification	Semester Credit Hours Completed	Minimum CGPA Required for Good Standing
Freshmen	01-30	1.50
Sophomore	31-60	1.75
Junior	61-90	2.00
Senior	90 or More	2.00

Additionally, students are required to declare a major by the end of their fourth semester and must be enrolled in courses that align with the timely completion of their declared major. Students who fail a course, have multiple Withdrawals, Incompletes, and/or receive "D" grades will also undergo review.

Academic Dismissal and Readmission

Students are expected to maintain good academic standing throughout their academic

career. Official notifications regarding academic standing will be issued to all full-time students whose performance does not meet the University's prescribed standards. After each semester, the Academic Advising Center, the Academic Review Committee, and the Vice Rector & Associate Vice Rector for Academic Affairs will assess whether students experiencing academic difficulties will be placed on Academic Probation, suspended on Probation, or dismissed from the University. Academic Dismissal is subject to specific conditions (outlined below).

The designation "Academic Probation" will appear on a student's transcript if their academic performance falls below the required standards for Good Academic Standing. This serves as a formal alert to students that their academic performance is insufficient for graduation, and that, unless improvement is demonstrated in the following semester, they may face dismissal.

Students placed on Academic Probation must adhere to the following conditions:

- Enroll in no more than five courses during a regular semester.
- Attend all classes for each enrolled course.
- Meet with an Academic Advisor at least once every two weeks.
- Regularly visit the Academic Advising Center to discuss academic plans and progress with academic support officers or student success advisors.
- Comply with any additional requirements set by the Academic Review Committee.
- Any student who fails to comply with the conditions of Academic Probation will be subject to review by the Academic Review Committee and/or the Vice Rector/Associate Vice Rector at any time and may be dismissed from the University.
- The Committee may decide to Drop a student whose academic performance consistently falls below the required minimum standards and who remains on probation for more than one semester. In such cases, the student may request readmission after completing a full, regular semester. (Generally, students will not be allowed to re-enroll during Summer or Winter semesters after being Dropped.)

Students requesting readmission should meet with an Academic Advisor and submit a written letter. Note that a student who is dropped for a second time will not be eligible to return to continue their degree program, effectively terminating the opportunity to complete their degree at FCCU.

Removal from Academic Probation

Probationary status will remain in effect until the student's CGPA meets the required threshold for Good Academic Standing.

Suspension from Co-Curricular and Sports Activities

A student placed on academic probation or facing dismissal for a second consecutive semester will be suspended from participating in co-curricular and sports activities. This suspension allows the student to dedicate their full attention to academic work. Additionally, no student with a CGPA below 2.0 is eligible to compete in any officially sanctioned sports event (whether FCCU or HEC).

Academic Integrity Issues

The Academic Integrity Committee will review all cases involving breaches of academic integrity. This includes, but is not limited to, instances of forgery (such as students signing on behalf of advisors, faculty, or staff) and plagiarism. All cases of forgery will result in a fine and an automatic hearing by the designated committee.

Academic Advising (Academic Support for Forman Students)

Each student will be assigned an Academic Advisor, who will assist with course selection, class schedules, career planning, and personal development. Once a student declares a major, advising will be handled by a faculty member from the respective department. It is the student's responsibility to meet with their Advisor at least once each semester to review academic progress. Students will receive as much guidance as needed, along with the freedom to make decisions they can responsibly manage.

The Student Academic Support Officers in the Academic Advising Center and the Student Success Advisors are also available for any student requiring assistance. The center, located in the Jim Tebbe Campus, is open Monday through Friday from 10:00 am to 4:00 pm.

Majors and Minors

Students must fulfill the requirements of a major field of study to be eligible for graduation. The number of credit hours required for the major varies depending on the degree program chosen, but it will not be fewer than 39 credit hours.

FCCU offers 27 different majors, three of which include specializations within the major. The specific courses required to complete each major are detailed in the departmental sections of the catalog.

Majors are offered in:

1. Biological Sciences
2. Biotechnology
3. Business with specializations in:
    a. Accounting & Finance
    b. Operations Management
    c. Marketing and Sales
    d. Human Resources
4. Chemistry
5. Computer Science
6. Economics
7. Education
8. English
9. Linguistics
10. Environmental Sciences
11. Human Geography
12. Physical Geography
13. History
14. Mass Communication with specializations in:
    a. Print and Electronic Media
    b. Advertising and Public Relations
15. Mathematics
16. Pharmacy (PharmD)
17. Philosophy
18. Physics
19. Political Science
    a. Political Philosophy
    b. International Relations
    c. Pakistan politics
    d. Comparative Politics
20. Psychology

21. Applied Psychology
22. Religious Studies majors
    a. Islamic Studies
    b. Christian Studies
23. Sociology
24. Sociology and Cultural Studies
25. Statistics
26. Urdu

Change of program (Online Form)

Please note that a program change request will not be approved if the student's merit at the time of admission was below the required merit for the program they are requesting to transfer into.
The student's request will be reviewed by the following:

1. The Chairperson of the department for the program the student wishes to enter.
    a) The Academic Dean of the new program.
    b) If the student is changing to a Bachelor of Studies program (other than BSB or Biotechnology), no approval from the Chairperson or Dean is required. The student may proceed directly to the Accounts Office.
    c) The decisions made by the Academic Dean and the department Chairperson are final.
2. Once the change is approved, a copy of the approval will be forwarded to the Accounts Office to adjust the fee structure. The new fee structure will take effect in the semester following the approval.
3. After the fee structure has been changed, the form will be forwarded to the Academic Services Office to change the program.
4. Finally, the student's advisor and major will be updated by the Academic Advising Center.
5. If a change of program request is denied, the student is not permitted to seek new admission into the desired program.

For any further questions or clarifications, please contact the Academic Services Office.

Degree Completion Requirements

In alignment with the Higher Education Commission (HEC) of Pakistan's policy mandating eight regular semesters (fall and spring), Forman Christian College (FCCU) has established the following guidelines:

Students are required to complete 8 semesters (fall and spring) to graduate. Summer and Winter terms may be taken at the student's discretion, but these terms should only be used to ensure timely graduation or to address any academic deficiencies. They should not be used as an attempt to graduate early.

While FCCU will recognize degrees once all requirements are fulfilled, please note that the HEC will only attest degrees if the program includes a minimum of eight regular semesters.

Multiple Majors and Minors

Students are allowed to pursue more than one major. However, it is important to note that the Higher Education Commission (HEC) recognizes only the first major listed on the transcript. If a student intends to graduate with multiple majors or a combination of a major and a minor, all requirements must be completed according to the same catalog.

External review of credit bearing Research/Final Year Project

Students undertaking credit-bearing research projects or final year projects within their chosen field are required to complete the work under the supervision of a faculty member. Upon completion, the department chairperson will forward the thesis, along with the Turnitin report, to the Controller of Examinations Office for external evaluation. The Controller of the Examinations Office will then notify the Academic Services Office of the grade awarded by the external examiner.

Bachelor of Studies (Hons) in 23 Majors

The following requirements must be fulfilled by all students to qualify for formal recommendation by the faculty for the Bachelor of Studies (Hons) Degree:

- The satisfactory completion of a minimum of 124 credit hours with a cumulative grade point average (CGPA) of 2.0 or better as well as a minimum grade point average (GPA) of 2.0 in the major.
- The completion of at least 12 upper-level courses labeled at the 300 or 400 level.
- The satisfactory completion of a major field of study from a list of those offered by the University and specific to one catalog only. For the Bachelor of Studies (Hons) core and elective courses must be completed as stated in the requirements of the selected major.
- The satisfactory completion of the General Education requirements of the University
- The successful completion of the senior capstone courses in the major as required

Bachelor of Studies (Hons) in Business

The following requirements must be fulfilled by all students in order to qualify for formal recommendation by the faculty for the Bachelor of Studies (Hons) in Business:

- The satisfactory completion of a minimum of 124 credit hours with a cumulative grade point average (CGPA) of 2.0 or better as well as a minimum grade point average (GPA) of 2.0 in the major.
- The completion of at least 12 upper-level courses labeled at the 300 or 400 level.
- At least 72 credit hours (including core courses) of Business courses as specified in the catalog.
- The satisfactory completion of the General Education requirements of the University.
- The successful completion of the senior capstone courses in the major as required.

Bachelor of Studies (Hons) in Computer Science

The following requirements must be fulfilled by all students to qualify for formal recommendation by the faculty for the Bachelor of Studies (Hons) in Computer Science:

- The satisfactory completion of at least 132 credit hours with cumulative grade point average (CGPA) of 2.0 or better as well as minimum a grade point average (GPA) of 2.0 in the major
- The completion of at least 12 upper-level courses labeled at the 300 or 400 level.
- At least 92 credit hours (including core, supporting & elective courses) of Computer Science courses as specified in the catalog.
- The satisfactory completion of the General Education requirements of the University.

Bachelor of Studies (Hons) in Biotechnology

The following requirements must be fulfilled by all students to qualify for formal recommendation by the faculty for the Bachelor of Studies (Hons) in Biotechnology:

- The satisfactory completion of minimum 124 credit hours with a cumulative grade point average (CGPA) of 2.0 or better as well as a minimum grade point average (GPA) of 2.0 in the major.
- The completion of at least 12 upper-level courses labeled at the 300 or 400 level.

- At least 64 credit hours (including core courses) of Biotechnology and Biology courses as specified in the catalog.
- The satisfactory completion of the General Education requirements of the University.
- The successful completion of the senior capstone courses in the major as required.

Doctor of Pharmacy (PharmD)

The following requirements must be fulfilled by all students to qualify for formal recommendation by the faculty for the Doctor of Pharmacy (PharmD) (A five-year professional degree)

- The satisfactory completion of 205 credit hours with a cumulative grade point average (CGPA) of 2.0 or better as well as a grade of 'D' or better in each course, as per curriculum approved by of the Pharmacy Council of Pakistan/Higher Education Commission of Pakistan.
- The satisfactory completion of the General Education requirements of the University Major GPA.
- The GPA calculated by tabulating ALL courses in the major taken by the student.

Requirements for Minor

An approved minor is outlined in the department's section of the catalog. To pursue a minor in a specific discipline, the student must complete the requirements for the minor as specified in the catalog.

Mandatory Undergraduate Internship

Effective from the 2022-2023 catalog, this internship policy applies to students enrolling in the fall semester and beyond. All Bachelor's and Biotechnology students will be required to choose between a Standard Internship or an Academic Internship. Professional programs (PharmD) and programs accredited by relevant councils (such as Business, Computer Science, and Education) must adhere to the internship policies set forth by their respective accrediting bodies.

General Education

Forman Christian College (A Chartered University) is a liberal arts university. The purpose of the General Education requirement is to introduce students to a broad range of intellectual pursuits, to provide sufficient breadth of knowledge to prepare them for their role as citizens, to equip them with communication and analytical skills, to help them to integrate knowledge that comes from different disciplines and to prepare them for a lifetime of self-directed learning.

Distribution Requirement

There are two components of the General Education requirement. First is the demonstration of competency as determined by performance on University assessment examinations given as final exams in the general education course related to each of the following five areas:

- Written communication in Urdu (URDU 101)
- WRCM 101: Writing and Communication I
- WRCM 102: Writing and Communication II
- Quantitative skills (MATH 100 or FEAT Math's score at the time of admission)
- Information Technology (CSCS 100 or COMP 102)

There are four categories of General Education. A total of 15 required courses fulfills General Education requirements. Further explanation is stated below.
Any course of three credits or more, including Major courses, fulfill this requirement

Humanities: 6 courses

All students must complete the following:

Religious Studies:

- Islamic Education 101 (required for all Muslim students) or Christian Ethics 152

Communication:

- WRCM 101: Writing and Communication I
- WRCM 102: Writing and Communication II
- URDU 101: Communicative **Urdu**

2 other courses from Humanities:

- Two (2) courses must be selected from English, History, Mass Communication, Philosophy, Religious Studies (Christian or Islamic Studies) Urdu, Arts, or Foreign Languages.

Social and Behavioral Sciences: 3 Courses

A student must take:

- 1 Pakistan Studies course –PKST 101
- 2 courses from: Business, Economics, Education, Geography, Political Science, Psychology or Sociology.

Science and Mathematics: 5 Courses

Students must take:

- 2-four credit Science courses with labs (from two different disciplines): Biological Sciences, Chemistry, Physics, Environmental Sciences or Pharmacy
- 1 Mathematics course
- 1 Computer Science course
- 1 other course in either Natural Science, Mathematics, Statistics, Logic (PHIL 221) or Computer Science

Foundations of University Education (UNIV 100): 1 Course

All University Freshmen students must take UNIV 100 during their first semester or after they have finished the ELP program. Transfer students with 60 or more credits are exempted from UNIV 100. See details for Transfer based exemption.

Academic Credit

Credit towards a degree is awarded for satisfactory course completion, independent study or academic work certified by another accredited degree granting institution (covered in the Transfer Credit policy).

One credit is defined as one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week of the semester. A credit hour means teaching a theory course for 50 minutes each week throughout the semester. At least an equivalent amount of work is required for other academic activities including laboratory work, internships, practical, studio work, and other academic work leading to the award of credit hours. Thus, one credit hour in laboratory or practical work/project requires lab contact of a minimum of two hours per week throughout the semester and one hour per week of out-of-class work, for a total of three hours.

Ordinarily credit is earned by course completion. A normal full-time academic load is five courses per semester. A student may take a minimum of 12 semester credit hours or a

maximum of 17 semester credit hours and still be considered a full-time student. Additional permission is required for overloads above 17 credit hours.

If a student enrolls in fewer than 12 credit hours, he/she is considered to be a part-time student. Enrollment for more than 17 credit hours is very rare and requires the approval of the Academic Advising Center and payment of any additional fees, if applicable. Permission to carry an overload will be granted based on a CGPA of 3.0 or above. Senior students (over 90 completed credits) with a lower CGPA can take an overload (after they receive the proper permissions) if they require the overload in order to graduate on time.

Complete URDU Exemption

Exemption for URDU 101 is granted by the Associate Vice Rector for Academic Affairs for the following types of academic backgrounds:

- Pakistani students who graduated from American or other foreign High School systems, either in Pakistan or in a foreign country.
- Foreign students who graduated from a High School system outside of Pakistan.
- Students who studied URDU as a second language/Easy Urdu in O level.

An exemption of URDU 101 requires substitution of another course in the Humanities. It is the student's responsibility to have this course properly substituted by the Academic Office.

FEAT-Based Exemption

MATH 100 and Mathematics Competency: Students who achieve a score of 75 or higher on a score range of 20-120, or 263 or higher on a score range of 200-300 on the Forman Entrance Admissions Test (FEAT) have met the Mathematics Competency requirement and are exempt from studying Math 100. Exemption of Math 100 through FEAT requires that any course with a MATH prefix from the Science and Mathematics category course be studied to replace this general education requirement.

Transfer-based Exemption

UNIV 100 Students who transfer into FCCU with 60 or more credits are exempt from studying UNIV 100. This is given at the time of transfer and admission and is not credit based. The required credits must be earned through the study of an additional course in the humanities category.

Exemption Requiring Substitution

Exemptions made in the above manner require course substitution by appropriately replacing the exempted course for degree audit purposes. Replacement must be done in consultation with the academic advisor and notified to the Academic Office after grading in the replacement course appears on the transcript.

A Level-based Credit (Adopted in 53rd AC)

FCCU will discontinue the policy of awarding credit for A-Level, Edexcel, and International Baccalaureate (IB) exams, effective FA24-Levels (or similar exams) can be used interchangeably with an associated course (see list below) to fulfill prerequisites for other FCCU courses. Only grades B and above will be used for meeting prerequisite requirements and only if the student wants to exercise this privilege. The student does not get credit for the exempted course and still needs to take courses to fulfill all credit hour requirements per their respective catalog. For example, MATH 201 Calculus II has a prerequisite of MATH 102. If a student earns a B or higher in the "Pure Mathematics 3" A-Level, then s/he has fulfilled the prerequisite for MATH 201 and can take MATH 201. The

student does not get credit for MATH 102; the only benefit is that the prerequisite for MATH 201 has been met by the A-Level exam score of B or higher.

Biological Science for BIOL 105
Chemistry for CHEM 100
Physics for PHYS 100

Computer Science for CSCS 100
Pure Mathematics 1 or 2 for MATH 101
Pure Mathematics 3 for MATH 102

Economics for ECON 100
Geography for GEOG 101
History for HIST 102
Psychology for PSYC 100

Islamic Studies for ISLM 101
Christian Studies for CRST 152
Sociology for SOCL 100
Urdu for URDU 103

Current students who have already earned credit for A-Levels will keep those credits but will need to earn a minimum of 120 (or 124 for “super seniors”) credits beyond any credits earned from A-Levels.

Substitution of Research and Internship

Unless research (499) or internship (398/498) are core courses, students who do not qualify due to CGPA requirement need to take additional courses in their major, to substitute for Research and Internship to complete their credit requirement to graduate.

Independent Study (Online Form)

Credit may be earned through independent study by advanced students who exhibit both the self-discipline and mastery of the methods demanded by the subject matter selected by the student. An independent study project is designed by a student in consultation with the Professor who is to supervise and evaluate the work. An academic contract, made in advance, specifies the subject and method of inquiry, the texts, the purpose of the project, and the basis of evaluation and credit. Each contract approved by the respective Dean of Faculty and Chairperson should be deposited in the Academic Services Office for registration and record keeping. Independent study forms are available on FCCU’s website.

FCCU recognizes that many experiences outside the classroom may contribute to a student's program. Internships, participation in community projects, and field experience may be accorded credit if closely coordinated with the student's academic program. Such experience ordinarily constitutes a part of a regular course or independent study project.

Transfer Credit

Credit is earned by migration or transfer from another degree-granting institution recognized by the Higher Education Commission or accredited in the USA or UK, up to a limit of 64 credit hours. A student transferring to FCCU from another institution should request a transcript of work done in the other institution to be sent to the Admissions Office. When the transcript has been evaluated by the Academic Services Office, the applicant is notified of the credit acceptance by the Admissions Office.

Course Credit that is Acceptable for Transfer

1. An official request for credit transfer must be made through:
   - The Admissions Office, prior to new admission.
   - The Academic Services Office, for students participating in approved student exchange programs during their studies at FCCU.
2. An official transcript is required for all transfer credits to be reflected on the FCCU transcript.
3. Transfer courses must be from an accredited institution.
4. The courses must align with FCCU's degree requirements.
5. The grade for each transfer course must be "C" or better at the undergraduate level to be accepted by FCCU.
6. Applicants with a CGPA below 2.0 must await case approval following evaluation.
7. The Chairperson of each department determines how transfer credits fulfill the requirements for FCCU's major degree requirements.
8. The transfer of General Education requirements will be assessed by the Academic Services Office.

Course Credit that is Unacceptable for Transfer

Transfer of credit based on the following is unacceptable:

1. Applicants that have previously withdrawn officially from FCCU.
2. Applicants that have been previously released for academic, or disciplinary measures, including dismissals based on Academic Probation.
3. Unapproved study at another institution while an active student at FCCU.
4. Unapproved simultaneous enrolment at two institutions (one being FCCU) in the same semester.
5. Distance learning programs that have not been properly approved prior to beginning.
6. Transfer credit request based on unofficial or photocopied transcript.
7. Transfer credit request based on private conventional BA/BS or equivalent qualification while a regular student at FCCU.
8. Courses studied at non-accredited institutions.

Counting a Conventional Degree towards a 4-Year Bachelors

1. A petition for conversion must be submitted to the Admissions Services Office.
2. The transcript or result of the accredited university's conventional BA/BSc degree must be submitted with this petition.
3. The Head of Academics will make a merit-based decision on the petition and communicate this in writing to the student.
4. If the petition is approved, the conditions of transfer apply.
5. A maximum of 30 credit hours can be achieved through transfer at Forman at the time of admission.

Readmission to the University

Students who have not been enrolled for three consecutive semesters will be dropped from the university. They must seek readmission to the University to resume their studies by submitting a Request for Readmission to the Associate Vice Rector for Academic Affairs for final approval. It is the student's responsibility to submit a copy of the readmission approval to:

1. The Accounts Office (for readmission fee and tuition)

2. The Academic Office (for registration).

Once readmitted the student will apply for a new student ID card.

Termination of Study

A student at Forman can have his/her study terminated – enrolment annulled, on the following grounds:

1. Completion of the Degree after obtaining accounts clearance (completion of degree audit and official listing in graduation booklet at commencement).
2. Withdrawing from the University after obtaining clearance.
3. Completion of the Tenure of the program six years (12 regular semesters).
4. Removal from the rolls on disciplinary or administrative reasons (breach of academic integrity, etc.).
5. Decision of Academic Review committee recommending dismissal.

Such students can reapply for enrolment anew, other than ones removed from rolls on discipline grounds, in competition with fresh enrolment, as transfer students, and the relevant departments can look at what courses can merit transfer (needing to complete 50% credits at FCC excluding transferred courses).

Registration Policies

Unofficial Presence in Class

Students may attend class only if they are officially registered. Instructors confirm registration by reviewing the class roster. Students are required to attend all courses they are registered for in a given semester and must attend the correct section to receive a grade. Unofficial section changes are prohibited; students who switch sections without approval or never showed up in the class will receive an "NS" (No Show) designation.

Registration Time Frame

Registration dates are published in the academic calendar available on the official website of FCCU. All courses for which the student wishes to earn credit must be registered through student web services. The student is responsible for every course listed on his/her account schedule and can receive no credit for courses not listed there.

After registration, official changes in registration may be made only during official add/drop periods when access to registration is again available online. No course may be added after this deadline.
See '*Cancellation of Courses due to Low Enrolment*' for that time frame.

Overloading Courses in a Semester (Online Form)

Under normal academic guidelines, students register for 5 courses, or up to 17 credits, through the online system. However, students with a CGPA of 3.00 or higher may request a credit overload from the Academic Advising Center. Senior students who have completed 90 credits may also be permitted to take an overload, regardless of CGPA, if the additional course is required for graduation.

No Seat in Selected Course (Request Online for Seat Exception)

Due to high demand, seats in certain courses may fill quickly. However, students with a compelling need to take a specific course in the current term may request entry. Approval is at the discretion of both the course instructor and the department chair.

When seeking a seat in a course that is already full:

1. Apply for Seat Exception online by going through the Online Seat Exception process guide, which is available on FCCU's website in Student's Tab and on Academic Services Office page Resources Tab.
2. The student must ensure that this course does not conflict in time with other courses registered online before submitting the request for approval to the Instructor.
3. Any discrepancy must be dealt with in the applicable semester.

Prerequisite Waivers

Before enrolling in a course with prerequisite requirements, students must have successfully completed the necessary prerequisites. In exceptional cases where this requirement has not been met, students may request a waiver by petitioning the instructor. If the waiver is approved, the instructor's endorsement, along with written approval from the department chair, should be submitted to the Academic Services Office for processing within the registration period.

Confirmation of Registration

Upon completion of the registration procedures as outlined in the registration post on the University website, the student's registration is confirmed on payment of the estimated bill provided on the student's web account. Payment must be made in entirety by the last date mentioned on the academic calendar.

Business Holds

Students whose dues remain in arrears will be put on business holds. All courses on a student's schedule at the end of add/drop will be charged. No courses will be deregistered, but a business hold will be placed on the account and no further registrations will be done until all fees are cleared. A fine will be charged for fees/dues paid after the stated deadline.

Cancellation of Courses due to Low Enrolment

1. After the close of add/drop, classes with low enrolment are likely to be closed, particularly lower-level elective courses.
2. For Spring and Fall, low enrolment is 5 students for upper level (300/400) and 10 students for lower level (100/200) courses.
3. For Summer and Winter (optional semesters), low enrolment is 10 students for all courses. However, in optional semesters the Low enrolment sections are not dropped but shall continue if the faculty teaching their courses agree to keep them active.
4. The Chairperson will be informed of the closure of courses due to low enrolment
5. All instructors teaching courses with low enrolment must inform students of the likelihood of closure, prior to the end of add/drop.
6. The Chairperson can also make the decision to continue with such a course provided there is appropriate justification to do so.
7. If a registered course has been canceled, students of that course can visit the Academic Services Office to arrange a satisfactory substitute, preferably within the add/drop period or within 4 days of add/drop closure.

Grading Policies

Grades are final as given by an instructor unless a reason exists for change as stated below. All grades will be locked onto the transcript at the time of degree awarding and will not be changed subsequently. (See Grade Change Policy)

Grading Legend

The grading system for undergraduate students is as follows:

Grade	Point Value	Numerical Value	Meaning
A	4.00	93-100	Superior
A-	3.70	90-92	
B+	3.30	87-89	Good
B	3.00	83-86	
B-	2.70	80-82	
C+	2.30	77-79	Satisfactory
C	2.00	73-76	
C-	1.70	70-72	
D+	1.30	67-69	Passing
D	1.00	60-66	
F	0.00	59 or below	Failing
NS	0.00	0.00	Did not show up in Class
W	-	-	Officially Withdrawn
AW	-	-	Administrative Withdrawal/Dismissal
AU	-	-	Audit/Listener Status
I	-	-	Incomplete
T	-	-	Transferred credit

Transcript Updates

Students are accountable for reviewing their transcripts after each semester's grading period and notifying the Academic Services Office of any inaccuracies, such as incorrect placements on Academic Probation or misapplied Repeat course credits.

Moreover, if a course is taken as a replacement for an exempted course, it must receive proper approval and be submitted to the Academic Services Office for substitution immediately following the grading period.

Courses that have dual designators (coding) are identified with an asterisk (*) to signify their status as cross-listed courses. It is imperative for students to choose the correct designator pertinent to their specific program, as these designations will not be altered on the transcript post-grading.
In cases where a student registers for a cross-listed course twice under different departmental codes (except when the initial registration resulted in a W, NS, or F grade), the course credits will only be counted once. Consequently, the second registration will be marked as "Academically Withdrawn" and assigned an AW grade.

Grade Change Policy

If an instructor of a student determines that a grade was issued incorrectly because of a clerical or procedural error (a calculation error or one in transcribing the grade), it can be corrected by submitting a grade change form to the Academic Services Office or by submitting a grade change request remotely via EMPOWER login.

The manual procedure is as follows:

1. An original grade change form must be picked up from the Academic Services Office by the Instructor of the course for which the change is being made.
    a. Forms will not be given to the student requesting the grade change or department administrative staff.
    b. Grade Change forms must not be stored in excess by instructors/departments.
2. The grade change form must be filled completely:
    a. The reason for the change must be stated clearly.
    b. The form must be signed and dated by the instructor.
    c. If the instructor is no longer on faculty, the grade change form can be processed by the department Chairperson with approval from the respective Dean of Faculty.
3. All grade changes carry a time limit.
    a. Incompletes in courses and any other grade changes due to typing errors or miscalculations will continue to be accepted by the Academic Services Office up to 8 weeks of the following regular semester.
    b. An Incomplete in Internship can remain unchanged for one semester.
    c. Research should be awarded an "I" Incomplete in the semester registered and changed within one year for Bachelors.
    d. Research should be awarded an “I” in the semester registered and changed within one Academic year for Bachelors.
    e. A late grade change form can be submitted to the Academic Office after approval of the Dean of Faculty, but final approval will be granted by the Vice Rector.

The grade change form must be submitted in person by the instructor within the stated time frame. Only original forms will be accepted for grade change. Photocopied grade change forms will not be approved.

Grade of 'I' (Incomplete)

1. A grade of “I” (Incomplete) indicates that, although a substantial proportion of the course requirements have been met, the student has not completed all course requirements by the end of the term.
2. In the judgment of the instructor the student:
    a. Has been in good standing.
    b. Is facing an emergency situation beyond his/her control.

3. A student must submit the work required within six (6) weeks of the following semester. If the work is not completed the grade of incomplete is automatically changed to an F.
4. An Incomplete should never be given to a student who has performed poorly during the entire semester and wants extra time to improve the grade.
5. An Incomplete in Internship can remain unchanged for one semester.
6. Research should be awarded an “I” in the semester registered and changed within one Academic year for Bachelors.

Retaking a Course

- A student who has earned a grade of D or F in a course may retake the course. In such cases, the higher of the two grades will be counted toward the CGPA.
- If a student retakes a course for the purpose of earning a higher grade outside of the conditions above, the second enrollment will be recorded as "Academically Withdrawn" (AW) on the transcript.
- If repeating a course with a D grade has caused double credits to appear on a transcript, the student must apprise the Academic Services Office of this anomaly and get it corrected immediately to avoid untoward circumstances delaying graduation.

Policy on Multiple Final Exams in One Day [54th AC]

If a student has three or more final exams scheduled on the same day, s/he has the option to reschedule one or more of the exams beyond two. It is the responsibility of the student to contact his/her faculty member and make this arrangement. The new day and time must still fall during the days of final exams, not before or after the final exam window. This arrangement shall be communicated to the Department Chair and Dean for their approval, with onward notice given to the Academic Services Office.

Withdrawal Policies

Course Withdrawal (Online Form)

- Students are allowed to withdraw from a course until the end of the tenth week of the regular semester. Students who withdraw from a course by the withdrawal deadline will receive a grade of “W” from the respective instructor.
- If a student does not officially drop a course or withdraws from a course after the deadline, he/she will receive a grade earned or F or NS.
- In circumstances where Academic Policy has been breached or disciplinary action taken, the Vice Rector's Office may award an AW (Administrative withdrawal) to a student and withdraw the grade given for the applicable course.
- In extreme circumstances beyond the student's control, such as illness, accident or death of a parent, permission will be granted to withdraw after the withdrawal deadline. In extenuating circumstances “W” will be awarded by the Vice Rector's office.
- Withdrawal from a course or courses does not affect a student's fee status. Students must pay fees for withdrawn courses.

Temporary Withdrawal/Leave of Absence (Discontinuing for one semester or year)

- Temporary Withdrawal indicates a student’s decision to discontinue studies for one semester or one academic year.
- Students considering withdrawal should first consult with their Academic Advisor, followed by a meeting with the Academic Advising Center (AAC). They must

complete the withdrawal form and provide supporting documentation for their request. The AAC will then submit the form, along with their recommendation, to the Vice Rector's Office.

- Students receiving financial aid are required to consult the Office of Financial Aid to understand how the withdrawal may affect their financial aid eligibility.
- Once the withdrawal decision is finalized, the Vice Rector's Office will forward the withdrawal form and supporting documents to the Academic Services Office for processing.

University Withdrawal (Online Form)

A University Withdrawal is defined as leaving the university permanently. If a student decides to leave the University, the following steps must be completed:

1. The University Withdrawal Clearance Form must be downloaded from the website.
2. The student is responsible for obtaining clearance from the Library, Computer Lab, Chief Conduct Officer, Accounts Office, and Science Laboratories.
3. The university ID card must be returned to the Accounts Office.
4. Once the completed form with all necessary clearances has been received, the Academic Services Office will issue a *Letter of Release.*
5. To collect the security deposit, the student must provide a copy of the Letter of Release to the Accounts Office.
6. If a student quits and fails to inform the university about the decision to discontinue at the university, he/she will receive failing grades for all registered courses of the respective semester. If the student does not cancel his/her registration prior to the drop deadline, he/she will be held financially responsible for applicable tuition fees.

Degree Audit

Degree Audits show progress towards a degree being earned at the University. It is mandatory that the student meet regularly with his/her advisor to keep a check on progress and plan for courses towards degree completion. The authority in degree audit is the published catalog which must be followed strictly.

In terms of credit, overall, the minimum requirement to graduate is 124 credits. Of these some are earned in the Major Block and some in the General Education Block. One course can be counted in two applicable blocks e. g. BIOL 221 is counted once in the Major and helps towards total credits needed there. BIOL 221 can also be counted toward fulfilling General Education Science requirements for a lab course. In this way a course can count twice in two different blocks.

However, the credits will not be doubled. Credit-wise the course will only be counted once. The credits will count for required major credits and will be a part of the 124 total required. General Education does not require a calculation of credits. Rather, acceptable courses have been taken in the required categories.

This is a commonly accepted way of counting courses and is done in other universities that have General Education requirements for graduation apart from the Major.

Official Degree Audit

After students have completed all degree requirements from their catalog, an independent degree audit is done by the Academic Services Office to determine compliance with Catalog requirements and eligibility for degree awarding.

All majors or minors added to the degree after the primary major has been declared must

be fulfilled from one catalog to pass the independent degree audit.

The Academic Services Office will email and send SMS to students prior to commencement each year, that reflects degree completion status and eligibility for participation in commencement. It is the student's and advisor's responsibility to ensure that the requirements for graduation have been met specifically as stated in the published catalog.

Ineligibility for Commencement

If requirements have not been met, the student will need to report the matter to the Academic Advisor and Head of Academic Advising, as well as apprise his/her department Chairperson of the situation. The degree application will need to be canceled at the Academic Services Office and participation in commencement will be withdrawn.

Urgent Degree Application Process

Students may apply for an urgent degree at any time before commencement, provided all degree requirements, as outlined above, have been fully satisfied.

If a student applied for commencement but their degree application was withdrawn due to non-compliance, they may reapply for an urgent degree once all requirements are met at the time of application. Requests for an urgent degree must be submitted to the Academic Services Office, require additional payment, and take approximately three weeks to process.

Addressing Anomalies in Departmental Offerings and Catalog Requirements

If anomalies exist between semester offerings and catalog requirements, students, along with their advisors must immediately apprise the department Chairperson of the need to facilitate them by offering a course that is listed on their catalog whether this is a core or a required elective.

One Course in Lieu of Another

If the department decides to change a core or required elective from a past catalog through deletion or dormancy or inactive, while the catalog is still active, the department Chairperson must:

1. Acquire approval of the Dean of Faculty in regard to any exception being made in lieu of such a course, justifying its applicability to one or all students.
2. The Dean will then formally communicate this approval to the Academic Services Office in writing.

Policy on Privacy

Forman Christian College (A Chartered University) guarantees both the privacy and the confidentiality of all student educational records as well as each student's right to access those records. The official custodian of student records is the Head of Academic Services Office with authorized processing carried out by the Academic Services Office staff.

Access to student records is limited to the student but can with the student's written authorization and accompanied with the student ID, be granted to parents or guardian, current instructors, counseling and administrative staff with legitimate interests, or any party designated by the student.

Authorized officials of the government, accrediting agencies, as well as persons bearing a lawful judicial order or subpoena may also request access to student records by presenting

proper documentation with a reason supporting such access.

A student or former student has the right to access his or her records. However, the University may deny access if the student has unpaid financial obligations to the University. Requests for access or copies of records must be made in writing to the Head of Academics who will comply within seven business days. Following review, a student may request any portion of his or her record to be edited, provided that supporting documentation is produced or available.

ACADEMIC SUPPORT FOR STUDENTS

Academic Support for Students

UNIV 100

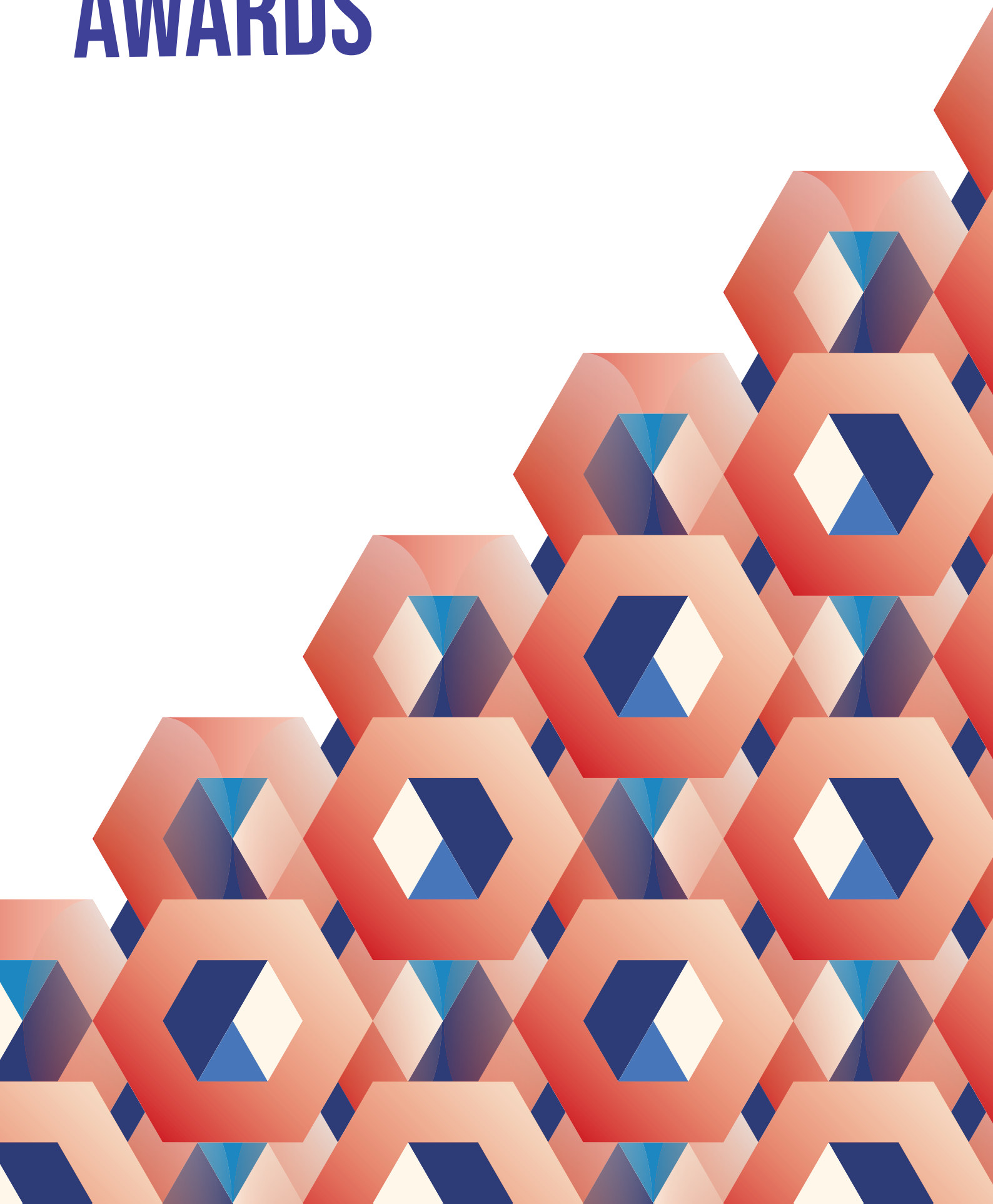
Prerequisite: exemption from or completion of the English Language Program (ELP).
All entering students must take UNIV 100 during their first semester or after they have finished the ELP program. University 100 is a mandatory course that must be completed in the first year at FCCU. A student cannot drop UNIV 100 during the drop period. The instructor of the UNIV 100 course will be the student's academic advisor for the first two years until the student declares a major.

Transfer students with 60 or more credits are exempt from UNIV 100 and will be assigned an Advisor by the Head of Advising directly.

Advising
Each student will be assigned to a faculty member who will serve as his/her Advisor. The Advisor will work with the student to select courses and class schedules, and they will discuss career planning and personal growth. Once the student selects a major program of study, the advising will be done by a faculty member from that department. It is each student's responsibility to meet with his or her Advisor at least once each semester to review their academic progress. Students will have as much guidance as they need and as much freedom as they can responsibly handle.

Students on Academic Probation must meet the Advisor as per the probation requirements. Students must contact the Head of Advising in the event that an Advisor is unavailable for an extended period of time.

AWARDS



Awards

Vice Rector's List

The Vice Rector's List is published following the Fall Semester and the Spring Semester and includes names of students who completed at least four courses with a grade point average of 3.75 or better. Students with incomplete grades at the time of publication are not eligible.
This achievement appears on the student official transcript and a certificate can also be issued if 'requested'.

Honors at Graduation

Latin Honors

FCCU awards diplomas with Latin Honors to qualified students in each graduating class. The criteria and designation for graduation with Latin Honors are:

Summa Cum Laude (Highest Honors)	3.90 or above CGPA
Magna Cum Laude (High Honors)	3.70 to 3.89 CGPA Cum
Laude (Honors)	3.50 to 3.69 CGPA

Migrated (transferred) students are eligible to graduate with Honors if they have completed more than half of their credit requirements for graduation at FCCU.

Scholar Athlete Trophy

This trophy is awarded to the students who fulfill the following criteria:

- Senior standing (transfer students MUST have completed at least half the required credits to graduate at FCCU)
- CGPA at end of Junior year 3.00 or above
- No academic probations
- Involved in team sports/track and field/swimming
- Participated in a minimum of nine intervarsity competitions over the three years
- Won first or second place in a minimum of three intervarsity competitions
- Participated in intramurals
- won intramurals
- Cleared the fitness test
- Participated and won a position in at least two events at the Annual Sports Gala for two years
- Consistently displays sportsmanship
- Clear of any disciplinary actions

Medals

"All medal awardees should have a clean proctorial record".

Prof. M.S. Bhatti

In honor of Professor M. S. Bhatti, a renowned former teacher. The medal is awarded to the student securing the highest CGPA amongst the university candidates in the Faculty of Humanities.

Sir. Mian M. Shafi

In honor of Sir Mian M. Shafi, a renowned alumnus. The medal is awarded to the student securing the highest CGPA amongst the university candidates in the Faculty of Social Sciences.

Sir. Shaikh Abdul Qadir
In honor of Sir Sheikh Abdul Qadir, a renowned alumnus. The medal is awarded to the student securing the highest CGPA amongst the university candidates in the Faculty of Education.

Swami Ram Teerth
Dedicated to a renowned former teacher and saint; it is awarded to the student securing the highest CGPA amongst the university candidates in the Faculty of Computer and Mathematical Sciences.

Dr. J.H. Orbison
In honor of Dr. J. H. Orbison, a renowned former teacher and founder of the Biological Science Department. The medal is awarded to the student securing the highest CGPA amongst the university candidates in the Faculty of Natural Sciences.

Dr. E.D. Lucas
Dedicated to a renowned former Principal and Economist; it is awarded to the student securing the highest CGPA amongst the university candidates in the Department of Economics.

Prof. E.J. Sinclair
In honor of Professor E. J. Sinclair, a renowned former Principal. The medal is awarded to the student who secures the highest CGPA amongst the graduating class in the university.

Khan Bahadur Muhammad Sanaullah
In honor of Khan Bahadur Muhammad Sanaullah, a renowned alumnus. The medal is awarded to the student securing the highest CGPA amongst the university candidates in the Faculty of Business and Management.

Professors'
Sponsored by the faculty of the School of Management, these medals are awarded to the students securing the top three CGPAs amongst the university candidates in Bachelor of Studies in Business (Honors).

Unilever
Unilever is a globally recognized brand for fast moving consumer goods; this medal is awarded to the student securing the highest CGPA amongst the university candidates in Bachelor of Studies in Business (Honors) specialization in Marketing and Sales.

Shezan
Shezan is one of Pakistan's oldest brands in the food industry; this medal is awarded to the student securing the highest CGPA amongst the university candidates in Bachelor of Studies in Business (Honors) specialization in Operations Management.

Askari Investment
Askari Investment Management is the asset management company of Askari bank and is at the forefront of providing investment [products for individuals and institutions; this medal is awarded to the student securing the highest CGPA amongst the university candidates in Bachelor of Studies in Business (Honors) specialization in Accounting and Finance.

Dr. C.M. Hussain
Dedicated to the father of Dr Wasiq Hussain (ex-Dean of the Faculty of Information

Technology & Mathematics). Dr CM Hussain was a renowned mathematician. This medal is awarded to the student securing the highest CGPA (at least 3. 0) amongst the university candidates in the Department of Mathematics without any F or W grades.

Dr. Peter H. Armacost
In honor of Dr Peter H Armacost, whose decade of dedicated service to Forman Christian College (A Chartered University) as the Principal and Rector, transformed FCCU once again into a premier educational institution of Pakistan. This medal is awarded to the student securing the highest CGPA amongst the University candidates in the Department of Psychology.

Dr. Robert F. Tebbe
In honor of Dr Robert F Tebbe, who served the cause of education in Pakistan for almost four decades as Professor of Chemistry at Gordon College, Rawalpindi and Professor and Principal at Forman Christian College (A Chartered University). This medal is awarded to the student securing the highest CGPA amongst the university candidates in the Department of Chemistry.

Aziz and Shaheen Haque
Dedicated to Col (r) Aziz-ul-Haque, a former alumnus of Forman Christian College (A Chartered University), and Mrs Shaheen Haque, parents of Dr Saad ul Haq, an MD in USA. The medal is instituted to encourage a spirit of healthy competition and promotion of the discipline of Geography. This medal is awarded to the student securing the highest CGPA (3.7 or better) in Bachelor of Studies (Hons) amongst the University candidates in the Department of Geography.

A. Karim
Dedicated to the father of Zafar Iqbal Qureshi, former Dean, faculty of Business and Management Studies at FCCU from 2005 to 2010; this medal is awarded to the student securing the highest CGPA amongst the University candidates in Business strategy in MBA.

Shafqat
Dedicated to the father of Dr Saeed Shafqat, Director Center for Public Policy and Governance at Forman Christian College (A Chartered University); it is awarded to the student securing the highest CGPA amongst the graduating class amongst the University candidates in Master of Public Policy and Governance.

Dr. Myron Miller
In honor of Dr Myron Miller who was founder chairperson, Department of Philosophy at Forman Christian College (A Chartered University). This medal is awarded to the student securing the highest CGPA amongst the university candidates in the Department of Philosophy.

Chaudhry Ahmed Saeed
In Honor of Chaudhry Ahmed Saeed an alumnus, philanthropist and President of the FCC Alumni Association. This medal is awarded to the student securing the highest CGPA amongst the university candidates in Bachelor of Studies in Biotechnology (Honors).

Roll of Honor (Co-Curricular)
Co-Curricular Roll of Honor is awarded to the students who demonstrate outstanding performance in a specified category of co-curricular activity on the recommendation of the

Societies' Board.

Certificate of Merit (Co-Curricular)
Co-Curricular Certificate of Merit is awarded to the students who demonstrate excellent performance in a specified category of co-curricular activity on the recommendation of the Societies' Board.

Shanky Lal Sheets Sports Medal and College Color
This medal and the College Color is awarded to the students who demonstrate outstanding performance in a specified category of a sports activity on the recommendation of the Societies' Board.

Qamar Zamani/Dr. K.F. Yusuf Gold Medal
Dr. Saeed Shafqat, Professor and Founding Director, CPPG, would like to institute a Gold Medal in the name of his two lifetime benefactors, his mother Qamar Zamani and his teacher Dr. Kaniz Fatima Yusuf, the first Women Vice-Chancellor of Quaid-e-Azam University, Islamabad. *"This Gold Medal will be awarded annually to the M.Phil. or PhD student who writes an outstanding, innovative, and evidence-driven M.Phil. thesis or PhD dissertation in the discipline of Public Policy and secures a high CGPA in the batch (3.8 or above)".*

Dr. Henrick John Malik (Professor Emeritus) Gold Medal
This Gold Medal was instituted by Dr. Shazma Azeem from the Department of Chemistry in honor of her uncle Dr. Henrick John Malik (Professor Emeritus), a renowned former professor and warden of Velte Hall at Forman Christian College (A Chartered University), Lahore from 1955 to 1960. His services as an educationist are also acknowledged by many other universities internationally. This Gold Medal will be awarded to the student securing the highest CGPA amongst the University candidates in the Department of Statistics.

Sarfraz Begum
In Honor of the mother of Dr. Mian Wajahat, Professor of Biological Sciences and Controller of Examinations. *This medal is awarded to the student securing the highest CGPA amongst the University Candidates majoring in Bachelor of Studies (Honors) School of Life Sciences.*

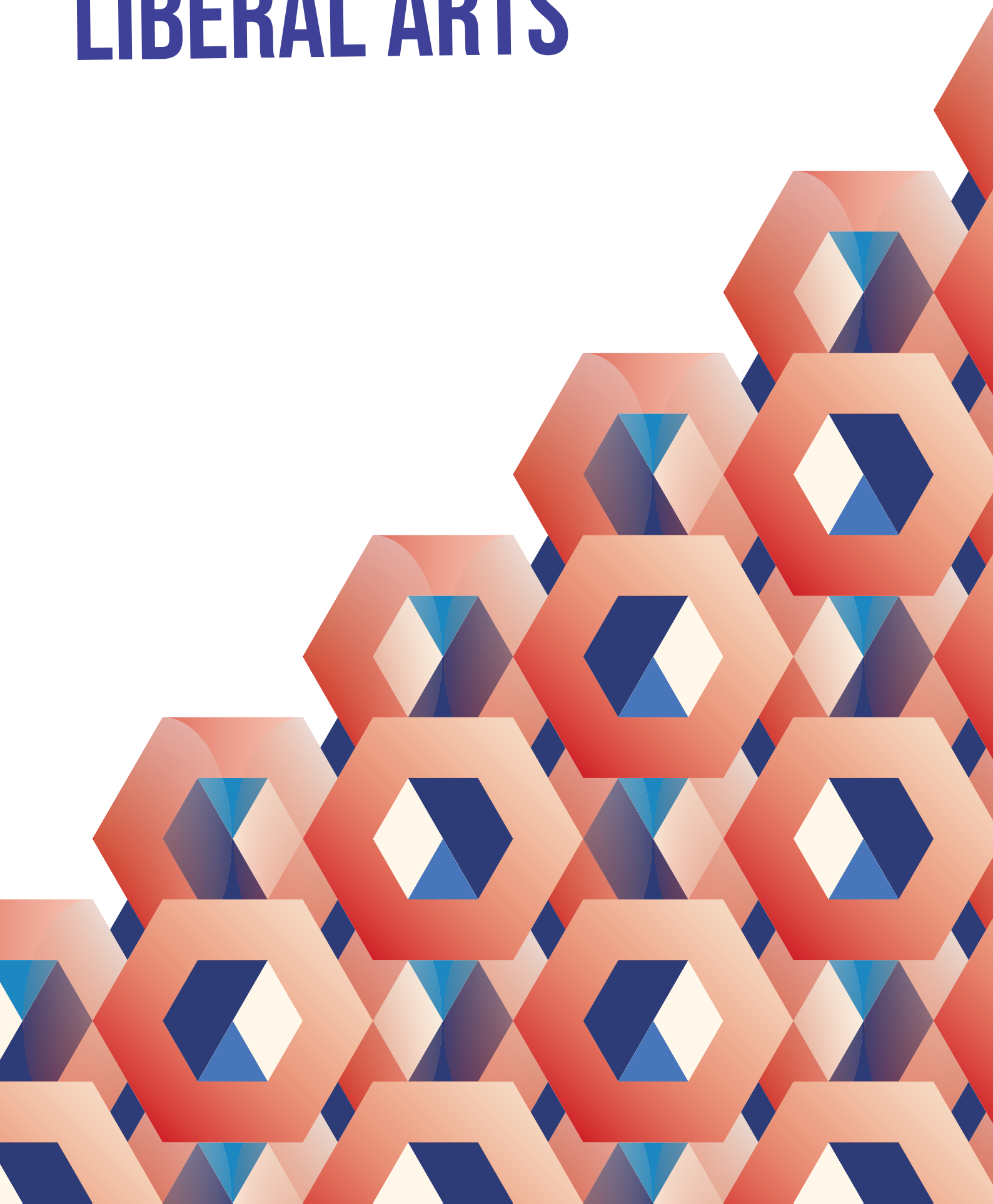
Zafar Hayat Kahlon Medal
Dedicated to Zafar Hayat Kahlon, a lawyer of High Court Lahore (1978-2011), political and social figure from Faisalabad, father of Dr. Laila Zafar Kahlon, Associate Professor of Physics at FCCU. He received a Law degree from Lahore Law College in 1975. Zafar Hayat Kahlon was a well-known Social and Political figure of Tehsil Samundri, Faisalabad and is also known for his contribution at Samundri Bar Association and for providing justice to the deserving population. This medal is awarded to the student securing the highest CGPA (3.500 or above) amongst the university candidates in Bachelor of Studies in Physics.

Justice (R) Rao Muhammad Naeem Hashim Khan Gold Medal
In honor of the father of Dr. Rao Raza Hashim, Dean of Faculty of Business and Management. This Gold Medal is awarded to the BS Business student with the Specialization of Human Resource Management who secures the highest CGPA in the batch (3.0 or above)"

Scholar Athlete Trophy
This trophy is awarded to the students who fulfill the following criteria:

a. Graduating (transfer students MUST have completed at least half the required credits to graduate)
b. CGPA above 3.000
c. No academic probations
d. Involved in team sports/track and field/swimming
e. Participated in a minimum of nine intervarsity competitions over the three years
f. Won first or second place in a minimum of three intervarsity competitions
g. Participated in intramurals
h. Won intramurals
i. Cleared the fitness test
j. Participated and won a position in at least two events at the Annual Sports Gala for two years
k. Consistently displays sportsmanship
l. Clear of any disciplinary actions

LIBERAL ARTS



Liberal Arts

A Liberal Arts Education

Forman Christian College (A Chartered University) is currently the only University in Pakistan offering a true liberal arts Bachelors' education, which provides the students with a good balance of depth and breadth of learning. This is done by ensuring that in addition to their selected major, all Bachelor's students take a minimum number of courses in Humanities, Natural Sciences, Mathematics and Information Technology and Social and Behavioral Sciences.

Depth of learning gives students the opportunity for career preparation; it teaches them to think critically, communicate effectively, solve problems and become lifelong learners, while breadth of learning provides the basis for students to understand modern issues as they develop, and to live a quality life. It develops in them a healthy curiosity about the world and above all to be good citizens of their countries and the world.

The 4-year Bachelor's program is designed to prepare graduates to succeed in a wide variety of occupations and to advance to positions with higher responsibilities. The program provides a world-class education at Pakistani prices. Our graduates are able to enter postgraduate programs abroad without taking further courses.

Majors/Areas of Concentration/Minors

A liberal arts education gives students the opportunity to choose from a wide variety of majors, minors and specializations in a major in consultation with their academic Advisor. Students can also choose to do double majors, minors and more than one specialization after discussion with the relevant department and their Advisor.

General Education

An important part of the program for each student is General Education. Students must take a total of 15 courses in the General Education program. This includes courses in each of the following areas of human knowledge: Humanities, Social and Behavioral Sciences and Science and Mathematics.

CAREER SERVICES & INTERNSHIPS OFFICE

Career Services and Internships Office

The Career Services and Internships Office (CSIO) at Forman Christian College (A Chartered University) aims to provide comprehensive guidance and counseling to its students and graduates on career development. It provides consistent assistance to students in finding attractive jobs and internships.

Career Services

The Career Services and Internships Office has strong linkages with national and multinational leading employers, industrialists, government officials and distinguished members of FCCU's alumni. Throughout the year, it organizes a wide range of on-campus activities such as career exploration lectures, recruitment drives, resume development and career-building workshops, employer-hosted information sessions, mock interviews and job fairs.

Job fairs facilitate students meeting prospective employers from leading companies and submitting their resumes for relevant job and internship opportunities. During such events, many recruiters conduct on-the-spot interviews and share information about their recruitment policies, company profiles and hiring procedures with the students.

The CSO also produces an Annual Employers' Guide that is sent to numerous organizations in Pakistan. Each Guide consists of a brochure describing FCCU's programs, a list of graduates with their majors and specializations, and a CD of all the graduates' resumes.

All these activities are designed to assist FCCU's students in becoming self-sufficient as they build their own life-long career strategies. These strategies continue well beyond graduation.

Internships

The Career Services and Internships Office contributes to the students' personal and professional development by helping them with internship placements and career-related experiences that complement classroom learning. It provides:

- Assistance and guidance to students in receiving attractive internships
- Establishes healthy relationship with students and counsels them to excel in their professional careers
- Advice and training on proper job etiquette and skills needed to be excellent employees
- Opportunities for strengthening relationships with existing and potential employers

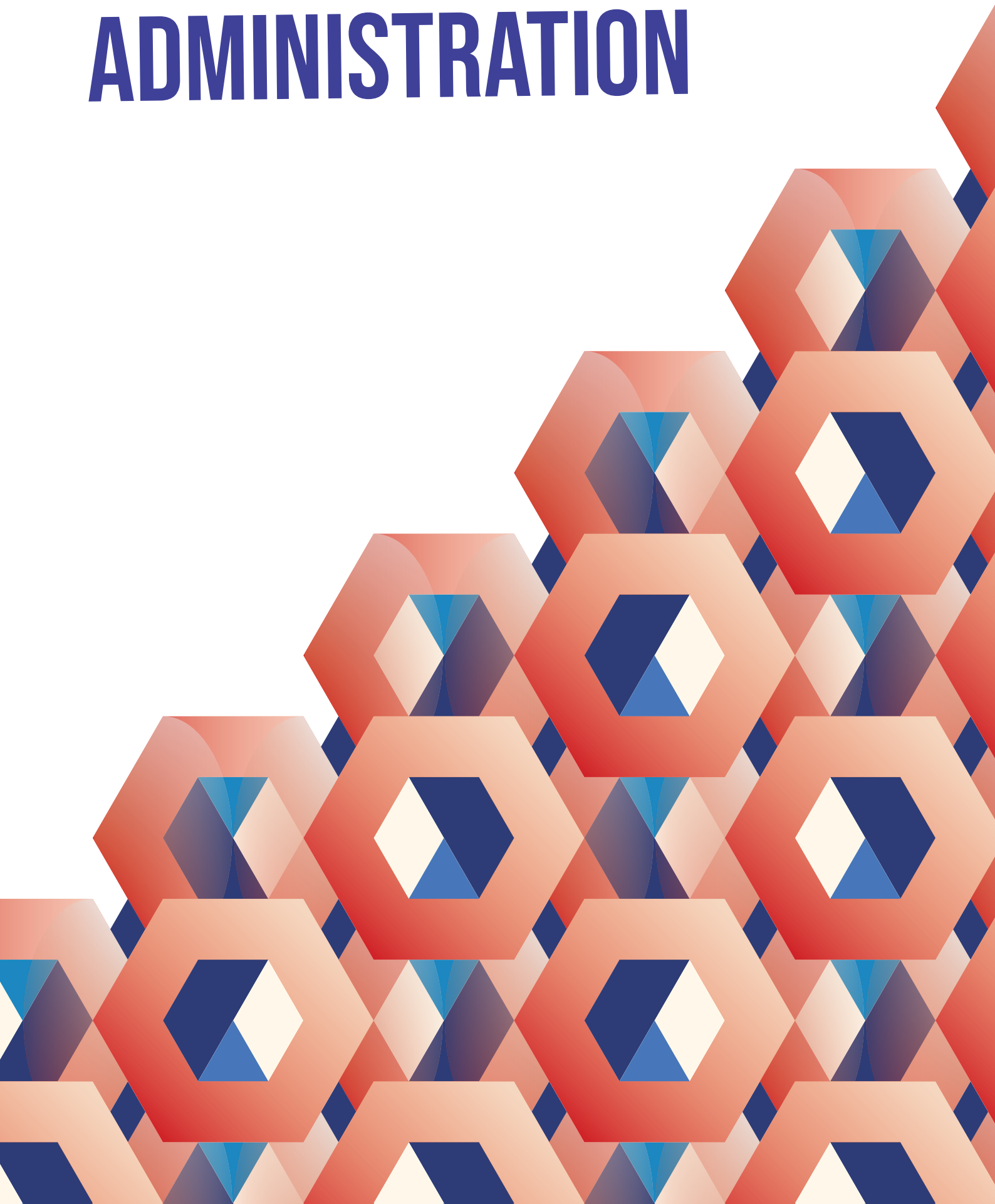
THE INTERNATIONAL EDUCATION OFFICE

The International Education Office

The International Education Office (IEO) at Forman Christian College (A Chartered University) is committed to providing inclusive counseling and advising for extensive opportunities in prestigious foreign universities. The Office has joint relations with the official representatives of international universities in Australia, Canada, Egypt, France, Germany, Kenya, Korea, Malaysia, Thailand, Turkey, UAE, UK, USA and other countries to explore admission, scholarship and semester exchange opportunities for FCCU's students. IEO organizes an extensive range of on-campus events/seminars with international University representatives throughout the year, including:

- Annual Education Fair
- Informative presentations and seminars
- One-on-one counseling sessions
- Mock interviews for admissions and scholarships
- Trainings and workshops on:
    a. How to apply for admission and scholarships
    b. Writing Statement of Purpose
    c. Guidelines for IELTS, GRE, TOEFL preparation, etc.

ADMINISTRATION



Administration

Vice Rector's Office
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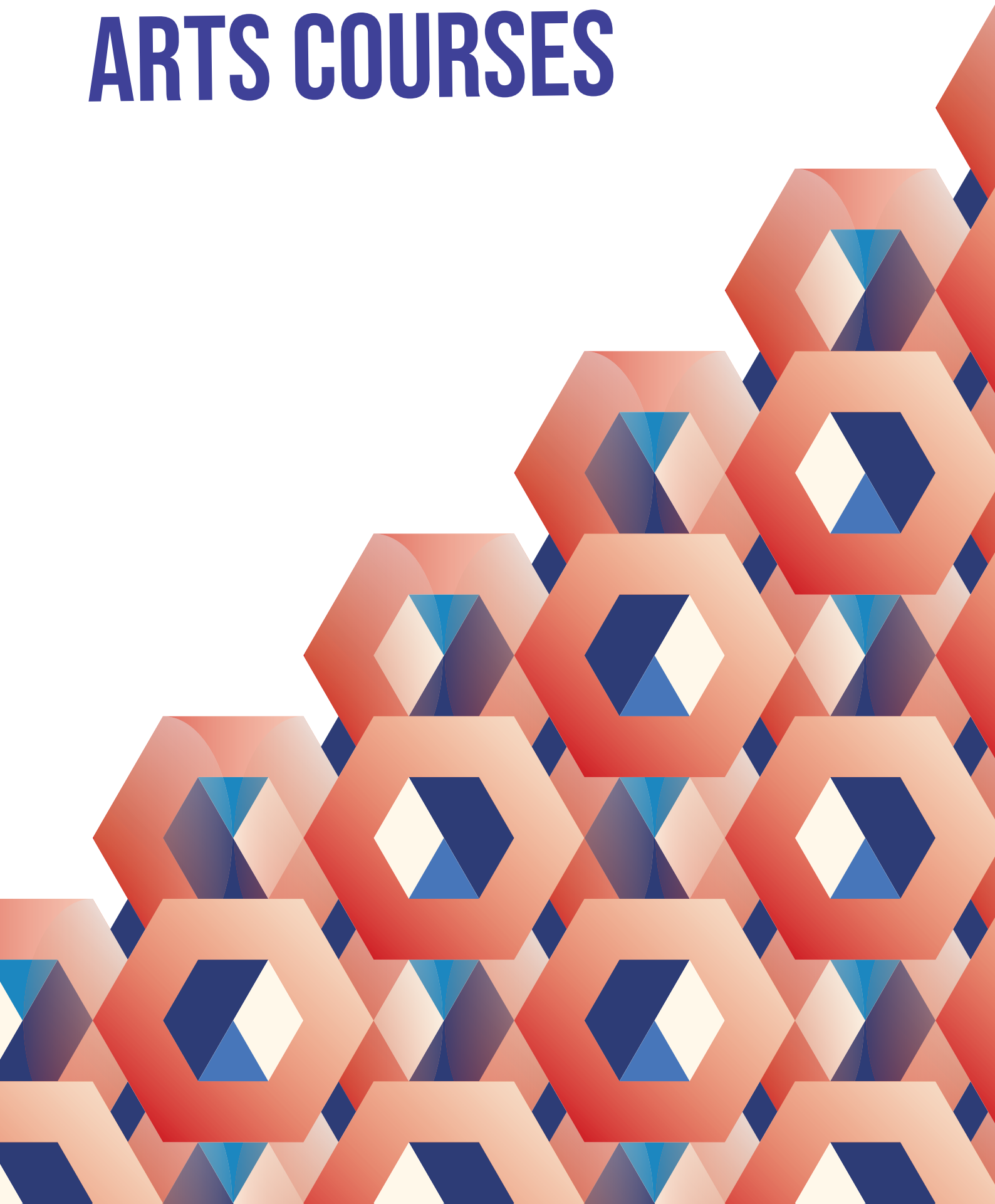
ARTS COURSES



Introduction

The importance of art in the present world cannot be overemphasized. The fact that it has existed since the first humans and continues to exist is proof of its significance and its inseparable relation to life itself. It helps us understand human experience by allowing us to put our emotions, perspectives and abstractions into more tangible forms. Most of all, it makes us dream. Today, when art has become knowledge, and knowledge is considered to be the human experience, it is necessary to have art as a discipline to be taught and studied. At FCCU, the Faculty of Humanities offers art courses to Baccalaureate (Hons) students. Through these courses we aim to not just teach certain skills but also motivate students to be creative by encouraging them to come up with new ideas and by making connections with the other courses that they study, thus making art their immediate reaction or way of expression and more relevant to them. Great emphasis is placed on students being aware of their creative process as to what inspires them to create or what compels them to make particular aesthetic decisions. Students can choose a variety of art courses each semester including music, performance and visual art courses.

Student Learning Outcomes Visual and Performing Art Program

Outcome 1: Creative thinking

- Students will demonstrate a well-rounded liberal arts education including historical, social and philosophical awareness contextualized in visual culture and the humanities in general.
- Students will demonstrate innovation, imagination and visual problem solving.

Outcome 2: Skill and Technique Development

- Students will be able to demonstrate familiarity with the selected media in and through studio courses.

Outcome 3: Communication

- Students will be able to communicate their ideas visually and verbally.
- Students will be able to demonstrate fluency with formal vocabulary to articulate and engage with current debates as well as comment on the works of art and art practices.

Outcome 4: Thinking/making/learning

- Students will demonstrate self-learning behavior which they will carry outside of the classroom. Through making, thinking, experiencing in the class to making connections and learning from their social engagements, physical environment and visual culture

ARTS 101: Introduction to Art (3 credits)

The course is an interesting mix of theory and practice. Where students will not only be introduced to the practice of art but will also dive into the process of art making and the mapping and documentation of the creative process. What is art? Can one define art? Why and how is it significant? Can one learn to read and create art? are the questions that will be explored during this course. Students will learn to look at and define art through new perspectives such as art as expression (individual and art), art depiction and celebration of beauty (art for the sake of art, arts function to beautify and embellish), art as the byproduct of fear (fear and creative process), art as resistance, Anything and everything is art (Marcel Duchamp), art as War (ISIS and Talin, Zizek), art is violence (Francis Bacon, Ann Bogart), art is a tool (socially engaged art, instrumentalization of art by development organizations and state institutions), art is memory (mythologies, culture, stories and documentation), art is labor of love (Artivism, social engagement, art for social change),

everyone is an artist (Joseph Beuys, art that can' be art, art works not created in the name of art). The course will focus on the design, context and means of art and art making by exposing students to the basic principles and elements of art as well as introducing them to different media such as painting, drawing, sculpture, performance, text, video, photography and installation.

ARTS 102: Painting I (3 credits)
This is a studio course directed to teaching the fundamentals of painting. Students will learn to see color, shape, line and tone and to relate as well as use these elements together in a composition. The course will expose students to various media using traditional and experimental approaches in painting such as landscape, still life, figurative and non-objective. Students will understand the symbolic significance of certain colors and their use in translating ideas. Various methods and techniques of applying paints will also be explored. Students will be encouraged to find their own style of painting which is more comfortable and personal to them for materializing their ideas in the form of paintings.

ARTS 103: Sculpture I (3 credits)
This Introductory level course will teach students the basic elements, techniques and history of Sculpture. In order to learn the additive and subtractive or reductive processes students will explore various media such as wood constructions, clay modeling, plaster casting and stone carving thus will become familiar with the new method and technique specific to each material. Students will learn the handling and tools for each material and will explore the potential and limitations of the materials. The course focuses on the form, whether representational or non-representational, and its relationship to the space and viewer as well as its design.

ARTS 104: Photography I (3 credits)
The camera is by far the most radical invention that changed the course of history. Images now dominate our world, and we make sense of this world in and through images. This course is a combination of practice and theory that aims to help students learn the basics of photography such as understanding the camera and its functions, learning how to see, composition and translating ideas into visuals. This course will explore the role of cameras in the contemporary world and the concept of curation and archiving in visual culture. The main focus is on teaching students to dissect images in order to understand the power of an image and how and what makes a successful image successful. Students will be exposed to a variety of images from various genres in photography in order to understand the diversity of photography as a medium and also its ency as a medium by discussing canonical works as case studies through the course of time, thus being introduced to the history of photography as well.

ARTS 111: Drawing I - Fundamentals (3 credits)
Drawing is the most essential tool for understanding the world as well as translating it in visual form. It remains the pivotal activity to the works of many artists. Drawing is the basis of it all, it is where exploration, development and refinement of ideas happen. This is a basic level course where students ll learn mark making through various media in drawing as well as learn the elements and principles of image making such as line, shape, form, color, movement, perspective and composition. From drawing out of imagination and then gradually building on drawing from observation the course will encourage the ways of looking such as various viewpoints and perspectives as well as the conscious use of all the elements and principles in drawing/designing a visual.

ARTS 121: Drawing II - Drawing Methods and Techniques (3 credits)
Prerequisite: ARTS 111
This course will teach advanced drawing methods and techniques that enhance

observation as well as help students draw realistically. They will be taught drawing with measurements, starting with the objects/still life and proportions in relationship to pace both negative and positive. Students will also experiment with different media in drawing. They will be encouraged to find their choice of medium and also their style of drawing through extensive practical exercises and projects.

ARTS160: Theatre I - Introduction (3 credits)
This course is process oriented and participatory. It focuses on the creative learning process by exposing students with various theater making methodologies and techniques through practical workshops and training. It addresses all the stages of theater production from gaining technical skills in acting to developing the script. Students learn to improvise and perform on stage and get the basic know-how in (production) design and artistic management. The course brings in acting techniques from diverse backgrounds, western (Boal, Stanislavsky, Brook) as well south Asian. Importantly, the course strengthens the practice with theoretical knowledge for the intellectual growth of the students. Majorly focusing on the historic trends and developments in theater tradition both global and local, the course also touches upon the theoretical perspectives of performance studies at the basic level.

ARTS 200: History of Art I - Prehistoric to Renaissance (3 credits)
We understand the history of humanity through art. From prehistoric depictions of wild beasts to contemporary abstraction, artists have addressed their time, place in history, and have expressed universal human truths for tens of thousands of years. This course chronologically traces human creativity from as early as 40,000 years ago up till the Renaissance, providing a systematic exploration of major civilizations and their culture, social structure, technology, iconography and architecture. The aim of the course is to acquaint students with visual imagery from prehistoric and ancient civilizations, spanning about 40,000 years. Students will develop skills in image recognition, vocabulary formation, and the use of visual evidence in argument and interpretation

ARTS 201: History of Art II-Renaissance to Contemporary (3 credits)
The study of the history of art cultivates a deep understanding of humanity's fundamental need to create. It traces how artists across various time periods and regions responded to their environment, society, and religion, and thereby produced artworks of lasting resonance and insight into the cultural practices of the time. This course is like time travel that constantly moves back and forth through the windows of time in order to understand the canonical works of art and as to why, when and where they were created, furthermore making connections to the present. It aims to instill in them the analytical approach needed to understand why and how things have shaped through the course of time. The course encourages students to compare periods, styles, materials and subjects etc. and to make connections. Within each chronologically set period, discussions will be thematic with particular attention to portraiture, religion, resistance, arts, technology, gender identities and the role of the artist in society. In addition, frequent connections will be made with contemporary art, with the aim that students will learn to not only stay linked to art being made today, but to also derive inspiration and relevance from the content studied in the course. The course will, through assignments, introduce students to not just writing about art, but also creative formalization of their ideas. More importantly, this course aims to make history a relevant tool for students to understand visual culture through connecting past and present.

ARTS 202: Theatre II: Improvisation and Devising (3 credits)
Prerequisite: ARTS 160
The course focuses on exploring the body as a tool for acting. The aim of this course is to have sufficient knowledge of the body and to be able to improvise a performance with and

without a script. Students will warm up with yoga and theater exercises. They will be introduced to inhibition breaking and trust building exercises. The students will learn interpretative skills (devise a character in a situation and engage with other characters in that situation in order to create sense of reality) technical skills (voice, movement, speech etc.) and knowledge of the improvisation and devising process (to be able to improvise and devise scenes for both unscripted and scripted performance). The students will improvise solo and group performances in class in order to learn the above skills and will have discussions about the performances. The course will expose and engage students in Improvisation games to justify the character through performance as well as understand and show commitment to imaginary circumstances in order to create convincing realities.

ARTS 211: Drawing III- Advanced Drawing (3 credits)
Prerequisite: ARTS 111/ARTS 121
This course focuses on developing the skills to observe and draw the human figure, and may involve the study of nature, plants, animals and objects in their environment. It develops a better understanding of anatomical and muscular structure, proportion, and rendering of form. Students will learn the basic human anatomy, major joints to understand the form of the human body in various sees and the role and engagement of muscles and joints. The course will focus on the realistic translation of the human form composed in different spaces with relation to various objects and architectural structures serving as backdrop. Emphasis is laid on developing observation, memory, perceptual skills, and individual style or way of expression.

ARTS 300: Images of Terror: Violence in Visual Culture (3 credits)
The course focuses on performance and the discourse on the interplay of art and violence. It examines the inevitability of violence in our daily lives. We experience, talk, fear, consume and even produce violence unconsciously. We produce more violence even while trying to counter violence. Thus, the course creates a debate around questions that link human aesthetics to the experience of horror and terror: How and when did violence become an integral part of our popular visual culture? Has the wave of terror changed our aesthetics? Do horror and violence together intrigue, thrill and entertain us? In order to answer these questions, the course looks at the discourse between art and violence, and their interplay. It looks into the aesthetics of intimidation, fear and resistance by going through art projects such as the post-9/11 works of Pakistani artist, Marina Abramovic' Rhythm, Tania Bruguera' Self Sabotage, ISIS and Taliban released videos and images, media coverage of bomb blasts, and political performances around the world after Arab Spring, Occupy Wall Street movement, hate graffiti and military parades, as well as Hollywood movies like Saw and Pakistani movies like *Maula Jutt* and *Waar.*

ARTS 301: Performance Art (3 credits) –40^{h}AC
The course will explore the body as a medium and also as a site of performance. Students will learn the potential of the body interacting with space and objects and the awareness of this interaction through practice across three key areas: text/theory, body/ movement and materials/space. Students will practice and create small pieces throughout the course. By incorporating theoretical knowledge of key issues in and around performance, methods of reflective practice and processes of documentation and criticism students will be engaged in debates and will learn to theorize their creative process.

ARTS 400: The Social Turn: Art and Social Practice (3 credits)
Social turn was first used in 2006 to describe the recent return to socially engaged art that is collaborative, often participatory and involves people as the medium or material of the work. The course is an artistic exploration of socially engaged art through practice and theory. This course will include the key critical and disciplinary debates in order to understand art which involves people and communities in debates, collaboration, or social

interaction. The students will understand the meaning of collaboration as well as the significance of participation of communities in making art and how it guides the creative process. They will study and explore the term Artivism as well as look at the development of art and its discourses critically. Students will also understand practice through engagement by collaborating with communities and designing research-based art projects. The primary aim of this course is to investigate the conception, process and materialization of art within a society and its impact on society. Students will be engaged in debates concerning ethics of public interventions and creative collaboration and in some cases its discontents.

Music Courses

MUSC 101: Music Practicum I - Vocal (3 credits)
This performance-based course focuses on developing vocal performance skills in learners. Students learn 12 notes and 10 thaats in two vocal performance I & II courses in two different semesters. The vocal performance I course focuses on the recognition and verbal reproduction of the twelve notes that constitute a scale/octave. The recognition includes the notes in the lower and upper octaves. Students first recognize the notes in the lower tetra chords and the upper tetra chords then learn to reproduce these notes verbally in a similar fashion. They get command over the notes by learning various combinations and permutations of the notes. They also learn to tune the tanpura, which is an essential component of the course. Students are not allowed to take the vocal performance I course along with the vocal performance II course in the same semester.

MUSC 201: Music Practicum II – Vocal

- Definition of Nad, Shurti, Sarwa, Alankar, Rag, Vadi Samvadi, Anuvadi, Vivadi, PakarTaan, Meend, Andolan, Gamak Kan, Alaap, Bol, Taan, Barhat, Dugan, Tigan, Chugan
- Forms of Classical Music Dhrupad, Khayal, Thumri, Hori, Lakshangeet, Sargam, Tarana
- Taals - Ektaal, Jhaptaal, Rupak Ragas - Bhairvai, Rageshveri, Kaushik Dhun
- Life Sketches - Amir Khusro and Sultan Hussain S Sharqi

MUSC 301: Music Practicum III –Vocal

- Thaat System
- Ten Thaats System
- Timetable of Ragas
- Process of evolving ragas from thaats Sudh, Chaya and Sankeeran ragas
- Life Sketches - Ustad Amir Khan, UstadBadr Ghulam Ali Khan
- Practical - Revision of previous ragas, Raga Desh, Bhopali, Bindrabani, Sarang
- Taals - Ektaal Slow, Rupak, Dhamar

MUSC 401: MusFic Practicum IV –Vocal

- Confluence of all the previous rafas and theory with an advanced approach.
- This section of the course would add some ragas such as, Puriya Dhanashri, Mianki, Todi, Marwa
- Life Sketches - Nazakat Ali Khan & Salamat Ali Khan, Amanat Ali Khan & Fateh Ali Khan, Roshan Ara Begum
- Taal - Practice and mature previous taals along with Ada Chautala, SulFakhtah

MUSC 210: Music Practicum II –Instrumental (Sitar/Flute/Other) (3 credits)
This hands-on performance-centered course familiarizes students to musical instruments like Sitar or Flute, its structure, tuning, sitting position, angle of approach, techniques and

the performance of *iver Notes and at of Raga Aimen*

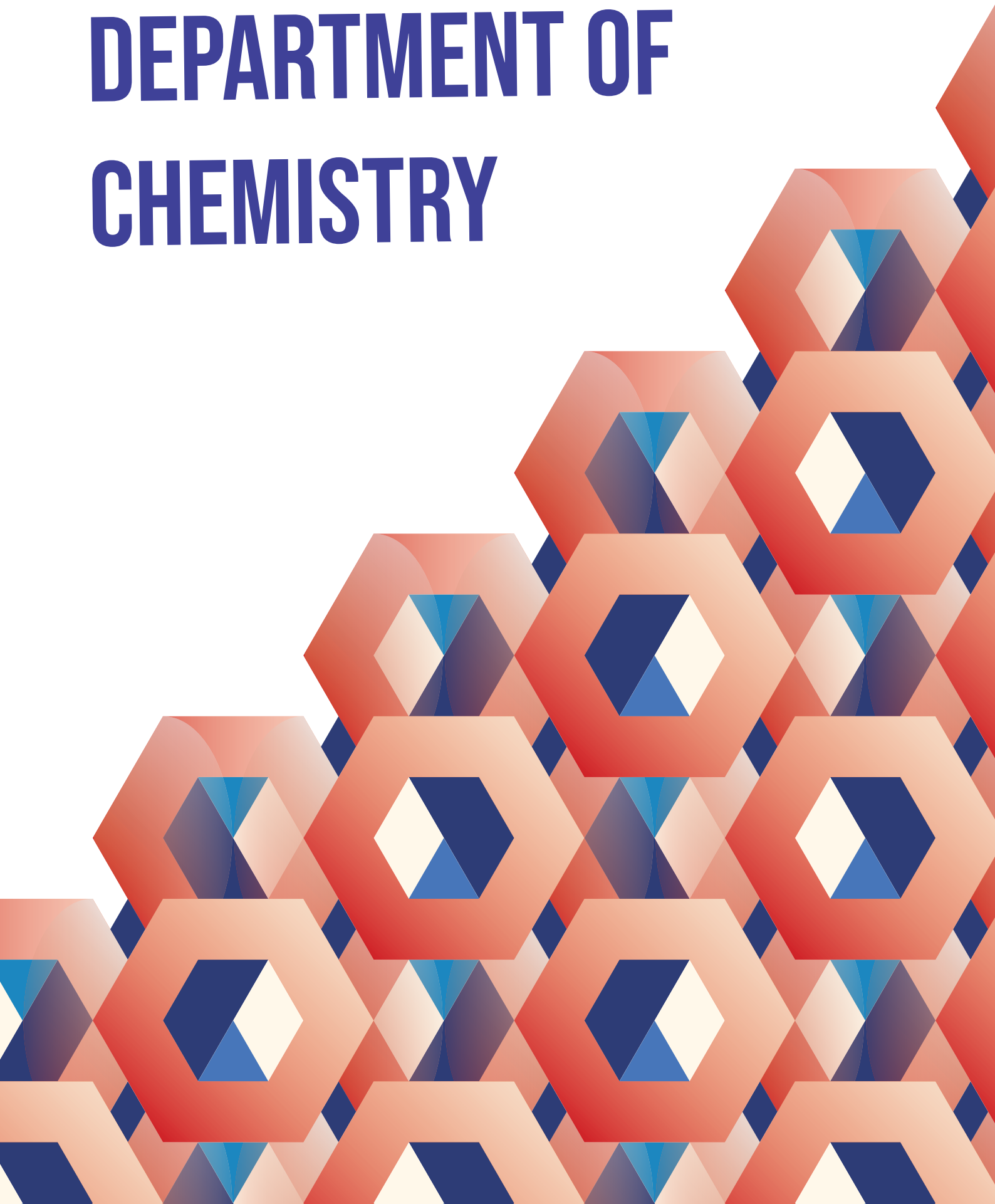
MUSC 220: Music Practicum III –Instrumental (Tabla/Other) (3 credits)
This hands-on course focuses on developing Tabla playing skills in students. They learn the Bols of Teen Tala along with the recitation of these with Talis, playing the Tala with their own hands.

MUSC 250: Music Appreciation (Introduction to Music, Theory, & Terminologies) (3 credits)
The course focuses on genres, terminologies, and forms of South Asian classical and semi classical music, and classifications, differences and improvisation of Ragas and Thatahs. The course exposes them to meanings, philosophies and role of music in history.

MUSC 400: Musicology (3 credits)
Prerequisite: MUSC 250
The Music Appreciation I course focuses on appreciation of the stylistic features of big six South Asian gharanas based on the following elements:

- Vocal Quality
- Use of Timber
- Use of Volume
- Treatment of Sawaras
- Treatment of Lai
- Selection of Ragas
- Style of Composition
- Method of Improvisation
- Treatment of Vilambitlai
- Treatment of Duratlai
- Types of Tanas
- Alankaras

DEPARTMENT OF CHEMISTRY



Introduction

The Department of Chemistry is one of the oldest at Forman Christian College (A Chartered University). Its rich tradition as a leading institution of chemical knowledge is reflected by eminent scholars of chemistry who served it. Special mention must be made of Prof Dr Carter Speers (1940-1951), who was Head of the Department and Professor of Technical Chemistry at the University of the Punjab; Dr RF Tebbe, an eminent Organic Chemist and learned scholar, who served the Department as Professor and later as Principal of the College for twelve years; and Prof Khairat M Ibne Rasa, an internationally known chemist, who was Professor of Organic Chemistry and Head of the Department.

Chemistry is an important discipline of scientific knowledge that plays a central role in our daily life. It is vital to our understanding of molecular transformations that are important to the production of food, medicines, fuel and countless other manufactured and extracted products. Chemistry helps to sustain the natural resource base for life and contributes to environmental protection and economic development. Design and synthesis of new organic and inorganic molecules, new methods of synthesis via microwave or ultrasonic irradiation, isolation and structural elucidation of novel natural products, development of biopolymers for targeted drug delivery, use of electroanalytical techniques for studying molecular interaction, computer aided drug design and discovery, and design and synthesis of catalysts for photocatalytic degradation of textile and other waste molecules are some of the areas of focus.

The faculty of the Department are currently involved in research. Career opportunities for Chemistry graduates are available in education, R&D organizations, research, and a wide range of industries such as pharmaceuticals, fertilizers, cement, leather, textile, paints and dyes, petroleum, sugar, soap and detergents, food and beverages, cosmetics and many more.

The Department of Chemistry at FCCU currently offers BS (4-year), MPhil (2-year) and PhD (3-year) programs. The main objective is to train students intellectually and professionally to work in a variety of capacities in their future life providing informed and skilled human resources for national and international needs. It offers a wide range of courses in analytical, inorganic, organic, physical, applied, biochemistry, and other interdisciplinary areas. The teaching/research equipment available in the Department includes GC-MS, HPLC, CHNSO Analyzer, Atomic Absorption Spectrophotometer, Flame Emission spectrophotometer, TGA-DSC, FT-IR spectrometer, Cyclic Voltammetry, 60 MHz Benchtop NMR (1H, 13C, DEPT, COSY), Magnetic Susceptibility Balance, Digital Polarimeter, Freeze Drier, Plate Reader among others.

The Department of Chemistry is part of the Faculty of Natural Sciences.

BS CHEMISTRY

The program prepares the students to demonstrate the ability to understand, analyze and address the real-world problems, from academia to industry, using Chemistry; and provides them with plenty of opportunities to excel both in the diverse job market, and in future learning.

Program Objectives

1. To educate students in foundational concepts of major disciplines of chemistry (inorganic, organic, physical, analytical, applied and biochemistry).
2. To educate students the fundamental chemistry lab methods/techniques and skills to conduct experiments and communicate the findings.
3. To equip students with skills to solve real-world problems related to chemistry.
4. To educate students how to think critically about the questions/problems pertaining to the area of chemistry.

5. To promote awareness among students about ethical aspects of chemistry such as safety, environmental issues and plagiarism policy.
6. To educate students about the employment opportunities and entrepreneurship skills based on the knowledge of chemistry.
7. To train students with effective professional skills (communication & presentation) in the area of chemistry.

Program Learning Outcomes

1- Knowledge:
Demonstrate an understanding of major concepts, theoretical principles and experimental findings in chemistry.

2- Application of Knowledge in Lab Activities:
Perform various laboratory experiments successfully by applying fundamental chemistry methods and techniques.

3- Application of knowledge to solve Real-World Problems:
Apply chemistry concepts to address real-world problems through effective solutions.

4- Critical Thinking:
Demonstrate critical thinking and analytical reasoning skills in the basic areas of chemistry.

5- Ethical Values:
Demonstrate understanding of ethical issues, norms, and implications in the domain of chemistry related to research, safety and environmental issues.

6- Career Opportunities:
Describe the range of career and higher education opportunities available to a chemistry graduate.

7- Describe the range of career and higher education opportunities available to a chemistry graduate:
Students will demonstrate adequate scientific communication and presentation skills in the domain of chemistry.

Requirements for the Major

A student majoring in chemistry is required to complete at least 48 credit hours in courses of chemistry including core/mandatory courses: CHEM 250, CHEM 261, CHEM 270, CHEM 311, CHEM 320, CHEM 330, CHEM 350, CHEM 361, CHEM 370 and any three 400 level chemistry courses.

Recommendations

During their Freshman and Sophomore years, students are recommended to take the following courses which will prepare them for higher level courses: CHEM 150, CHEM 160, CHEM 170, CHEM 173, CHEM 250, CHEM 260, CHEM 261 and CHEM 262. Taking these courses at the initial stages will help them to complete the degree on time with sufficient number of courses in their desired specializations.

Recommended Elective Courses: In order to gain sufficient mastery of the subject, a student majoring in chemistry is advised to take as many elective courses as he/she can, giving special attention to his/her desired area of specialization, and selecting at least one course from each of the following categories.

Inorganic-Analytical Chemistry

- CHEM 413: Instrumental Methods of Analysis
- CHEM 450: Advanced Inorganic Chemistry
- CHEM 453: Chemical Applications of Group Theory
- CHEM 454: Inorganic Electronic Spectroscopy
- CHEM 455: Inorganic Reactions Mechanism

Organic-Biochemistry

- CHEM 260: Principles of Organic Chemistry
- CHEM 331: Principles of Biological Chemistry
- CHEM 462: Spectroscopy of Organic Compounds
- CHEM 464: Advanced Organic Chemistry
- CHEM 465: Natural Products and Medicinal Chemistry Physical Chemistry
- CHEM 271: Quantum Chemistry
- CHEM 470: Polymer Chemistry
- CHEM 471: Advanced Physical Chemistry
- CHEM 473: Surface and Solid State Chemistry

Requirements for the Minor

Minor in Chemistry is open to students having basic science background at Intermediate and A Level. Students are required to take a course of at least 24 credit hours of 200 level or above by selecting at least one course from each area of chemistry (organic, inorganic and physical).

Course Descriptions

CHEM 100: Introduction to Chemistry (4 credits)
Open for those students who have not taken chemistry at Intermediate or A Level
Chemistry as a basic science, matter and states of matter, elements and periodicity, atomic structure, concept of mole and elementary stoichiometric calculations, acids and bases, elementary redox reactions and electrochemical cells, organic functional groups and major classes of organic compounds and their importance, and environmental aspects of chemistry.

CHEM 150: Introduction to Inorganic Chemistry (4 credits)
Prerequisite: Intermediate or A Level Chemistry
Various theories of bonding including valence bond theory, molecular orbital theory, Werner's theory, crystal/ligand field theory, three center bonds, bonding theory of metals and intermetallic compounds, bonding in electron deficient compounds, hydrogen bonding, shapes of molecules (VSEPR model).

CHEM 160/ENVR 160: Introduction to Organic and Biochemistry (4 credits)
Prerequisite: Intermediate or A Level Chemistry or CHEM 100
Bonding and structure of organic compounds, study of hydrocarbons including additions to multiple bonds and substitution reactions of benzene, petroleum products, chemistry of food and its components including carbohydrates, proteins, lipids, nutrition, and caloric intake.

CHEM 161: Foundation of Chemistry Entrepreneurship (3 credits)
Chemical entrepreneurship is a rapidly growing field that is especially important to contribute in a knowledge-based economy. The objective of the course is to provide students with the skills necessary to start their own business based on chemistry knowledge. There are many business opportunities available for chemistry students that this course will focus on such as herbal products, cosmetics, essential oils and perfumes, skin care products and so on.

CHEM 170: Introductory Physical Chemistry (4 credits)
Prerequisite: Intermediate or A Level Chemistry
Physical states of matter: structure and physical properties of gases, liquids, and solids, Bragg's Law, intermolecular forces. Kinetic Theory of Gases: deviation from ideal behavior, Van der Waals equation, distribution of velocities, Boltzmann Distribution Law. Chemical Kinetics: rate of reaction, reaction velocity, rate laws, integrated rate law, half-life of

reaction, determination of order of reaction. Chemical Thermodynamics: First Law of Thermodynamics and Thermochemistry. Quantum Chemistry: development of quantum theory, wave mechanics, Schrodinger equation, wave function.

CHEM 172: Chemometrics (3 credits)
Prerequisite: Intermediate or A Level Chemistry
Chemometrics is one of the important chemistry courses that undergraduate students are being taught worldwide. It mainly helps the students to get deep insight into the chemistry while applying the various concepts of mathematics and tools of statistics. A few basic concepts of mathematics starting from order of operations to graphs and few statistical tools being specific to chemistry problems will be discussed in this course to understand lab experiments and instrumental analyses.

CHEM 173: Introductory Nuclear Chemistry (3 credits)
The course focuses on structure and properties of atomic nuclei and related phenomena; nuclear structure, nucleons, binding energy and decay processes; fission and fusion; isotopes and isotopic labeling; nuclear transmutation; applications in the field of medicine and energy; nuclear power reactors; future prospects.

CHEM 180: Introduction to Forensic Chemistry (2 credits)
Prerequisite: Science Background
Introduction to forensic chemistry, chemical analysis in forensic science, time of death; blood, DNA in forensic, fingerprinting; polymers and fibers; firearms, narcotics, toxicology; case studies.

CHEM 181: Introduction to Food Chemistry (2 credits)
Prerequisite: Science Background
Introduction to food science and technology, food components, food processing, commercially important fats and oils, manufacture of regular and calorie-reduced margarines, fat replacers, flavor enhancers, hydrolyzed vegetable protein, browning reactions, fluid milk and pasteurization, yogurt and cheese, vegetable pigments and flavoring compounds, and food preservatives.

CHEM 182: Fundamentals of Textile Chemistry (2 credits)
Prerequisite: Science Background
Chemistry of natural and synthetic fibers, mercerization, decorative fabrics, textile dyeing and printing, sizing, bleaching and pretreatment of fibers, fashion designing, textile raw materials and environmental issues of textile industry.

CHEM 250: Chemistry of Main Groups Elements (4 credits)
Prerequisite: Intermediate or A Level Chemistry
Structural characteristics, reactivities, simple compounds, coordination compounds, metal crowns, organometallic compounds of s and p block elements, noble gasses and their compounds, interhalogens, pseudohalogens and polyhalides. Anomalies in periodicity, the use of d-orbitals by non-metals, reactivity and d-orbital participation, pπ-dπ bonds, multicenter bonding in electron deficient molecules, three-center-two electron and three-center four-electron bonds.

CHEM 260: Principles of Organic Chemistry (4 credits)
Prerequisite: Intermediate or A Level Chemistry
Basic concepts of organic chemistry like resonance, inductive effect, isomerism including stereochemistry, geometric isomerism, acids and bases, their relative strength and factors affecting acidity and basicity, significance of pH, pka and pKb, chemistry of alcohols, phenols, thiols and ethers and their industrial applications.

CHEM 261: Organic Chemistry I (4 credits)
Prerequisite: Intermediate or A Level Chemistry
Reaction mechanisms with full emphasis including free radical, electrophilic and nucleophilic substitution, addition and elimination reactions; chemistry of alkyl halides, amines and organometallic compounds, catalytic reactions and their importance.

CHEM 262 Physical Organic Chemistry (3 credit)
Prerequisites: CHEM 150 or CHEM 160 or CHEM 170
The course attempts to explain physical aspects of organic molecules and their reactions. It includes an overview of the theories of chemical bonding, energy changes during chemical reactions and energy profiles, thermodynamic properties, concept of stability and spontaneity, equilibria and reversibility, transition state, energy of activation and Hammond postulate, solvation and solvation effects, and catalysis. It will also cover charge transfer complexes, quantitative structure-activity relationship and computational chemistry and its applications.

CHEM 270: Thermodynamics and Equilibrium (4 credits)
Prerequisite: Intermediate or A Level Chemistry
Chemical Thermodynamics: Second and third laws of thermodynamics, concept of entropy, Helmholtz and Gibbs Energy functions, Spontaneity and equilibrium, chemical potential, system of variable composition, interrelationship of thermodynamic functions. Phase equilibrium: Clapeyron equation, solid-liquid, liquid-gas, solid-gas equilibria, Phase diagrams, Phase rule. Solutions: ideal and non-ideal solutions, Raoult's law, Colligative properties, Osmotic pressure, depression of freezing point, elevation of boiling point.

CHEM 271: Quantum Chemistry (3 credits)
Prerequisite: CHEM 150 or CHEM 170 or CHEM 270
Postulates of quantum mechanics, quantum mechanical operators, Schrodinger equation, wave functions and their properties. Quantum mechanical systems: Particle in a 1 – D box, Harmonic oscillator, Rigid rotator, Hydrogen atom, Variation principle, Huckel method.

CHEM 311: Fundamental Analytical Chemistry (4 credits)
Open to Sophomores and Above
Gravimetric and volumetric methods of analysis including buffers, complexometric titrations, redox titrations, non-aqueous titrations, Karl-Fischer titrations, UV/VIS spectroscopic analysis, IR Spectroscopy, treatment of measurement errors; usage and handling of standards, sampling, precision, accuracy, signal-to-noise ratio, limits of detection and quantitation, statistical evaluation of data; quality control and quality assurance.

CHEM 320/ENVR 320: Industrial Chemistry (4 credits)
Open to Sophomores and Above
Efficiency and yield, common chemical industries with special reference to Pakistan including cement, surfactants, paper and pulp, glass and ceramics, leather, metallurgies of important metals, liquid crystals and inorganic polymers. Environmental industrial impacts and industrial environmental management.

CHEM 330/ENVR 330: Biochemistry (4 credits)
Prerequisite: CHEM 160 or CHEM 261 or equivalent
Detailed structure and physiological function of primary metabolites including carbohydrates, proteins, lipids and nucleic acids, nature and role of enzymes and coenzymes, metallo-proteins and enzymes, mechanism of enzyme action, kinetics and regulation of enzymes and their industrial applications.

CHEM 331: Principles of Biological Chemistry (3 credits)
Prerequisite: CHEM 330
Interconnections between chemistry, biology and underlying chemical logic of biomolecules and metabolic pathways, genes and genomics.

CHEM 340/ENVR 340*: Environmental Chemistry Fundamentals (3 credits)
Prerequisite: CHEM 100 or Chemistry at Intermediate/A Level
Viewing the earth as five integrating systems i.e. the hydrosphere, the atmosphere, the geosphere, the astrosphere and the biosphere, the course deals with the chemical phenomenon involved in these systems and how human activities are affecting these. With a strong emphasis on the chemical aspects of environmental science, the course covers such topics as Water chemistry; oxidation/reduction; phase interaction; chemicals pollutants: origin, fate and hazards; atmospheric chemistry; chemicals and other air pollutants; photochemical smog; and hazardous waste chemistry.

CHEM 342: Green Chemistry Applications
Prerequisite: Open to Sophomores and Above
The course focuses on the environmental issues related to products and processes of chemical and related industries, and exploring their environmentally benign alternatives; green and sustainable chemistry, its principles and their applications in various chemical and pharmaceutical industries and research; new trends, environment friendly new materials, processes, and green methods in organic/ inorganic synthesis and green solvents and catalysis; various chemical strategies to remove inorganic and organic pollutants from water, soil and air.

CHEM 350: Coordination Chemistry (4 credits)
Prerequisite: CHEM 150 or CHEM 250
Historical background of coordination compounds, nomenclature and stability, geometry of complexes having coordination number 2 to 9, explanation of optical and magnetic properties of coordination compounds, Jahn-Teller effect, isomerism and stereochemistry, stabilities of coordination compounds, characterization and applications of coordination compounds, metal-based drugs, organic reagents used in inorganic analyses.

CHEM 361: Organic Chemistry II (4 credits)
Prerequisite: CHEM 260 or CHEM 261
Study of carbonyl compounds including aldehydes, ketones, carboxylic acids, esters, amides, enolates and conjugate additions. Chemistry of vegetable oils and waxes.

CHEM 370: Kinetics and Mechanism (4 credits)
Prerequisite: CHEM 170 or CHEM 270
Chemical Kinetics: first and second order reactions, reaction mechanism, unimolecular reactions, complex and chain reactions, theories of reaction rates, fast reactions, reaction in solutions. Electrochemistry: electrode potential, ion selective electrodes, electrochemical cells, measurement of electrode potential, electrical work, temperature dependence of cell potential, electrolysis, polarography, cyclic voltammetry, impedance. Surface chemistry: adsorption, chemisorption, heterogeneous catalysis.

CHEM 372: Chemistry and Energy (3 credits)
Prerequisites: CHEM 250 or CHEM 261 or CHEM 270
The course attempts to explain the diverse role of chemistry in solving energy problems. It covers the broad areas of electrochemistry, solar energy, biofuels, and chemical and biochemical processes. Fossil fuels and need for alternative energy sources, electrode potential and its measurement, galvanic cells, cell potential and free energy change, Nernst

equation, various types of fuel cells and their thermodynamic and electrochemical aspects, nature of solar radiation and its use as source of energy, photovoltaic converters, dye-sensitized solar cells, biofuels, biomass as fuel, ethanol production, fermentation, and anaerobic digestion. Recent research and future prospects.

CHE3M 413: Instrumental Methods of Analysis (4 credits)
Prerequisite: CHEM 311 or CHEM 370
Atomic spectroscopic techniques: atomic absorption and emission techniques. Thermal analysis: TGA, DTA, DSC. Chromatography: introduction to separation techniques, solvent extraction, chromatography (paper, TLC, HPLC, GC, GPC) and electrophoresis. Hyphenated techniques: gas chromatography-mass spectrometry (GC-MS), liquid chromatography-mass spectrometry (LC-MS), MS-MS, LC-FTIR; inductively coupled plasma-mass spectrometry, matrix-assisted laser desorption/ionization-time of flight (MALDI-TOF) mass spectrometry, tandem mass spectrometry, ion trap mass spectrometry, other topics of interest. Nuclear techniques: neutron activation analysis, nuclear quadrupole resonance, isotope dilution method, isotope ratio mass spectrometry, Mössbauer spectroscopy, radio-immunoassay, x-ray techniques.

CHEM 421: Pharmaceutical Chemistry (3 credits)
Prerequisite: CHEM 260 or CHEM 261 or CHEM 330
Types and physicochemical properties of drugs and pharmacologically active products, structure and activity relationship, drug design, metal ions as information carriers, chemistry and mode of action of some common drugs.

CHEM 450: Advanced Inorganic Chemistry (4 credits)
Prerequisite: CHEM 250 or CHEM 351
Non-aqueous solvents, chemistry of carbonyl and nitrosyl compounds, lanthanides and actinides.

CHEM 453: Chemical Applications of Group Theory (3 credits)
Prerequisite: CHEM 250 or CHEM 350

Symmetry; symmetry elements and operations; point groups; matrices and transformation matrices, group representations, character tables; reducible and irreducible representations; applications of group theory to bonding theories, infrared and Raman spectroscopy, crystal field theory, optical activity.

CHEM 454: Inorganic Electronic Spectroscopy (3 credits)
Prerequisite: CHEM 250 or CHEM 350
Electronic spectroscopy of coordination compounds, Russell-Sanders coupling scheme, derivation of term symbols of for p1-p6 and d1-d10 systems, pigeonholes diagram, magnetism, magnetic susceptibility, magnetic moments, Faraday's and Gouy's methods, orbital contribution to magnetic moment, effect of temperature on magnetic properties of complexes.

CHEM 455: Inorganic Reactions Mechanism (4 credits)
Prerequisite: CHEM 250 or CHEM 350
Classification of reaction mechanisms, rate laws, steady state approximation, inert and labile complexes, substitution reactions, octahedral complexes, acid hydrolysis, acid catalyzed reaction, base hydrolysis, attack on ligands, steric effects of inert ligands, square planar complexes, nucleophilic reactivity, trans-effect, cis-effect, effect of leaving group, mechanism of substitution, and racemization reactions, reactions in non-aqueous inorganic solvents, classification of solvents, types of reactions in solvents, effect of physical and chemical properties of solvent, detailed study of liquid NH3, H2SO4, HF, SO2, BrF3 supercritical fluid (water and CO2), reactions in molten salts and ionic liquids

CHEM 462: Spectroscopy of Organic Compounds (4 credits)

Prerequisite: CHEM 260 or CHEM 261 or CHEM 361

Study of IR, Mass and NMR spectroscopy as tools of structure elucidation, functional groups identification by IR spectroscopy, fragmentation pattern of main classes of organic compounds, 1-D proton and C-13 NMR spectroscopy and fundamental 2-D NMR techniques.

CHEM 464: Advanced Organic Chemistry (4 credits)

Prerequisite: CHEM 260 or CHEM 261 or CHEM 361

Study of reactive intermediates, pericyclic reactions, rearrangement reactions and oxidation-reduction reactions, retro-synthesis and disconnection approach, design and synthesis of organic compounds of industrial importance.

CHEM 465: Natural Products and Medicinal Chemistry (4 credits)

Prerequisite: CHEM 330 or CHEM 361 or equivalent

Introduction to natural products and their medicinal importance, biosynthesis of terpenoids, alkaloids, flavonoids and steroids, total and partial synthesis of some representative natural products, chemistry of perfumes and aromatherapy, drug discovery.

CHEM 470: Polymer Chemistry (3 credits)

Prerequisite: CHEM 261 or CHEM 270

Introduction to polymers, step-growth, chain polymerization, copolymerization, kinetics of polymerization. Physical aspects of polymers: molecular weight, distribution, averages, and methods of determination, characterization of polymers.

CHEM 471 Advanced Physical Chemistry (3 credits)

Prerequisite: CHEM 271 or CHEM 370

Angular momentum, approximate methods, perturbation theory, multi-electron atoms, rotational, vibrational and rotational-vibrational spectroscopy, symmetry and group theory, molecular orbital calculations, recent developments in physical chemistry, computational chemistry.

CHEM 473: Surface and Solid State Chemistry (4 credits)

Prerequisite: CHEM 270 or CHEM 370

Crystal structures, unit cells and Miller indices, X-ray diffraction, adsorption and desorption, Langmuir and BET isotherms, surface reactions and reactivity, ultrathin films and interfaces, techniques for the study of surfaces.

CHEM 498: Industrial Training (6 credits)

Open to Junior year students intending to major in Chemistry

Junior and Senior students with a minimum 2.50 CGPA can register for this course. Registered students will take an off-campus Industrial Training for 6-8 weeks in a reputed organization. At the end of the training, the student will submit a report on his/her internship. The internship will be evaluated by the Department.

CHEM 499: Research Project (6 credits)

Open to Junior year students intending to major in Chemistry

Junior and Senior students with a minimum 2.50 CGPA can register for this course. Project must be completed, and the research thesis submitted within 6-7 months. The viva will be conducted after submission of the research thesis.

DEPARTMENT OF COMPUTER SCIENCE

Introduction

The Department of Computer Science is part of the Faculty of Computer and Mathematical Sciences. It offers a rigorous undergraduate program for capable and motivated students who are excited by the influence of computing in our lives and who want to tackle the challenges of tomorrow. Computer Science is a fast-developing field, and our program aims to equip students with the fundamental knowledge that enables them to keep abreast of the latest developments and to contribute.

The Department offers the following degree program:

- *Bachelor of Studies (Honors)*

Bachelor of Studies in Computer Science

The 4-year *BS (Honors)* degree program at Forman Christian College (A Chartered University) is duly accredited by NCEAC (National Computing Education Accreditation Council) of HEC. The program provides a solid understanding of the theory and techniques of Computer Science (CS) so that upon graduation the students can enter various industries or pursue graduate studies. The curriculum offers a holistic view of discipline. It emphasizes both the state-of-the-art and the essential skills of modeling, abstraction and problem solving that open up a wide range of industries to the students. Our courses are mix from various areas that reflect the excitement and joy of computing, e.g. Mathematics, Electronics, Algorithms, Programming, Theoretical CS, Artificial Intelligence, Application Development, Software Engineering, Networks, Operating Systems, Database, Computer Vision, Human-Computer Interaction and more.

Learning Objectives

- **Core Knowledge:** Graduates will possess core computing knowledge and skills to establish themselves in professional roles.
- **Professionalism:** Graduates will fulfill their professional responsibilities taking due account of ethical dimension of their conduct.
- **Leadership:** Graduates will be effective as members/leaders of inclusive and multi-disciplinary teams, communicating effectively and engaging with society for creative problem solving.
- **Continuous Improvement:** Graduates will be acquiring new knowledge professionally or academically.

Program Learning Outcomes

1- **Knowledge for Solving Computing Problems:**
Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

2- **Problem Analysis:**
Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

3- **Design/Development of Solutions:**
Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations

4- **Modern Tools Usage:**
Create, select, adapt, and apply appropriate techniques, resources, and modern computing tools for complex computing activities, with an understanding of the

limitations

5- **Individual and Teamwork:**
Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings

6- **Communication:**
Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions

7- **Computing Professionalism and Society:**
Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice

8- **Ethics:**
Understand and commit to professional ethics, responsibilities, and norms of professional computing practice

9- **Lifelong Learning**
Recognize the need, and have the ability to engage in independent learning for continual development as a computing professional

10- **Program Completion:**
Completion of an accredited program of study designed to prepare graduates as computing professionals.

Requirements for the Major

BS (Honors) CS degree requires the completion of 132 credits in all as specified in the table below.

Core Courses	Supporting Courses	Computing Electives	General Education	University Electives	Total
58 credits (18 courses)	22 credits (7 courses)	12 credits (4 courses)	47 credits	6 credits (2 courses)	132* credits

**Total is 132 credits (and not 145 credits) because General Education's Science and Mathematics category's requirement of 1 lab course (4 credits), 1 Mathematics course (3 credits), 1 Computer Science course (3 credits), and one course from any domain (3 credits) will be fulfilled from the Core, Supporting and Elective courses of Computer Science. This means 13 credits from these different streams of Computer Science will simultaneously satisfy General Education's 13 credits. These credit hours will be counted only once.*

Credit Hours per Course:

Though the majority of the courses are 3 credit hours, there are courses with a different number of credit hours as well. These are noted in the course details below.

Core and Supporting courses are shown in the following tables. Supporting courses are also compulsory to take, but the term 'Supporting' is used to indicate that they are from other disciplines that support Computer Science curriculum:

Core Courses	Credits
COMP 102 Programming I (lab course)	(4 credits)
COMP 111 Programming II (lab course)	(4 credits)
COMP 113 Discrete Mathematics	(3 credits)
COMP 200 Data Structures and Algorithms (lab course)	(4 credits)
COMP 206 Digital Logic Design (lab course)	(3 credits)
COMP 213 Database Systems (lab course)	(3 credits)
COMP 220 Software Engineering	(3 credits)
COMP 300 Computer Organization with Assembly Language (lab course)	(3 credits)
COMP 301 Operating Systems (lab course)	(3 credits)
COMP 302 Theory of Automata	(3 credits)
COMP 303 Design and Analysis of Algorithms	(3 credits)
COMP 311 Computer Networks (lab course)	(3 credits)
COMP 360 Introduction to Artificial Intelligence (lab course)	(3 credits)
COMP 401 Ethics for Computing Professionals (1 credit)	(1 credit)
COMP410: Parallel and Distributed Computing	(3 credits)
COMP 421 Information Security	(3 credits)
COMP 451 Compiler Construction (lab course)	(3 credits)
COMP 497 Senior Project (6 credits) (in two parts A and B in two semesters)	(6 credits)
Total	**58 Credits**

Supporting Courses *(these are also compulsory)*	**Credits**
MATH 111 Calculus and Analytic Geometry	(3 credits)
STAT 115 Probability and Statistics	(3 credits)
CSCS 105 Basic Electronics (4-credits lab course) (3+1)	(4 credits)
CSCS 201 Multivariate Calculus	(3 credits)
CSCS 202 Computational Linear Algebra	(3 credits)
CSCS 203 Differential Equations	(3 credits)
CSCS 320 Numerical Computing (lab course)	(3 credits)
Total	**22 credit**

General Education Notes:

CSCS105 Basic Electronics (4 credits) is cross listed with PHYS 102 Basic Electronics (4 credits) and will fulfill the requirement of one of the two lab courses that must be completed in the Science and Mathematics category of General Education.

CSCS100 Introduction to Computing course can be taken by under-graduates. CS students *only in their freshman year*, and not afterwards, as part of their General Education requirement (and *not* as a Computing Electives requirement) to establish a basic level of skill in the use of computer-based tools (like word processing, presentation and spreadsheet software) and for an understanding of basic computing concepts. However, students from other disciplines (i.e. non-CS students) can take it in any semester as part of their General Education requirement.

Transfer to BS (Hons.) Computer Science Degree

Any student who wishes to transfer from any other degree program to BS (Hons) Computer Science must:

1. Have the required T-Score at the time of admission
2. Have a good previous academic and achievement record relevant to Computer Science
3. Minimum 3.0 CGPA at the time of request to transfer
4. Attain a grade of B in any Computer Science course(s) given to the student to gauge the student's ability with the permission of the Chairperson
5. The decision is also subject to the availability of seats in the department.
6. The Chairperson of the Computer Science Department reserves the right to accept or reject any application.

Students from other Majors

1. Students from other majors can only take the following course from the computing domain: CSCS 100 Introduction to Computing

2. For registration in a course other than CSCS 100, students from other majors must take written permission from the Chairperson of the Computer Science Department. Such students will only be accommodated during the add/drop period if seats are available after registration by BS Computer Science students.

Course Descriptions

Core courses

COMP 102: Programming I (4 credits) Lab Course
Prerequisite: None
Basic skills of problem solving and programming, problem analysis, algorithm design, program development and testing, structured design techniques, object-oriented thought process and basic tools.

COMP 111: Programming II (4 credits) Lab Course
Prerequisite: COMP 102
The course includes the concepts and practical applications of classes, inheritance, class hierarchy, polymorphism, basic data structures, basic searching and sorting techniques.

COMP 113: Discrete Mathematics (3 credits)
Prerequisite: MATH 101 or A Level Mathematics or Intermediate Mathematics Similar to MATH 303
Foundations of discrete mathematics as they apply to Computer Science, understanding and appreciation of the finite nature inherent in most Computer Science problems and structures through study of logic, set theory, functions, recursive relations, combinatorial reasoning, iterative procedures, predicate calculus, tree and graph structures.

COMP 200: Data Structures and Algorithms (4 credits) Lab Course
Prerequisites: COMP 111, COMP 113
More sophisticated data structures and algorithms required to manipulate them, selection or construction of suitable data structures for a wide range of problems, analysis of the efficiency of chosen solutions, standard problems such as sorting and searching, time and space complexity of computer programs.

COMP 206: Digital Logic Design (3 credits) Lab Course
Prerequisite: MATH 101 or A-Level Mathematics or Intermediate Mathematics
Fundamentals of hardware system design, beginning at the digital logic level with bits, binary representations, and basic binary operations, minimization techniques, combinational and sequential logic circuits and gates, basic functional units, higher level computing functions, hardware description languages, basic elements of some real-life architectures.

COMP 213: Database Systems (3 credits) Lab Course
Prerequisite: COMP 200
Databases, various data models, data storage and retrieval techniques and database design techniques, relational data model, relational algebra as a basis for queries in SQL and normalization techniques to optimize database structures.

COMP 220: Software Engineering (3 credits)
Prerequisite: COMP 200
Basics of Software Engineering, the terminologies involved, and various principles, methods, tools and techniques used to produce quality software, two fundamental approaches of software engineering: structural and object-oriented. Various techniques

used for requirements engineering, system/software design, implementation, and testing, fundamental issues of software measurement and project management.

COMP 300: Computer Organization with Assembly Language (3 credits) Lab Course
Prerequisites: COMP 111, COMP 206
Introduction to computer systems and architectures, CPU operations, busses, memory, instruction sets, machine code, use of assembly language for optimization and control, low-level logic employed for problem solving while using assembly language as a tool, trace low level code of instruction, interrupt handling and multi-tasking systems, writing moderately complex assembly language subroutines and interfacing them to any high-level language.

COMP 301: Operating Systems (3 credits)
Lab Course
Prerequisites: COMP 200, COMP 300
Construction and working of operating systems, understanding management and sharing of the computer resources communication and concurrency, developing effective and efficient applications, problems and issues regarding multi-user, multi-tasking, and distributed systems.

COMP 302: Theory of Automata (3 credits)
Prerequisite: COMP 200
Mathematical models of computation, definition and properties of formal languages and grammars, finite automata, regular languages and regular expressions, pushdown automata and context free languages, pumping lemmas and normal forms, Turing machines, Church's Thesis, Halting Problem and undecidability, overview of the theory of computational complexity.

COMP 303: Design and Analysis of Algorithms (3 credits)
Prerequisite: COMP 200
Basic notions of the design of algorithms and the underlying data structures, analysis of complexity of algorithms, number-theoretic and graph algorithms, basic algorithmic paradigms e.g. divide-and-conquer, dynamic programming, greedy algorithms, and introduction to computability theory.

COMP 311: Computer Networks (3 credits) Lab Course
Prerequisites: COMP 301
Engineering concepts underlying computer communication, including analog and digital transmission, circuit switching and packet switching, logical network structure and operation including network layers, network models (OSI, TCP/IP) and protocol standards, understanding of modern network concepts.

COMP 360: Introduction to Artificial Intelligence (3 credits) Lab Course
Prerequisite: COMP 200
This course introduces principles and practices of Artificial Intelligence, elements of intelligent behavior, techniques of knowledge representations, optimal solutions and complexities with heuristics, production systems and expert systems, introduction to machine learning, languages and their usage for implementation of intelligent behavior.

COMP 401: Ethics for Computing Professionals (1 credit)
Prerequisite: COMP 220
Introduction to ethical questions faced by designers, developers, managers and users of information systems including intellectual property rights, privacy concerns, professional responsibilities and deliberate harmful use of IT resources.

COMP410: Parallel and Distributed Computing (3 credits)
Prerequisite: COMP 301
The course will cover a selection of topics in constructing, testing, and performance evaluation of parallel and distributed applications. Various implementation techniques, paradigms, architectures and programming languages will be discussed including: MPI, OpenMP, GPU, concurrency and multi-threading.

COMP 421: Information Security (3 credits)
Prerequisite: COMP 311, STAT 115
Introduction to information security from a theoretical and practical perspective, details of different security vulnerabilities of information systems and computer networks, methods to defend against the attacks for vulnerabilities exploited by adversaries and hackers, cryptographic techniques and protocols, network security protocols and practices, digital signatures and authentication protocols and wireless network security.

COMP 451: Compiler Construction (3 credits) Lab Course
Prerequisite: COMP 302
Organization of compilers, different types of translators, lexical and syntax analysis, parsing techniques, object code generation and optimization, detection and recovery from errors.

COMP 497: Senior Project (6 credits, 2 semesters, 3 credits each semester)
Prerequisites: COMP 213, COMP 220, Senior standing COMP 497A is the prerequisite of COMP 497B
Requires students to research, conceive, plan and develop a real and substantial project related to computer science over the course of two semesters. It provides an opportunity to students to realize their acquired professional competence in the form of a demonstrable software product or other tangible result. The students must also submit a written report as per guidelines and make an oral presentation.

Supporting Courses

These courses are also compulsory and belong to disciplines that support Computer Science.

Similar Courses: Some courses in the supporting category are similar to courses from other departments. These are indicated below. Computer Science majors must strictly study the course as specified in their catalog and **cannot** study a similar course at any time.

MATH 111 Calculus and Analytic Geometry (3 credits)
Prerequisite: MATH 101 or A Level Mathematics or Intermediate Mathematics This course is open only to Computer Science majors unless it is cross-listed. Similar to MATH 102, MATH 20.
The focus of this course is the study of the inverse relationship that exists between differential and integral calculus. Students will learn the fundamentals of calculus along with its application to interesting problems in science and engineering. Topics include limits, derivative, problem solving using differentiation, Fundamental Theorem of Calculus, integrations techniques, computation of areas and volumes by slicing, volumes of revolution and surface areas of revolution, infinite series and convergence tests and Taylor's series. Demonstration of various ideas will use mathematical software package(s).

STAT 115 Probability and Statistics (3 credits)
Prerequisite: MATH 101 or A Level Mathematics or Intermediate Mathematics This course is open only to Computer Science majors unless it is cross-listed. Similar to

STAT 100, STAT 101, STAT 102, MATH 105, MATH 107
This course will introduce fundamental concepts of statistics and probability to Computer Science students. It includes a firm understanding of concepts like descriptive statistics, measures of central tendency, dispersion, moments etc. Different ways and laws of probability, random variable, conditional probability, independence Bayes' Theorem, some standard discrete and continuous probability distributions, concept of regression and correlation, along with exposure to statistical package(s).

CSCS 105 Basic Electronics */PHYS 102 General Physics II*(4 credits) (3+1hrs)
Prerequisite: PHYS 100 or A-Level Physics or Intermediate Physics
This course also fulfills one of the "science lab course" requirement for Computer Science students
Fundamental ideas of current and voltage are taught, augmented with basic circuit theorems to develop an understanding of circuit design and analysis. An introduction to the working and characteristics of diodes and BJTs equips students with the essential skill set to better understand digital and analogue circuits.

CSCS 201 Multivariate Calculus (3 credits)
Prerequisite: MATH 111 Similar to MATH 301
The course studies the fundamental topics from single variable calculus, like limits and continuity, in the context of several variables. Topics of study include vector valued functions, partial derivatives, multiple integrals, integration in vector fields, and Green's, Stokes' and Gauss' theorems.

CSCS 202 Computational Linear Algebra (3 credits)
Prerequisite: MATH 111 Similar to MATH 103, MATH 209
The course teaches concepts that are crucial to many areas of Computer Science, including computer graphics, image processing, computer vision and quantum computation. Topics include matrices, vectors, vector spaces, linear independence, linear transformations, eigenvalues & eigenvectors, solution of system of linear systems and singular value decomposition. Students will use ideas from linear algebra and apply them to data to perform tasks such as: 2D graphics transformations, image transformations and error-correcting codes. Software packages such as Mathematics or MATLAB will be used to implement various algorithms.

CSCS 203 Differential Equations (3 credits)
Prerequisite: MATH 111 Similar to MATH 202
This course introduces ordinary differential equations. Emphasis is on concepts and applications of first-order and higher-order differential equations, systems of differential equations, numerical methods, series solutions, and Laplace transforms.

CSCS 291 Introduction to C/C++ (3 credits)
The course provides a solid foundation in programming principles and techniques using the versatile and powerful programming language C/C++. The students learn various concepts of programming, including variables, data types, control structures, functions, arrays, pointers, classes, and object-oriented programming (OOP) principles through a combination of lectures, hands-on coding lab exercises, and assignments. In addition to exploring the syntax and semantics of the C++ language, this course will also emphasize good programming practices, code readability, problem-solving strategies, and algorithmic thinking. By the end of the semester, students will have developed the skills necessary to design, implement, test, and debug C++ programs, enabling them to tackle real-world programming challenges with confidence.

CSCS 320 Numerical Computing (3 credits) Lab Course

Prerequisite: MATH 111 Similar to MATH 310
Introduction to computer representation of numbers, error analysis, finite differences, interpolation, splines, numerical differentiation and integration, numerical solution of linear and nonlinear systems of equations.

Computing Electives:

CSCS 290: Introduction to Java Programming (3 credits)
Prerequisite: COMP 111
The main purpose of the course is to equip students with knowledge of Java language programming methods. In this course students will acquire procedural programming: software development technique that imposes a hierarchical structure on the design of the programs. Moreover, students will learn the principles of object-oriented programming (OOP): programming techniques based on objects.

CSCS 306 Embedded Systems (3 credits) Lab Course
Prerequisite: COMP 111, COMP 206
An embedded system is centered around an embedded processor, usually a microcontroller, performing control related activities with minimum electronic component count. This course is focused on how to program and interface an embedded processor. Students will learn how to acquire data from analog as well as digital sensors, perform processing and take real time decisions to implement switching of motors/actuators.

CSCS 313: Software Requirements Engineering (3 credits)
Prerequisite: COMP 220
Role of requirements engineering within the software life cycle, comparison, contrast and evaluation of structured, object-oriented, data-oriented and formal approaches to requirements analysis, gathering necessary requirements from a customer to develop specifications and software.

CSCS 321: Cyber Security (3 credits)
Prerequisite: COMP 200
This course is designed to teach students the principles of cybersecurity and how they correlate to security practitioners and cyber adversaries. The course integrates networking and system management principles with a focus on system security through defensive strategies. Students will learn how to think like an attacker, how modern cyber-attacks and defenses work in practice, and how to evaluate risks and security systems. They will learn by working on hands-on lab settings and participating in real-world attack and defense scenarios while developing strong critical thinking skills. After completing this course, students will have the necessary core skills and understanding of typical risks and weaknesses as well as how to design a safe system using fundamental concepts and methodologies.

CSCS 342: Web Application Development (3 credits) Lab course
Prerequisites: COMP 213, COMP 220
Concepts, methods, technologies, and techniques of developing web applications that collect, organize and expose information resources, web application architectures, design methods and technologies, interface design, usability of web applications, security, accessibility, testing metrics, operation, deployment and maintenance of web applications, current and future web technologies.

CSCS 351: Software Quality Assurance (3 credits)
Prerequisite: COMP 220
Quality assurance and verification, avoidance of errors and other quality problems,

inspections and reviews, testing, verification and validation techniques, process assurance versus product assurance, quality process standards, product and process assurance, problem analysis and reporting, statistical approaches to quality control.

CSCS 352: Object-Oriented Analysis and Design (3 credits)
Prerequisite: COMP 220
Exploitation of the rich object-oriented modeling provided by Unified Modeling Language (UML), adaptation to changing requirements with iterative techniques and component-based design, design solutions optimized for modern object-oriented languages and platforms, application of proven design patterns, design heuristics, anti-patterns and refactoring techniques to refine analysis and design models, construction of unit and system tests to verify implemented designs.

CSCS 364: Information Retrieval (3 credits)
Prerequisite: COMP 200
Information Retrieval is the process of responding to the user queries by retrieving the information from text-based information on a specific topic (i.e., text in-text out). In recent years, these concepts have also extended to image-based information retrieval (i.e., image in-image out). Web search is a specific application of IR techniques to the largest corpus of text i.e., the web, and it is a use case where many people interact with IR systems most frequently. This course emphasizes efficient text indexing, Boolean and vector-space retrieval models, positional encodings, IR approaches for the web, document clustering for reducing search space, and ranked retrieval based on queries.

CSCS 365: Introduction to Digital Image Processing (3 credits)
Prerequisite: COMP 200 and CSCS 202
This course introduces the students to the basics of digital images, their structure and formulation. Algorithms for image manipulation and characterization in spatial domains are included. Later formal treatment of images in frequency domain, including filtering and edge detection are described.

CSCS 366: Introduction to Natural Language Processing (3 credits)
Prerequisites: COMP 200 and STAT 115
The course is focused on different approaches to building systems for semantic understanding of the natural language. It not only covers the theoretical concepts but also aims to provide hands-on natural language processing tools like POS-tagger, sentence parser, named- entity recognizer, etc.

CSCS 367: Blockchain Technologies and Applications (3 credits)
Prerequisites: COMP 213, COMP 303 and COMP 311
This course will familiarize students with basic concepts of Blockchain technology. This course enables students to explain basic components of a Blockchain (transaction, block, block header, and the chain), its operations (verification, validation, and consensus model) underlying algorithms, and essentials of trust. Content includes the hashing and cryptography foundations indispensable to Blockchain programming. The business uses of Blockchain in various industries like Finance and Supply Chain will be discussed.

CSCS 368: Fundamentals of Data Visualization (3 credits)
Prerequisites: COMP 200 and STAT 115
Data Visualization is a process of obtaining detailed insights hidden in the data. It is a necessary component in the pipeline of any data science project. This course teaches skills specifically in terms of how to effectively present the data and findings. Further, this course provides hands-on skills using a selection of tools and language libraries for data exploration and visualization.

CSCS 403/MATH 403*: Graph Theory (3 credits)
Prerequisite: COMP 113/MATH 303
Graphs, sub graphs, isomorphism, trees, connectivity, Euler and Hamiltonian properties, matching, vertex and edge colorings and planarity.

CSCS 405: Software Projects Management (3 credits)
Prerequisite: CSCS 220
This course describes the basic principles and informs about the application of activities involved in Software Projects Management. It provides an opportunity to develop the ability to plan and manage software development projects successfully and maximizing the return from each stage.

CSCS 440: Systems Programming (3 credits) Lab course
Prerequisites: COMP 301
Internal operation of system software including assemblers, loaders, macro-processors, interpreters and inter-process communication.

CSCS 450: Technology Management (3 credits)
Prerequisite: COMP 220
Introduction to technology strategy, corporate strategy, technology transfer, technology strategy development, product development strategy and innovation process.

CSCS 451: Introduction to Robotics (3 credits)
Prerequisite: COMP 200
Robotics, as a field of study, is undergoing massive research and development to improve the dynamic, perceptual, and behavioral aspects of robots. Students will learn the basics to model, simulate and design various robotic systems (with an emphasis on robotic manipulators). The course will cover introduction to different types of robots and their applications. It will also reflect upon coordinate systems, kinematic principles, locomotion, and robot perception techniques (which will include robotic sensors, data acquisition, use of computer vision techniques in robotics, image processing applied to robotic perception, and feature extraction from various sensor data).

CSCS 453: Computer Graphics (3 credits)
Prerequisites: COMP 200, CSCS 202
Graphics hardware including display devices, applications of computer graphics, development of graphics software, interactive graphics programming, Raster scan, conversion algorithms for line segments, circles, ellipses and general curves, 2D transformations, windowing and clipping including panning and zooming, line clipping and area clipping algorithms, region filling algorithms, 3D objects display techniques, 3D representations, 3D transformations, curve and surface design and representations, rendering, shading and animation.

CSCS 454: Reinforcement Learning (3 credits)
Prerequisite: COMP 360
The course will introduce students to the fundamentals of reinforcement learning (RL). We will start by introducing RL problem formulation, its core challenges, and a survey of consolidated approaches from literature, including dynamic programming, value-function learning and policy learning. We will then cover model-based RL and exploration strategies. Finally, the course will discuss more recent reinforcement learning models that combine RL with deep learning techniques. The course will leverage a combination of theoretical and applicative lectures.

CSCS 455: Data Mining and Data Warehousing (3 credits)
Prerequisite: COMP 213, STAT 115
Database concepts, different data models, data storage and retrieval techniques and database design techniques, data warehousing and data mining, emerging database technologies and applications.

CSCS 456: Introduction to Deep Learning (3 credits)
Prerequisite: COMP 200 and STAT 115
Deep Learning is a hierarchical learning methodology based on artificial neural networks which are algorithms inspired by the structure and function of the brain. It has applications in wide-range of industries these days such as face- recognizers working at massive scales, robotics, speech translation, text analysis, improving customer experience, autonomous vehicles etc.

CSCS 457: Computer Vision (3 credits)
Prerequisites: COMP 200, CSCS 202
Introduction of theory and applications of computer vision and current problems, techniques and applications, computer vision systems, interaction of different components in a complete system, writing programs to solve computer vision problems through the use of several programming assignments and examples.

CSCS 458: Big Data (3 credits)
Prerequisites: COMP 213
The proliferation of unstructured data in quantities impedes the use of traditional statistical approaches. To examine such data, new techniques are required. In order to be responsive, new algorithms are required to deal with different techniques. New data storage and retrieval mechanisms are required. Many of the algorithms come from well-known big data owners like Google (search, adwords), Amazon (recommended books), and Facebook (social network analysis). As more players enter the competition, new methods will emerge to meet their needs. The course objective is to develop understanding about the core concept of Big Data, why Big Data requires a different programming paradigm and mindset, and what are the various programming approaches used, and what type of data can be processed.

CSCS 460: Machine Learning (3 credits)
Prerequisites: COMP 200, CSCS 202
Supervised learning, classification, regression, bias-variance analysis, maximum-margin classification, kernel methods, evaluation, validation, unsupervised learning, clustering, dimensionality reduction, outlier/anomaly detection, sequential data modeling, deep learning, model maintenance.

CSCS 461: Principles of Programming Languages (3 credits)
Prerequisite: COMP 303
Theory and practice of programming language translation, languages, grammar and parsing, lexical, syntactic and semantic analysis, compile-time error handling, organization of programming languages including language processors, syntax data types and sequence control, storage management, comparison of language features from the functional, imperative, logical and object-oriented paradigms.

CSCS 462: Social Engineering and Insider Threats (3 credits)
Prerequisite: COMP 303
The aim of this course is to teach students the methods of social engineering and to equip

them with the capability to recognize and identify insider threats. After taking this course, the students will be able to develop and implement responsive security measures and preventive security policies and regulations to counter social engineering and insider threats.

CSCS 465: Information Security Standards and Regulations (3 credits)
Prerequisite: COMP 303
This course aims to provide basics and advanced concepts relevant to information security standards / frameworks. At the end of the course, the students should be able to analyze, evaluate, initiate, implement, control, and improve an information security management system using ISO 27001 framework. Moreover, the students will have understanding about the other frameworks to standard / framework within their organization.

CSCS 466: Wireless Networks (3 credits)
Prerequisite: COMP 311
Techniques in design and operation of first, second and third generation wireless networks: cellular systems, medium access techniques, radio propagation models, error control techniques, handoff, power control, common air protocols, radio resource and network management.

CSCS 468: Mobile Application Development (3 credits) Lab Course
Prerequisites: CSCS 290
Programming of applications for mobile phones and mobile devices such as tablets in a popular mobile device platform and programming language.

CSCS 470: Introduction to Game Development (3 credits) Lab Course
Prerequisites: CSCS 220
The course will cover a selection of topics in the design and development of 2D and 3D video games. Fundamental issues, implementation techniques, platforms, and programming languages will be discussed. Introduction to core game engine, basic graphics, Graphical User Interface (GUI), networking, Artificial Intelligence will be provided.

CSCS 475: Technology Entrepreneurship (3 credits)
Prerequisites: COMP 220
Develop an understanding of different concepts of entrepreneurship and their application in technology enterprises for better entrepreneurial competence and ultimate success. The course will cover case studies from the tech domain. The students will get practical experience of entrepreneurship by completing a course project in Technology Entrepreneurship.

CSCS 295/495: Special Topics in Computing / Themes (1-3 credits)
Prerequisites: As appropriate for the material
These courses allow the presentation of new or emerging areas of study in the computing domain not present in the current catalog.

COMP 405: Human-Computer Interaction (3 credits) Lab Course
Prerequisite: COMP 220
Exploration of the differences in information processing by humans and machines using insights from psychology and cognitive science, design of human-computer interfaces and systems involving both human and computer components.

COMP 452: Computer Architecture (3 credits)
Prerequisites: COMP 301
This course provides an understanding of design issues of computer systems from the

perspective of performance measures and cost-performance tradeoffs. The course covers the fundamentals of modern processor design. Topics include instruction set design, RISC vs. CISC architectures, memory management, caches, memory hierarchies, interrupts, I/O structures, pipelining, parallelism, and multiprocessor systems.

University Elective for Computer Science Freshmen

CSCS 100: Introduction to Computing (3 credits)
Computer Science students can take this elective course only in their Freshman year, and not afterwards, as part of their General Education requirements only

Introduction to computing environments, general application software, computing hardware, operating systems, desktop publishing, internet, software applications and tools and computer usage concepts, introduction to software engineering and information technology within the broader domain of computing.

*** Cross-listed Courses:**
Courses with two designators (coding) are marked with an asterisk (*) to identify them as cross-listed courses. Students must select the correct designator for their applicable program and requirement. Students may earn credit in only one of the two cross-listed courses.

DEPARTMENT OF ECONOMICS

Introduction

The Department of Economics at Forman Christian College (A Chartered University) has been offering the undergraduate program since 1915. The Department has evolved over time, bringing it up to par with contemporary needs by building resources, introducing a wide range of courses, upgrading curricula, and adding new scholars. Currently, there are more than 300 baccalaureate students majoring in Economics, and it is rated as one of the most popular degrees at FCCU. The Department of Economics is part of the Faculty of Social Sciences.

Vision

The vision of the Department of Economics is to develop responsible, capable, and ethical leaders in the field of Economics who can apply existing ideas and develop new ones to serve humanity in general and Pakistani society in particular

Mission

The Department is working with the mission of creating a learning environment in the field of Economics, endowed with the best physical and human resources required for producing confident, competent, and credible professionals and sending them to seek success and serve society. The Department strives to produce and provide an atmosphere:

- Conducive to independent, critical, and creative thinking.
- Promoting competitive as well as collaborative attitudes of seeking knowledge.
- Cultivating an ability of self-motivated lifelong attitude of independent learning

BS (Hons) Economics

The BS (Hons) Economics program provides a thorough understanding of economic theories of global economic issues with a particular focus on Pakistan's economy. It enables the students to perform quantitative and qualitative analyses to present the findings effectively. The degree not only aims to enhance the student's personal and professional decision-making capacities but also empowers them to contribute to policy formulation and participate in the economic development of Pakistan.

Program Objectives

1. To develop in our students an understanding of core principles and concepts of economics.
2. To develop in our students critical and analytical skills necessary to analyze socioeconomic issues faced by economic agents.
3. To encourage our students to articulate economic ideas and policies for the welfare of society.
4. To instill in our students ethical and moral values necessary in professional and personal lives.
5. To develop in our students' desire of learning and ability to explore and avail career and educational opportunities in the field of economics and related disciplines

Program Learning Outcomes

1- Subject Knowledge:
Demonstrate knowledge of theories and concepts of economics for application in practical life.

2- Policy Formulation:
Formulate and communicate economic ideas and policies for the welfare of society.

3- Computing and Statistical Skills:
Apply statistical tools and software to collect, analyze and interpret socioeconomic data.

4- Empirical Techniques:

Apply empirical techniques and statistical software to test hypotheses and investigate socio-economic issues faced by economic agents.

5- **Research Skills:**
Demonstrate knowledge of the research process, survey design, ethical consideration and communicating research results in a meaningful way.

6- **Ethical and Moral Values:**
Recognize ethical and regulatory practices in economic activities, research process and report writing.

7- **Career skills:**
Explore and avail career and educational opportunities in the field of economics and related disciplines.

Requirements for the Major

1. A minimum CGPA of 2.0 is required to declare Economics as a major.
2. Students must complete 24 credit hours of core courses and 24 credit hours of elective courses.
3. A minimum of six elective courses of 300 or 400 levels are required for majoring in Economics.

Core Courses
ECON 101, ECON 102, ECON 103, ECON 201, ECON 202, ECON 203, ECON 300, ECON 302

Elective Courses
ECON 206, ECON 210, ECON 303, ECON 304, ECON 305, ECON 306, ECON 307, ECON 309, ECON 311, ECON 313, ECON 315, ECON 320, ECON 322, ECON 323, ECON 325, ECON 395, ECON 400, ECON 402, ECON 403, ECON 404, ECON 406, ECON 411, ECON 413, ECON 417, ECON 422, ECON 498, ECON 499.

Course Descriptions

ECON 100: Principles of Economics (3 credits)
This course is counted towards General Education credits.
The course cannot be registered simultaneously or after any of the following: ECON 101, ECON 102, ECON 103 BUSN and BUSN 225
Prerequisite: None
The aim of this course is to introduce students to the basic concepts and principles of microeconomics and macroeconomics. Main contents of the course include market forces of demand and supply, cost of production, market structures, concepts of national income, inflation, unemployment, international trade and development economics.

ECON 101: Principles of Microeconomics (3 credits)
Prerequisite: None
The course is designed to build the foundation for major concepts of microeconomics. Students will learn how consumers and producers take rational decisions in their daily economic affairs. The course includes principles of demand and supply and interactions of market forces, optimization of output and pricing strategies under perfect and imperfect market structures.

ECON 102: Principles of Macroeconomics (3 credits)
Prerequisite: None
This course describes key macroeconomic concepts, theories, and policies; and explains how an economy operates in a country. Main contents of the course include national income accounting, productivity, standard of living, growth and public policy issues,

introduction to consumption, saving and capital formation, inflation, unemployment, monetary system, quantity theory of money and introduction to monetary and fiscal policies.

ECON 103: Mathematics for Economists (3 credits)
Prerequisite: None
This course is designed to teach students basic tools of Mathematical Economics and their application to economic analyses. With the help of mathematical tools, it will be learnt how firms precisely maximize their profit, revenue and minimize cost. The main contents include real number system, set theory, comparative static analysis, linear models and matrix algebra, tools of algebra and calculus, application of calculus in economics, optimization of one and multivariable functions, optimization with constraints, and economic application of optimization.

ECON 201: Intermediate Microeconomics (3 credits)
Prerequisite: ECON 101, ECON 103
This course is a continuation of Principles of Microeconomics. By using mathematical models, it analyzes consumer and producer theories, firm behavior under perfect and imperfect market structures, and market inputs in perfect and imperfect competitive environments.

ECON 202: Intermediate Macroeconomics (3 credits)
Prerequisite: ECON 102, ECON 103
This course is a continuation of Principles of Macroeconomics, it covers Classical and Keynesian economic theories, derivation of AD and AS models and their implication for stabilization policies, short-term and long-term inflation-unemployment relationship, consumption and investment theories, economic growth, growth accounting and convergence.

ECON 203: Statistics for Economists (3 credits)
Prerequisite: None
This course is designed to introduce students with basic concepts of Statistics and their application in Economics. The course focuses on measures of central tendency and dispersion. Basic concepts of probability and its distributions, normal, chi-square, t and F distributions and their applications. Moreover, students will be taught to develop and test hypotheses and apply regression and correlation analyses to analyze relationships between economic variables.

ECON 206: Banking and Finance (3 credits)
Prerequisite: ECON 102
This Course is designed to familiarize students with basic concepts and principles of banking and financial institutions. It will also provide a comparison between conventional and interest free financial institutions, their underlying principles, modes of financing and contractual mechanisms. The basic contents of the course include functions and role of money, credit creation, financial institutions and markets, and functions of commercial and central banks in economic development. For Islamic or interest free banking, the course covers norms of Islamic Finance such as, prohibition of *Riba*, *Ghrarar* and the need for cooperation. The course will also cover the Islamic modes of financing such as *Mudarabha, Musharakah, and Murabaha;* their contracts, types, basic rules and contractual mechanisms.

ECON 210: Population Economics (3 Credits)

Prerequisite: None

This course is designed to introduce students with basic concepts of demography and theories of population economics. The main contents of the course will include historical trends in fertility & mortality, demographic transition, determinants of changes in population composition and their socio-economic impact, theories of population and economic development, role of youth, consequences of aging, issues of education, health & labor market, and concept of demographic dividend. This course also aims to develop basic skills to use census and other population data sources to calculate, analyze and interpret different demographic indicators and indices.

ECON 300: Fundamentals of Econometrics (3 credits)

Prerequisite: ECON 201, ECON 202, ECON 203

The course will equip the students with the fundamental concepts and techniques of econometrics to conduct an econometric project and to understand the way in which economic theory and the real world are connected. The main topics are single-equation regression models, the method of ordinary least squares, dummy variable regression models; relaxing the assumption of classical model: multicollinearity, heteroscedasticity and autocorrelation.

ECON 302: Research Methods and Computer Applications (3 credits)

Prerequisite: ECON 300

This course is designed to learn about different methods and methodologies of research used in economics and how to apply them. The course will cover the topics of data collection methods, research design, sampling, report writing and the use of econometric softwares.

ECON 303/ ENVR 306 *: Environmental Economics (3 credits)

Prerequisite: ECON 101

This course is an Introduction to the economic and ecological principles essential for a clear understanding of contemporary environmental and natural resource management issues. The course covers the economic, legal and ecological perspectives to better understand the causes and solutions to market failure and environmental degradation. Main contents of the course include economic efficiency and market failure, property rights, externality, measuring social welfare and welfare improvements, demand for environmental goods, environmental valuation methodologies, environmental cost-benefit analysis, environmental policy and environmental regulations, common pool resource management and depletable resource management.

ECON 304: Managerial Economics (3 credits)

Prerequisite: ECON 201, ECON 203

The purpose of this course is to provide a basic understanding of economic theory and analytical tools that can be used in decision-making problems. It covers demand analysis, estimation and forecasting, production and cost theories and their estimation, decision making under risk and uncertainty, managerial theories and models of the firm.

ECON 305: Public Sector Economics (3 credits)

Prerequisite: ECON 201, ECON 202

This course covers the theory of public sector economics, that is, the role of the government in the functioning of the economic system. The course focuses on the topics, such as role of public sector, theories of public goods, externalities, distribution equity and economic welfare, concepts used in taxation, types of taxes and their shifting & incidence, resource mobilization, public expenditure evaluation, public debt, external debt modeling,

budget deficit and cost-benefit analysis of development finance.

ECON 306: History of Economic Thought (3 credits)

Prerequisite: ECON 202 and CGPA ≥3.0

This course intends to survey the evolution of economic ideas and main schools of thought that played an important role in the development of history of economic thought. The course will discuss the selected authors and their challenges in historical and institutional perspective. The course includes the evolution of Economics in ancient Greek and Roman medieval times; doctrine of Ibne Khaldun, Mercantilists, and Physiocrats. Marxists, Marginalists, Classical; Keynesian, Monetarists, and Institutionalists' contribution to economic theory will also be discussed

ECON 307: International Trade Theory and Policy (3 credits)

Prerequisite: ECON 201

This course is designed to introduce basic principles of international trade and policies to improve trade balance. Evaluation of international trade, Mercantilists' views on trade, theories like absolute & comparative advantage, standard theory of international trade, neo- classical trade theory, offer curve and terms of trade, factor endowments and Heckscher- Ohlin model, factor price equalization and Stolper-Samuelson theorems, HO Model and new trade theories, trade based on economies of scale, product differentiation, technological gap and product cycle models, impact of economic growth on international trade, impact of international trade policies on nation's welfare like tariff and its effects, quota and its effects, nontariff trade barriers, new protectionism, economic integration, customs unions, and free trade areas.

ECON 309: Econometric Methods (3 credits)

Prerequisite: ECON 300

This course covers advanced econometrics techniques at undergraduate level. It includes nonlinear regression models and approaches to estimate them; qualitative response regression models: LPM, logit and probit; panel data regression models: fixed effect approach and random effect approach; simultaneous-equation models: simultaneous equation bias, identification problem and approaches of their estimation (ILS, 2SLS).

ECON 311: Development and Growth Economics (3 credits)

Prerequisite: ECON 202

This course focuses on theory and the history of economic growth and development. It covers the role of economic institutions in development, structures and characteristics of developing/developed countries, growth models of Harrod-Domer, Solow-Swan, Kaldor and Joan Robinson. Moreover, issues of poverty, inequality, population, urbanization, education, health, agriculture and rural development are also part of this course.

ECON 313: Monetary Theory (3 credits)

Prerequisite: ECON 202

This course helps students to comprehend the monetary aspects of an economy by focusing on the determinants of demand and supply of money and role of financial institutions. The main topics are the nature of monetary economics, money supply process and definition of monetary aggregates, theories of money demand, microeconomic determinants of demand for money, testing the demand for money, monetary transmission mechanism, price surprises, central banking and the money supply.

ECON 315: Advanced Mathematical Economics (3 credits)
Prerequisite: ECON 103
This advanced course of mathematical economics helps students who want to pursue higher degrees in Economics. The main contents include homogeneous and homothetic functions, application of linear homogeneity, Cobb-Douglas production functions, dynamic and integral calculus, definite and indefinite integral, proper and improper integral, economic application of integration, dynamic economic models, solving differential and difference equations of various types, plotting phase diagram and trace phase trajectories, second order differential and difference equations, dynamic economic models of first order and second order, linear programming with varying techniques, nonlinear programming, Kuhn-Tucker conditions, application of linear and nonlinear programming, and optimal control theory.

ECON 320 Economics of Investment and Finance (3 Credits)
Prerequisite: ECON 203 OR Stat 101/Math 107.
This course introduces the theory and practice of investment and finance in economics. The course will cover the framework, tools and techniques for making financial and investment decisions. Specifically, it covers the topics related to time value of money, stock and bond valuation, capital budgeting, modern portfolio theory and risk-return relationship. At the end of the course, students should have a clear understanding of financial decision-making practices using excel.

ECON 322 Data Analysis for Economists (3 credits)
Prerequisite: ECON 203
Data analysis for economists is a course designed to equip students with the essential computational skills and tools necessary to excel in the field of Economics. In an increasingly data-driven world, the ability to harness the power of computing is essential for economists to conduct robust analyses, make informed decisions, and communicate their findings effectively. This course bridges the gap between economic theory and computational proficiency, empowering students to navigate complex economic problems using modern computational techniques. The course will cover fundamental software applications, and data analysis techniques to enhance students' quantitative and analytical skills in the field of Economics.

ECON 323 Digital Economics (3 credits)
Prerequisite: ECON 101 OR ECON 102
This course focuses on the analysis of markets, valuation of factors of production, changing nature of work and consumption patterns, big data and data industry, and monetary theory during the age of digital Economics, especially in the presence of both crypto and platform-based currencies as well as rising growth and advancement of fintech. It will also probe the scenarios of the creative economy within the context of prospective economic growth where each economy must compete in a globalized world for the sustainability of economic growth.

ECON 325 Islamic Economics (3 credits)
Prerequisite: ECON 100 or ECON 101 or ECON 102
This course is designed to introduce students to the basic principles and foundations of Islamic Economics. It will provide an alternative perspective to conventional economic systems and offer solutions to the core economic issues faced by the world today. Students will explore the ethical and moral dimensions of economic activities, wealth distribution, sustainability, and social justice. The main topics include Sharia-compliant economic and financial systems, the prohibition of interest and uncertainty, the distribution of wealth, Islamic financial instruments, their mechanisms, and ethical and moral practices in business and Economics. Additionally, the course covers monetary and fiscal policies, rules of taxation, and the role of government in market regulations.

ECON 395 Micro Data Analysis (3 Credits)
Prerequisite: ECON 203 OR STAT 101 /MATH 107 OR instructor's permission
This course has a broader scope and will be available to all FCCU students and students of other universities as per FCCU policy.
This course aims to introduce the process of evidence generation through data. The learners will be able to make informed decisions using data and to communicate their results effectively. The focus of the course is the practical application of micro-econometric methods based on cross-sectional and panel data of individuals, households, firms, regions, etc. The course covers data management in STATA, like; ordering of variables and observations, groups and subsets of data, comparison, and missing values. changing data values, data validity, data cleaning, outliers, combining and merging data files. The course also includes various econometric models like; count data, negative binomial distribution, and logit and probit modeling.

ECON 400: Issues in Pakistan Economy (3 credits)
Prerequisite: ECON 202
This course is designed to introduce leading issues of Pakistan's economy. The main feature of the course is that it covers economic issues with reference to the political and social environment of Pakistan. The strategy of the course will be class discussions on the selected readings. The main contents of the course include poverty and income distribution, state of inflation and unemployment, growth and development issues of major sectors of Pakistan's economy and role of fiscal and monetary policies in Pakistan. The course also covers the issues related to education, population, health, corruption, balance of payment, budget deficits and governance in Pakistan.

ECON 402: Project Planning and Appraisal (3 credits)
Prerequisite: ECON 201
This course is designed to equip the students of economics with capabilities required for preparation and execution of projects with high success. It covers project planning, its process, appraisal and evaluation with special reference to Pakistan. It includes technical, social, financial and economic analysis of projects; discounted measures of project worth, i.e., BC ratio, IRR, NPV etc.; techniques used in time and resource management like CPM, PERT and WBS, project monitoring and sensitivity analysis. Moreover, critical analysis of mega projects related to health, education, transport, irrigation, electricity and environmental preservation in Pakistan would be the part of this course.

ECON 403: Time Series Econometrics (3 credits)
Prerequisite: ECON 300
This specialized course focuses on time series data analysis. Main contents include times series techniques in econometrics: dynamic econometric models, autoregressive and distributed lag models, ARIMA modeling and forecasting, measuring the volatility in financial time series (ARCH and GARCH models), vector auto-regression (VAR), co-integration and error correction modeling.

ECON 404: Corporate Finance (3 credits)
Prerequisite: ECON 320
This course is designed to introduce students to financial instruments, and the process and analysis of investment in financial markets. Both the theory and practice of investment decisions, and the diverse securities used as investment tools to implement those decisions, will be addressed in this course. The modern tools of investment such as options and futures will also be introduced in this course.

ECON 406: Introduction to Game Theory (3 credits)
Prerequisite: ECON 201
This course applies microeconomics concepts within the context of firms/industry with focus on analytical tools to understand and consequently predict behavior in multi-person decision settings. Main contents include definitions and rules of games, games with perfect certainty, symmetric and complete information, mixed and continuous strategies, dynamic games with symmetric and asymmetric information, moral hazard and adverse selection, principal agent models, cooperative and non-cooperative games.

ECON 411: Development Policy (3 credits)
Prerequisite: ECON 311
The course will cover the process, tools and basic principles of policy formation in countries like Pakistan. The main aim of the course is to develop critical skills in students to analyze past development policies with the objective of learning lessons for the future. The course will discuss in detail future forces/drivers of development in a rapidly changing global world. The main contents of the course include issues and policies related to poverty, population, health, debt crises, monetary and fiscal management, agriculture and industrial development. A practical approach of the use of data analysis and application of economic and statistical concepts will be used to enhance the capabilities of students to formulate the right kind of policies for the social and economic development of a country like Pakistan.

ECON 413: Monetary Policy (3 credits)
Prerequisite ECON 313
An advancement after learning monetary theory, this course will deepen the use of monetary theory in policy design by covering these contents: Introduction to monetary policy, policy goals and instruments, monetary policy and macroeconomic models, monetary policy coordination, Tobin tax, market constraints and policy analysis in Keynesian models, monetary policy rules, price targeting vs. inflation targeting, optimal policy with endogenous contracts.

ECON 417: International Finance (3 credits)
Prerequisite: ECON 202
This course develops a specialized taste for financial matters among nations of the world through understanding and analysis of following concepts: balance of payments, foreign exchange markets, exchange rates, purchasing power parity theory, monetary approach to the BOP and exchange rates, elasticity approach to BOP, asset market model of exchange rates, macroeconomics of open economy and international monetary system, adjustments in BOP under fixed and flexible exchange rate systems, various adjustment policies to remove internal and external balances, impact of different policies (fiscal and monetary) on open economy through aggregate demand and aggregate supply curves under different exchange rate systems, evaluation of European Monetary and International Monetary systems.

ECON 421: General Equilibrium and Welfare Economics (3 credits)
Prerequisite: ECON 202 and CGPA ≥3.0
The course discusses the nature of general equilibrium analysis. Main topics include Walrasian model, general equilibrium and disequilibrium models, economic efficiency and Pareto principle, social welfare function and Arrow's Impossibility theorem. Moreover, income distribution and compensation principles, imperfect competition and efficiency, market based and Pareto solutions to public goods and externalities, market failure and theory of second best will be discussed in detail.

ECON 422: Macroeconomics Analysis (3 credits)

Prerequisite: ECON 202

This advanced level course in macroeconomics provides a rigorous framework for understanding modern macroeconomics. It covers long run economic growth, short run output and employment determination, areas of consensus and controversy among various schools, fiscal & monetary policies implications under classical, real business cycle and Keynesian school of thoughts; Monetary and fiscal policies policy in the open economy; Optimal monetary policy, competing strategies: targeting monetary aggregates or interest rates, debt sustainability, government debt and Ricardian equivalence, dynamic consumption theories and investment Theories.

ECON X95: Themes (1-3 credits)

Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

ECON 498: Internship (6 Credits)

The internship is offered to juniors/seniors with CGPA ≥ 2.75

Credit will be granted for a full-time internship of at least six weeks during the summer semester. Internship credit is not retroactive and must be pre-arranged with the Head of the Department. The students must provide verification of the completion of internship on the institution's letterhead from the head of the institution, not later than one week after such completion. The grading for internship will be done by the Chairperson based on the written report/viva voce by the student.

ECON 499: Research Project and Paper Writing (6 credits Spread over two semesters)

Prerequisite: ECON 302 and CGPA ≥ 3.3

This is a research *study* course and will be registered as 499a and 499b in two consecutive semesters of final year. The project must be approved by the department before its commencement. Students will conduct a research project under the prearranged supervision of a faculty member of the department on a topic of economic significance. The departmental committee will conduct a viva-voce examination of the students. The student will submit 3 hard copies as per undergraduate research guidelines available with the advisors.

DEPARTMENT OF EDUCATION

Introduction

FCCU's Department of Education was revamped in 2003 when the college returned to private ownership. It is gaining a reputation for being one of the finest Education Departments in the country. It offers a 4-year BS (Hons) degree in Elementary and Secondary Education.

Mission

Our mission is to send out into the field teachers who are fully prepared to meet the challenges of teaching in a constantly changing 21st century.

Bachelor of Studies (Hons) Education

The BS degree follows a liberal arts education framework. This provides every student the opportunity to explore the breadth of knowledge by taking courses in varied disciplines to fulfill the general education requirements and be better prepared to face the world. In addition, it provides every student with the opportunity to explore in depth the field of education as their area of concentration.

Graduates from this program are well prepared to face the challenges of the real classroom and its impact on young lives as they teach. A unique feature of this program is a full semester of teaching practice during the final year which provides the student-teacher with a real-world classroom experience. The student-teacher works in close association with the cooperating teacher at the school and the advisor from FCC. It helps the prospective teacher visualize his/her career. Our education graduates make a difference: they TEACH!

Program Objectives

1. To develop among students a comprehensive understanding of the field of education.
2. To enable students to identify complex problems prevailing in school education and conduct research studies to understand concerned phenomena and improve practices.
3. To help students integrate ideas, disciplines, perspectives, and contexts to understand complex educational phenomena and improve professional practices.
4. To enable students to identify areas of personal interest and motivate them to commit to professional excellence, life-long learning, teaching as a career, and educational research.

Program Learning Outcomes

1. Demonstrate concepts, theories, and models of the field of education that may include but are not limited to, teaching, learning, assessment, educational technology, educational research, counseling, and educational administration.
2. Conduct research projects to understand complex educational phenomena or solve educational problems.
3. Appl appropriate pedagogical approaches and strategies to cater to the learning needs of all students in mixed-ability classrooms.
4. Demonstrate integration of Information and Communication Technology (ICT) in their teaching and assessment strategies and other academic activities using innovative ideas.
5. Devise self-regulated learning plans to keep them abreast with advancements in the field of education and to make efforts to fill the gaps in educational phenomena.
6. Identify opportunities for career advancement and further education related to the field of education.

Requirements for the Major for a BST Ed:

A total of 48 credits are required: 18 credits in the core courses, 23 credits in the Education electives and 6 credits of Student Teaching Experience.

Requirements for the Major

Core Education courses: EDUC 110, EDUC 120, EDUC 240, EDUC 300, EDUC 350, EDUC 497, EDUC 498 and EDUC 499. The following courses from the Elective - Supporting Courses list should be studied (EDUC 310, EDUC 320, EDUC 330, & EDUC 345); two courses from the list Elective - Pedagogy Courses.

Minor in Education: A Minor in education requires a total of 18 credits including: EDUC 110, EDUC 120, EDUC 300
1 Course from EDUC 240 / 350 / 497
1 course from Elective –Supporting Courses list
1 course from Elective - Pedagogy Courses list

Core Course		
Sr. No.	Course Code - Course Title	**Credit Hours**
1	EDUC 110 - Foundations of Education	3
2	EDUC 120 - Educational Psychology	3
3	EDUC 240 - Technology in Education	3
4	EDUC 300 - Instructional Methods and Strategies	3
5	EDUC 350 - Classroom Management	3
6	EDUC 497 - Practicum I	3
7	EDUC 498 - Student Teaching Experience (Practicum II)	6
Electives - Supporting Courses		
Sr. No.	Course Code - Course Title	**Credit Hours**
1	EDUC 210 - Education Policies of Pakistan	3
2	EDUC 260 – Inclusive Education	3
3	EDUC 310 - Curriculum Development	3
4	EDUC 315 - Learning Theories	3
5	EDUC 320 - Introduction to Research Methods in Education	3
6	EDUC 330 - Educational Measurement and Evaluation	3
7	EDUC 335: Peace Education	3

8	EDUC 340 - Early Childhood Education	3
9	EDUC 345- Introduction to Guidance	3
10	EDUC 499 - Senior Research Project	3
Electives - Pedagogy courses		
Sr. No.	Course Code - Course Title	**Credit Hours**
1	EDUC 325- Teaching of Religious Education/Studies	3
2	EDUC 355 - Teaching English	3
3	EDUC 360 - Teaching Science	3
4	EDUC 370 - Teaching Language Arts	3
5	EDUC 373 - Teaching Reading	3
6	EDUC 380 - Teaching Mathematics	3
7	EDUC 390 - Teaching Social Studies	3

Course Descriptions

EDUC 110: Foundations of Education (3 credits)
Perspectives on economic, cultural, political, ideological, philosophical, aesthetic and psychological foundations of education, history of education in Pakistan.

EDUC 120/PSYC 175 *: Educational Psychology (3 credits)
Principles of Psychology as applied to the educational process, characteristics of the individual learner, the teacher, the classroom, methods and other relevant factors in the learning process, various stages of growth and development, brief introduction to psychological measurements and creativity in children.

EDUC 210: Education Policies of Pakistan (3 credits)
Various educational policies of Pakistan, analyses of the successes and failures of each with identification of probable causes, analysis of policies at the preschool, elementary, secondary, higher education and teacher education levels.

EDUC 240: Technology in Education (3 credits)
Prerequisite EDUC 120
Hands-on experience with computers and other technological applications in education, ways of integrating technology and the use of the internet with classroom teaching procedures in the content areas will be explored.

EDUC 260: Teaching Exceptional Children (3 credits)
Prerequisite: EDUC 120 or PSYC 100

Introduction to the teaching of exceptional children either exceptionally intelligent or with difficulties, strategies for use in a regular classroom setting, methods of identifying disabilities and giftedness, ways of finding available resources to facilitate the learning process.

EDUC 300: Instructional Methods and Strategies (3 credits)
Prerequisite EDUC 120, EDUC 240
Types of instructional methods and assessment strategies and best uses of each, discussions and practice in choosing and planning for the appropriate instructional methods, classroom arrangements, and management for each instructional method.

EDUC 310: Curriculum Development (3 credits)
Prerequisite: EDUC 120
A perception of what curriculum is as a progressive activity in the student's and teacher's lives, an international vision of curriculum and its wider application in a global society.

EDUC 315: Learning Theories (3 credits)
Prerequisite: EDUC 120
Cognitive development, learning facilitation, social perspectives, and intelligence, works of Maslow, Pavlov, Skinner, Erikson, Piaget, Vygotsky, Bruner, Wiener, Gagne, and Gardner.

EDUC 320: Introduction to Research Methods in Education (3 credits)
Prerequisite: STAT 100/101/102
Concepts and methods in research as applied to education, quantitative and qualitative research, criteria and procedures for selecting a problem, and research methodologies with application for real life.

EDUC 325: Teaching of Religious Education/Studies (3 credits)
Prerequisite: EDUC 120
The course will prepare pre-service teachers to support school students in reflecting on their religious experiences and religious identity and learn to interact and engage sensitively with their peers from different groups, religious or non-religious.

EDUC 330: Educational Measurement and Evaluation (3 credits)
Prerequisite: STAT 100/101/102
Concepts of measurement as they apply to testing and to the construction and evaluation of testing instruments, an understanding of how to participate competently in educational decisions related to measurement and testing.

EDUC 335: Peace Education (3 credits)
Prerequisite: EDUC 120
This course informs students about the theoretical, practical, philosophical, cultural, pedagogical, and curricular elements of Peace Education and inculcates an understanding of the theory and practice of effective conflict resolution education.

EDUC 340: Early Childhood Education (3 credits)
Prerequisite: EDUC 120
Areas of early childhood development include theories of development, discipline and guidance, and instructional methodologies for preschool children.

EDUC 345: Introduction to Guidance (3 credits)
Prerequisite: EDUC 120
This course will equip preservice teachers with the knowledge and skills to support

students' holistic growth and development during their school years and design appropriate program and intervention strategies to support students become aware of and deal with different situations affecting their academic performance and personal lives.

EDUC 350: Classroom Management (3 credits)
Prerequisite EDUC 120
Understanding of the dual roles of the teacher as an instructor and manager, strategies from various approaches to provide a rich repertoire of management choices, proactive, responsive, and supportive classroom management strategies.

EDUC 355: Teaching of English (3 credits)
Prerequisite: EDUC 120
This course will prepare students to teach English in Elementary and Secondary schools. The course will focus on English learning and teaching theory and its application in classroom practices (teaching, assessment, resource preparation, and reflection).

EDUC 360: Teaching Science (3 credits)
Prerequisite: EDUC 120
Curriculum concepts, methods, and materials for teaching science, the discovery or constructivist approach of teaching science.

EDUC 370: Teaching Language Arts (3 credits)
Prerequisite: EDUC 120
Development of skills in reading, writing, speaking, and listening from Class 1 through Class 8, standards for each area in each year, planning classroom management and methods for incorporating language arts across the curriculum, and the use of workshops for teaching language arts.

EDUC 373: Teaching Reading (3 credits)
Prerequisite: EDUC 120
Methods of teaching reading, classroom management for teaching individuals and small groups, methods of assessment for determining reading levels and progress of students, flexible grouping and scheduling for a variety of school situations and age groups.

EDUC 380: Teaching of Mathematics (3 credits)
Prerequisite: EDUC 120
Preparation in the teaching of Mathematics and components of Mathematics at the elementary level, organizing content, methodology, and preparation of support materials.

EDUC 390: Teaching Social Studies (3 credits)
Prerequisite: EDUC 120
Conceptual frameworks and insights into the effective teaching of History and Geography at the elementary level.

EDUC X95: Themes in Education (1-3 credits)
Sections: A-E of 1 credit F-J of 2 credits K-Z of 3 credits

The course explores themes in education keeping the current trends and practices in mind. It is more exploratory and experiential learning than simply listening to the instructor. Field visits and surveys will be conducted.

EDUC 497: Practicum I (3 credits)

Prerequisite: EDUC 110, EDUC 120, EDUC 240, EDUC 300 and EDUC 350
Practicum is regarded as the core climax or highlight of any teacher preparation program. Although the term practicum is generally understood as the school experience, which is often referred to as teaching practice, it has two phases, that is, the preparation phase and the school experience phase. “Practicum I” is the preparation phase of caps courses offered to undergraduate students. This course prepares BS (Education) students for Practicum II, which is the school experience phase of the practicum.

This course will facilitate students to revisit the fundamental concepts and procedures of classroom teaching and management. This course will assist the students in developing a range of professional skills and techniques and guide them to reflect on their roles as teachers and practices to improve their classroom teaching and management as well as their professional lives.

EDUC 498: Student Teaching Experience (Practicum-II) (6 credits) MAJORS ONLY
Prerequisite: For MAJORS: EDUC 497

An extended field-based course with real-life experience in the classroom. All aspects of the teaching-learning process will be looked at from a practical perspective.

EDUC 499: Senior Research Project (3 credits)
Prerequisite: EDUC 320
Students will select a problem from the field of education and go through the process of educational research under the guidance of a mentor. Research findings will be applied to actual scenarios.

DEPARTMENT OF ENGLISH

Introduction

The Department of English was established in 1901. Renowned scholars like Prof. Rev. H. D. Griswold, his son, Dr. Griswold, Dr. F. M. Velte, Dr. E. J. Sinclair, Dr. S. L. Sheets, Prof. Eric Cyprian, Prof. Z. Bede, Prof. Talat Mehmood and Prof. Gillani Kamran have been associated with this department. The graduates of the English Department have distinguished themselves in the public life of the Indo-Pak subcontinent as civil servants, judges, lawyers, diplomats, writers, poets, politicians and entrepreneurs.

The department offers a Bachelor of Studies (Hons) degree in English and is part of the Faculty of Humanities.

Bachelor of Studies in English Literature

The Baccalaureate program trains the students for lifelong effective communication in English. It teaches them to connect literature with history, theology, culture, and civilization and interpret them in the perspective of liberal education. The main objectives are to broaden the vision of students, to enlighten their minds, and to give them deep insight into literature. This program opens various options for English majors and prepares them for pursuing postgraduate research in language and literature within and outside Pakistan. They also have the option of joining various careers such as newscasting, teaching, civil services, law, journalism, editing, creative writing and publishing.

Mission of BS English literature Program

The mission of BS English literature is to educate and train students for long life effective communication in English by connecting English literature with history, theology, culture and civilization and interpret them in the perspective of liberal arts education to prepare them for careers such as teaching, creative writing, civil services, journalism, newscasting, editing and publishing.

Objectives BS English Literature Program

1. To enlighten the minds of students through interaction and interpretation of literary texts
2. To provide them with a deep insight into a wide variety of various genres of literature.
3. To broaden the vision of students through critical analysis
4. To equip students with research skills in favor of writing, presenting and publishing well documented research

Program Learning Objectives (PLOs) for BS English Literature

1- Critical Reading:
The students as active readers will express their appreciation for ambiguity and interpret multiple perspectives.

2- Appraisal of Literary Texts:
The students will appraise the diversity of literary and social voices within – and sometimes marginalized by – major traditions of literature in prose.

3- Application of Theory:
The students will read works of literary, rhetorical, and cultural criticism, and apply ideas from these texts in their own reading and writing.

4- Interpreting Poetry:
The students will appraise, interpret and analyze various forms of poetry in different eras.

5- Employing Skills:
The students will identify topics, formulate questions for productive inquiry, use appropriate methods and sources for research, evaluate critically the sources they find, and employ their chosen sources effectively in their own writing.

6- Practicing Core Values:
Students will demonstrate integrity by writing plagiarism-free academic papers and will also abide by the FCCU core values.

Values

Students will demonstrate integrity by writing plagiarism-free academic papers and will also abide by the FCCU core values.

Requirements for the Major in English Literature

A total of 48 credit hours.

Major Core Courses: ENGL 201, LING 217, ENGL 301, ENGL 307, ENGL 315, ENGL 403, ENGL 498, ENGL 499
Minor Core Courses: ENGL 201, ENGL 301, ENGL 307, ENGL 315

The remaining courses will be chosen depending on personal interests and career goals.

Note: **Linguistics courses can also be taken by students majoring in English Literature*

Requirements for the Minor in English Literature

- A total of 18 credit hours.
- A minor in English is open to students from all disciplines that have a minimum CGPA of 2.50.

Minor Core Courses	ENGL 201	ENGL 301	ENGL 307	ENGL 315

The remaining four English Literature courses will be chosen depending on personal interests and career goals. The two elective courses are supposed to be 300 and 400 level courses.

Bachelor of Studies in Linguistics

The study of linguistics draws on methods and knowledge from a wide range of disciplines. Pursuing a major in linguistics allows students to study language scientifically and at the same time exposes students to related disciplines, all while developing insight into one of the most intriguing aspects of human knowledge and behavior. Majoring in linguistics means that students will learn about many components of human language, including the physical properties and structure of sounds (phonetics and phonology), words (morphology), sentences (syntax), and meaning (semantics). It involves looking at how languages change over time (historical linguistics); how they vary from situation to situation, group to group, and place to place (sociolinguistics and dialectology); how people use language in context (pragmatics); and how people acquire or learn language (language acquisition). Students will learn to make insightful observations, formulate and test clear hypotheses, develop arguments and draw conclusions, and communicate their findings to a wider community. A Linguistics major is therefore well equipped for a variety of jobs.

Mission of BS Linguistics Program

The mission of BS Linguistics is to educate and train students to study and interpret different aspects of language scientifically at micro and macro levels by exposing them to a wide variety of disciplines such as psychology, sociology, history, education,

anthropology, philosophy, computer science, and to prepare them for careers in teaching, translation, creative writing, civil services, journalism, newscasting, editing and publishing.

Objectives BS Linguistics Program

- To develop a comprehensive understanding of linguistic inquiry.
- To enable students to identify, relate and emphasize the importance, role, and function of language in other disciplines and vice versa.
- To introduce students to the theoretical and practical aspects of the English language.
- To equip students with research skills in favor of writing, presenting and publishing well documented research.

Program Learning Objective

1- Application & Analysis of Language:
The students will apply and analyze the theoretical concepts and empirical findings of modern linguistics, its relationship to other disciplines and describe the synchronic and diachronic changes that English has been going through.

2- Appraisal & Application of Speech Sounds:
The students will appraise the production, perception and transmission of speech sounds and their meaningful combinations in various varieties of English.

3- Interpretation of Linguistic Structures
The students will identify, analyze and interpret the internal structure of words, phrases and sentences and the rules that govern them

4- Demonstration of Inter & Intracultural Communication
The students will describe and differentiate meanings in real and contextual settings through various theoretical approaches of meaning formation and demonstrate insight into inter and intracultural communication.

5- Interdisciplinary Linguistics:
The students will theoretically analyze and critique the role of psychology, sociology, power, dominance and social inequalities in acquiring, learning and using language effectively.

6- Employing Linguistic Skills:
The students will identify topics, formulate questions for productive inquiry, use appropriate methods and sources for research, evaluate critically the sources they find, and employ their chosen sources effectively in their own writing.

7- Practicing Core Values:
The students will demonstrate integrity by writing plagiarism-free academic papers and will also abide by the FCCU core values.

Requirements for the Major in Linguistics

A total of 48 credit hours with the following core courses:
LING 207, LING 217, LING 301, LING 302, LING 304, LING 319. LING 410, LING 413, LING 495, LING 498, LING 499

The remaining courses will be chosen depending on personal interests and career goals.

Requirements for the Minor in Linguistics

A total of 18 credit hours consisting of the following courses:
LING 217, LING 301, LING 302, LING 304, LING 319, LING 410, LING 413

Course Descriptions

WRCM 101: Writing and Communication I (3 credits)
The first course in the Writing and Communication Program asks students to choose and work through a current controversy in Pakistan or the world. Along the way, students will learn the basics of academic writing, from constructing an argument to fashioning a

paragraph to analyzing opposing arguments in a short essay. Students will also learn how to listen to main ideas, what makes up a good speech, and how to present their papers.

WRCM 102: Writing and Communication II (3 credits)
Prerequisites: WRCM 101
In the second course of the Writing and Communication Program, students will build on what they learned in the first course while learning how to research and incorporate academic sources. In the first of two major papers and presentations, students will analyze and report the history and status quo of a current controversy in Pakistan or the world. The second paper and presentation build on the first with the addition of the student's view on and possible solution for the controversy. For the second major presentation students will analyze their audience beforehand in order to craft and deliver a maximally persuasive speech in the PechaKucha style.

ENGL 110: Contemporary Short Story (3 credits)
Prerequisites: WRCM 101, WRCM 102
This course is an introduction to major short story writers in English and American literature; emphasis on familiarity with composition, technique, style and thought process; understanding the elements of a short story that make it different from other forms of prose fiction.

ENGL 150: Structure of the English Language (3 credits)
Prerequisites: WRCM 101, WRCM 102
The emphasis of this course is to familiarize students with the concepts of language universals in understanding grammatical structure of languages focusing on the structure of the English language in particular. It focuses on the inflectional forms of words, types of phrases, types of clauses and principles of sentence construction; construction of tree diagrams at the phrase and simple sentence level; developing more sound concepts of grammar for further study in the field of Linguistics.

ENGL 175: Critical Thinking and Reading (3 Credits)
Prerequisites: *WRCM 101*, *WRCM 102*
This foundational course serves as an introduction to a wide range of methods for literary, critical and textual reading. This course aims to provide the students with a set of interpretive tools which they can use to analyze and critique texts in English classes and beyond. This course has a special emphasis on developing close reading and critical analysis of the text through close reading. Emphasis will be on speed reading, previewing, skimming, scanning, brainstorming and developing extensive reading habits in the students.

ENGL 201: Introduction to English Literature (3 credits)
Prerequisites: WRCM 101, WRCM 102
This course revolves around the basic questions on the nature and function of literature, interpretation, discussion and evaluation of literary texts through a diverse and rich variety of selections from English and American literature.
Note: This course is a prerequisite for all 200-300 level literature courses.

ENGL 204: English Prose (3 Credits)
Prerequisites: ENGL 201
This course will give an overview of English non-fiction prose. It is a selective survey of representative works of (non-fiction) prose in order to create a critical understanding of what distinguishes one form of writing from another; the impact of the times and movements that bring about change in a writer's form, thought, and style. In fact students will be exploring the development of philosophical and critical thoughts of the English

nation in this course.

ENGL 207/MCOM 207*: Media and Literature (3 credits)
Prerequisites: WRCM 101, WRCM 102
This course centers around the role of media as a means of understanding literature; importance of language and literature with reference to specific social and cultural issues.

ENGL 214: 18th Century Novel (3 credits)
Prerequisites: WRCM 101, WRCM 102
This course provides an overview of prominent English novelists; literary criticism; appreciation of the themes of different English novels both in their historic milieu and from the perspective of current language philosophies.

ENGL 220: Partition Fiction (3 credits)
Prerequisites: ENGL 201
This course aims to introduce students specifically to short stories and novella about Partition. These fictional works record the trauma of this historic moment witnessing the mass migrations, brutality and psychological trauma of the division. The authors studied during this phase will include Manto, Khushwant Singh, Bapsi Sidhwa, Joginder Paul, Jahanara Shahnawaz. This will include stories written in English and translated into English from other languages.

ENGL 250: Creative Writing (3 Credits)
Prerequisites: WRCM 101, WRCM 102. In addition, students will have to present their writing portfolios to the instructor before they are allowed to register for this course.
This course is taught in a workshop format. Students will bring original works of poetry and fiction to be critiqued by the workshop facilitator and fellow peers. The works will be produced and revised based on the critical analysis of relevant poetry and fiction texts, discussions, and lectures by guest speakers on literary craft. As part of the course requirements, the students will attend a certain number of literary events and activities. They will be assessed for attendance and participation in these events.

ENGL 270: City & Story (3 credits)
Prerequisites: ENGL 201
What is a city? What do cities mean? Who creates, maintains and owns a city? How does a city shape an individual, a people, a country? In a global context today, are cities sites of despair, turmoil or resistance? This course employs an interdisciplinary approach and aims to familiarize students with major cities of the ancient, medieval, and modern Indian subcontinent through the lens of literature (storytelling). Each study of a selected city is paired with a literary text and a scholarly work in order to impart a richer understanding of the subcontinent upon the student. This course follows a chronological order and some of the cities explored here are Kandahar, Delhi, Lahore, Peshawar, Dhaka etc.

ENGL 290: Language and Gender (3 credits)
Prerequisites: LING 217
This course explores the relationship between language and society, with particular reference to the differences in linguistic behavior between women and men, from a cross-cultural perspective. Topics include a historical overview of linguistic stereotyping and discrimination, a sociolinguistic analysis of sex differentiation and conventions of politeness. Sex differences reflected in discourse and their social consequences are also examined. In addition, the course will consider issues concerning language structure and ideology, including sexism in English and the relative success of gender-based language reform efforts.

ENGL 294: Translation Studies (3 credits)
Prerequisites: LING 217
The course introduces some of the major concepts in translation theory and focuses on their application to translation practice. It deals with the issues of equivalence, formal properties of texts as objects for analysis at linguistic, semantic, discourse, and pragmatic levels, and emphasizes the importance of adopting a functional approach to translation practice, and a descriptive and sociological approach to translation research. Students will be provided with a comprehensive overview of the discipline of translation studies, making them aware of both the diversity of possible approaches to translation and the relationships between these approaches.

ENGL 300: An Introduction to Russian Literature (3 credits)
Pre-requisites: ENGL 201
Russian Literature is believed to have influenced World Literature in terms of philosophical thoughts, emotions and most importantly on Russian identity and Nationalism. This course will focus on writers whose works were signified as voices of the land, produced from the late 18th century to 19th century. It will examine the main socio-political and cultural trends in Russia that influenced writers such as Pushkin, Gogol, Chekov, Dostoevsky and Tolstoy. Russian Romanticism (patriotism/nationalism), Sentimentalism, Cosmism and Realism as trends will be emphasized. This course includes all genres of literature i.e. Prose (novel & short story), drama and poetry and all texts will be studied in English. In this course students will explore the historical significance of Russian literature and trace its development into the nineteenth century.

ENGL 301: The 19th Century English Novel (3 credits)
Prerequisites: ENGL 201
This course introduces and explores the characteristics of Victorian culture, literature and history, exploring ambition, enlightenment, social, moral and economic issues of the 19th century.

ENGL 303: Science Fiction (3 credits)
This elective course has been specially designed for the students of English Literature, Computer Sciences, and Natural Sciences to reflect upon the entanglements of science, technology, and humanity in the contemporary world. It is aimed at informing and educating students about the dynamics of the genre of Science Fiction by critically analyzing seminal novels written in the 19th, 20th, and 21st centuries. During the classes, students will discuss the repercussions of the increasing enmeshment of humans with technology and its possible futures.

ENGL 307: Classical Drama (3 credits)
Prerequisites: ENGL 201
This course brings a critical awareness of Drama as a genre or a tradition with focus on its origin in Greece and onwards. The course aims to review and analyze the nature and function of ancient Greek and Roman drama in its theatrical, historical and social context. The texts will be selected from the major dramatists such as Aeschylus, Sophocles, Euripides, Aristophanes, Seneca and others from classical antiquity whose works are preserved. Through all of this, our goal will be to reconstruct as fully as possible the evolution of ancient play-making. The main objective will be to integrate, as broadly as possible, the picture we receive of classical drama into that of ancient history, society and thought.

ENGL 308: Elizabethan Drama (3 Credits)
Prerequisites: ENGL 201
This course explores English drama from the Elizabethan to Jacobean Age, with attention

to such playwrights as Lyly, Kyd, Marlowe, Ben Jonson, and Shakespeare. Plays will be selected from these playwrights to create a critical awareness in the students regarding the questions of genre, tradition, innovation and elements of universality in these Elizabethan plays.

ENGL 310: British Romantic Poetry (3 Credits)
Prerequisites: ENGL 201
This course especially covers a critical survey of the Romantic Movement and prominent romantic poets. It will describe the distinctive position that the English Romantic poets celebrate in this movement. This course may include selected poems by the romantic poets such as William Blake, William Wordsworth, S.T. Coleridge, John Keats, P.B. Shelley and others.

ENGL 315: Poetry I (3 credits)
Prerequisite: ENGL 201
In this course, students will explore the history of English poetry, looking at its changing forms in the Elizabethan, Jacobean, Restoration, Neoclassical, Reflective, Pre-Romantic, Romantic and Victorian ages.

ENGL 317: Existential Philosophy and Literature
Prerequisite: ENGL 201
The most distinctive focus of existentialism (or existential philosophy) is the nature and meaning of human existence. Why do we exist? What is our purpose in life? What is the ultimate meaning of life or is there even one to think about? These questions are intriguing as well as mind-boggling to say the least. These questions sometimes lead us to what is infamously known as “Existential Crisis”. But why does this crisis arise in the first place, is an overarching idea waiting to be dissected on an individual as well as collective level. While many avenues exist within Existentialism.

ENGL 318: The Art of Truth”: Creative Nonfiction (3 credits)
Prerequisite: ENGL 201
This course will familiarize students with contemporary examples of creative nonfiction, also called the fourth genre or narrative nonfiction. Students will read different sub-genres of CNF like the personal essay, literary journalism, creative cultural criticism, and nature and travel writing etc. They will also try their hand at writing in these sub-genres.

ENGL 322: American Prose and Fiction (3 credits)
Prerequisites: ENGL 201
This course is designed to conduct an in-depth survey and exploration of leading developments in fiction and non-fiction prose in the United States in various ages.

ENGL 323: American Poetry (3 Credits)
Prerequisites: ENGL 201
The course offers a general survey of American poetry representing various poets such as Whitman, Emily Dickenson, Robert Frost, Sylvia Plath, Adrienne Rich others.

ENGL 325: American Drama (3 credits)
Prerequisites: ENGL 201
This course offers a selective study of the cross section of American playwrights. The idea is to develop a taste and understanding for American Drama in particular. This course aims to include selected plays from the works of playwrights such as Arthur Miller, Tennessee Williams, Eugene O'Neill, Edward Albee, Sam Shepherd, August Wilson, Thornton Wilder and others.

ENGL 328: Trauma Literature and Theory (3 credits)
Prerequisites: ENGL 201
The purpose of this course is to establish a foundational understanding of Trauma Literature & Theory in the students. To achieve this purpose, the students will be introduced to Trauma Literary and theoretical texts in English featuring geographical and historical contexts. The texts to be studied in this course are selected from the works of Jonathan Safran Foer, Mohsin Hamid, Don DeLillo, Kamila Shamsie, Khaled Hosseini, Nadeem Aslam, Sorayya Khan, Basharat Peer, Dan Fesperman and others. All these writers, in their works, have depicted the various aspects of trauma including its traces from the Holocaust, WW II, Indian Partition 1947, Hiroshima/Nagasaki atomic explosions, the separation of the East & West Pakistan, Kashmir Conflict and 9/11 attacks followed by terrorism, militancy and War and Terror.

ENGL 331: Research Methods for English Literature and Language (3 credits)
Prerequisites: ENGL 201
This Course focuses on the techniques of writing professional abstracts or proposals; thesis statement and contention; finding appropriate topics for research papers; preparation and annotation of bibliographies; writing reviews from critical and analytical perspectives; using theoretical framework, getting into the process of writing the first or later drafts; editing research according to academic requirements. For those students who are interested in pursuing a thesis, this course creates a foundation for them for preparing and submitting a proposal for a research paper, which is the final requirement for ENGL499: Thesis.

ENGL 350: Advanced Creative Writing (3 credits)
Prerequisites: ENGL 250
This course is developed for students who wish to improve their writing of fiction, literary nonfiction, and poetry in a creative, professional studio arts workshop atmosphere. Please note that this course must be capped at 15 students approximately.

ENGL 400: Re-Contextualizing Shakespearean Drama (3 credits)
Prerequisites: ENGL 201, ENGL 308
This course offers our students the chance to review and critically approach selected Shakespearean plays. The course focuses on understanding the socio-political context of the plays and their relevance to the local context and influences on local literature. The course will include selected well acknowledged Shakespearean plays (both tragedy and comedy).

ENGL 401: Forms of Fiction, Nonfiction, or Poetry
Prerequisites: ENGL 201
This course is designed for students who wish to learn more about the narrative structures and forms that underpin different literary genres. It is open to students interested in developing both creative writing and critical skills. Our major focus will be on two literary traditions from two different geographic regions: Latin America and Africa. Primary studies will focus on writing techniques with a special focus on learning the techniques the writers adopt to develop character, plot, voice, and structure. Also, varying literary histories and traditions will be presented and discussed.

ENGL 403: Contemporary Literary Criticism (3 credits)
Prerequisites: ENGL 201
This course explores the latest trends in literary criticism and theory to trace influence and interaction of contemporary literary criticism within the diverse range of literary genres.

ENGL 404: Poetry II - Contemporary Poetry in English (3 credits)
Prerequisites: ENGL 201
In this course students will study Modern poetry, Postmodern poetry, and Poetry written in the 21st century. The course will not be confined only to English poetry written by American and British poets. It will cover the poets of other English-speaking countries like Canada, Australia, and New Zealand etc. It will also include poetry in English by poets from non-English-speaking nations and translated works in English.

ENGL 405: Modern & Post-Modern Drama (3 credits)
Prerequisites: ENGL 201
This course will be taught as a series of seminars exploring the shift from modernist to postmodernist theater from the early 20th to the 21st century. It examines several plays that address important issues of modernity and postmodernity, both in their form and content. This course will explore the contribution and response of drama to social and cultural debates around the role of art, gender and sexuality, the family, the state and the nation. The students will study a different play each week, give a short presentation in one of the seminars and engage fully in the discussion of all the texts. The activities include study of plays by such dramatists as Beckett, Chekov, Ibsen, Bond, Miller, Williams, Pinter, Soyinka with background readings from other dramatic literatures.

ENGL 406: Literature, Gender, Sexuality (3 Credits)
Prerequisites: ENGL 201
"Literature, Gender, Sexuality" aims to practice reading some renowned and popular literary works from gender diversity perspective (such as feminist, queer and trans studies). Following any acknowledged yet debatable definition/ description of gender (man-masculine, woman-feminine, transgender-androgynous, etc.) and sexuality (hetero, homo, bi, trans, etc.), the course highlights historical and socio-cultural constructs along with discursive [mis]conceptions that tend to multiply marginalization and increase psychological complexities. In a way, the course foregrounds literary representation of complex and at times tabooed gender identifications that are commonly blocked by dominant mindsets in a society. Introductory in spirit, critical readings selected for this course enhance debate around the aforementioned controversy related to literary representation of gender and sexuality.

ENGL 407: Pakistani Literature: Contemporary Political Context (3 credits)
Prerequisites: ENGL 220
This course will focus on the Pakistani Literature produced in the past three decades. The overlapping themes and concerns related to diaspora, hybridity culture, and gender will be discussed. Emerging political issues such as the Kashmir crisis, post 9/11 responses from Pakistan, neo-colonialism within the independent states, and marginalization of minorities will be explored. Some of the authors discussed in this course will include Basharat Peer, Wajahat Ali, Mohammad Hanif, Mohsin Hamid and Kamila Shamsie and others.

ENGL 408: Modern and Postmodern Fiction (3 credits)
Prerequisites: ENGL 201
This course explores the development of avant-garde British Modern and Postmodern fiction writers. Selected novels written by Joseph Conrad, James Joyce, Virginia Woolf, Iris Murdoch, and Don DeLillo will be discussed in the classes. Novels will be selected from the larger oeuvre of these authors to create a critical awareness in the students regarding the questions of genre, tradition, innovation and elements of universality in these texts.

ENGL 409 Transcultural Literature (3 credits)
Course Prerequisite: ENGL 201- Introduction to Literature
In an era of globalization and mass migration, Transcultural Literature crosses political

borders to highlight the interconnectedness of human experience. It challenges hegemonic discourse and encourages the students to explore culturally diverse perspectives via textual analysis. With its special focus on empathy, the course challenges individualistic, self-centered, and oppressive metanarrative of success and existence. It aims at connecting everyday experiences with global implications and universal humanistic appeal via literature. In this course, the students will be familiarized with a range of transcultural writers and will get an opportunity to explore transculturality in the regional literature as well. Including a range of genres, eras, and culture, this course navigates complexities in ideas like home, migration, identity, freedom, and belongingness. The goal is to have a scholarly understanding of transcultural literature alongside highlighting its humanistic appeal.

ENGL 410: Introduction to Digital Literary Studies (3 credits)
Prerequisites: ENGL 201
Literary Studies have evolved with the advent of digital technology and electronic gadgets. This has helped the literary scholarship to discover newer ways of approaching Literature. This course aims to familiarize the students with the emergent contours of literary studies in the wake of the digital world and the ways in which literary studies are progressing alongside the advancement of technology. Secondly, the purpose of this course is to develop a digitally informed practice that may lead to an effective application of different digital tools by the students of Literature. The students will be dealing with the digitized forms of Literature such as digital literary texts, video adaptations of literary texts, digitized Folk Wisdom, and digital Literary Archives etc. This will encourage the students to use digital tools to produce new interpretations and hitherto untapped perspectives in Literary Studies. Thus, at baccalaureate level, this course will provide the students with a foundational understanding of Digital Literary Studies.

ENGL 430: Postcolonial Literature & Theories (3 credits)
Prerequisites: ENGL 201
The focus of this course is the analysis of literature produced in the former colonies of the European Empire including Africa, South Asia, Australia and Canada. The literature produced in these countries reflects on theorizing the issues related to power and domination, native/settler tussle, identity issues, conceptualizing diaspora, mimicry, ambivalence and hybridity. Literary analysis of fiction and poetry from postcolonial nations within the broader theoretical framework offered by postcolonial theorists.

ENGL 440/PHIL440*: Literature and Philosophy (3 credits)
Prerequisites: ENGL 201
The focus of this course is to trace the connections between two disciplines: Literature and Philosophy; students survey how writers make use of philosophical ideas, themes, vocabulary and language; study of how literary texts can focus on important philosophical issues; emphasis on both Philosophy in literature and Philosophy as Literature.

ENGL 445: Literature & Environment (3 credits)
Prerequisites: ENGL 201
Ecocriticism asks how the literary arts—one of the richest arenas for the practice of human imagination—does, has, or could shape environmental thought and action. We read critical environmental theory, literature and poetry, and examine selected films to pry open new and urgent questions about the past and present, to build alternative visions for the future. Grounded in the research and writing methods of literary studies, this course also asks participants to be global citizens and polymaths – to think across national borders and disciplinary boundaries – to open up earthy and alternative ways of interpreting the ecological crisis that are arguably relevant to students in any study program. Practically speaking, the course is broken into two parts “Ecocritical Theory” and “Ecocritical Reading”. In the first half of the course we will read and investigate a variety of contemporary ecological theoretical

writings, including *Ecocriticism: A History* by Pippa Marland, *Literature and Environment* by Lawrence Buell, Ursula K. Heise, and Karen Thornber, *Writing the Anthropocene: An Introduction* by Tobias Boes and Kate Marshall; students will also be introduced to important conceptual terms such as “the Anthropocene” and learn strategies for critiquing the distinction between nature and culture. The second part of the course encompasses the reading of selected eco-conscious literature from around the world.

ENGL 496: Research Seminar Series (3 credits)
Pre-requisites: ENGL 201, ENGL 331
The course intends to prepare students for conducting research independently and being able to learn from and participate in academic discussions. Weekly seminars led by faculty, varying in topical content and scope according to faculty interest. A graduate student tutor will be assigned to each research seminar to assist in writing the weekly review, every phase of the research and writing process. The faculty member will also be responsible for preparing the students for writing one academic paper as a final assignment at the end of this course. The assessment of this course will be based on attending 90% of the seminars, preparing one page brief for each seminar (graded), preparing a set of questions and writing one term paper based on the experience of each seminar attended and presenting it in front of the entire group. The research seminar culminates in the writing of a major research paper by each student enrolled. The faculty instructor will grade students' research papers. The seminars organized each semester will revolve around a single theme related to the literary, socio-political and critical debates surrounding one topic.

ENGL 498: Internship Program (3 credits)
Minimum 2.75 CGPA required, and it's recommended that students opt for the internship in their junior year or must have completed 70 credit hours (General Education Literature courses).
ENGL 498 is an Internship Program offered by the department of English during the Summer semester. The objective is to expose students to the job market. This course will provide them the opportunity to enhance their English language and academic skills at a broader scale. The course also helps them understand how they can utilize their degree by joining various professional domains.

ENGL 499: Thesis (3 credits)
Mandatory final Assessment for English Literature Majors
Prerequisites: ENGL 331, ENGL 403
The students majoring in Literature will present a well-thought thesis, using primary and secondary sources to develop a critical, well thought and well-argued, theoretically apt 11, 000-word research paper (following the latest MLA style bibliography) under the supervision of the assigned instructor. The assessment will also include a viva assessed by an external examiner. The department will conduct an Internal Examination/entry test to select the students who can opt for English as Major. This examination will be conducted once every semester. The students who fail this exam will have the option of doing English Minor or re- appearing in the departmental exam for achieving the required assessment standard of the department.

ENGL X95: Themes (1-3 credits)
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

LING 207: History of English Language (3 credits)
Prerequisites: WRCM 102 – 39th AC
Built around the notion of 'all languages change over time', this course surveys the development of English language from its Germanic origins in the Anglo-Saxon period till today; emphasis is on tracking some of the linguistic changes English has undergone from its origin, including changes in words, spellings, sentence structure, meaning, and sound system; major periods in the history of English language from old English to Middle English and Early Modern English to Modern Standard English; keeping to the central notion of language variation and change, the present English accents and dialects, 'World Englishes', will also be briefly considered and their implications discussed for Future English.

LING 217: Introduction to Linguistics (3 credits)
Prerequisites: WRCM 102
Theoretical concepts and empirical findings of modern linguistics on a non-technical level; highlights of the connection between linguistics and other disciplines; study of language, understanding of related disciplines.

LING 301: Phonetics and Phonology (3 credits)
Prerequisites: LING 217
Awareness of the sound system of languages with particular emphasis on English; speech-sounds and how they differ; pattern-formation, changes in sounds according to context, stress and intonation affecting meaning; introduction to the system of phonetic transcription.

LING 302: Morphology and Syntax (3 credits)
Prerequisites: LING 217
This course covers the basic concepts of morphology and syntax. Though an overview of other approaches is provided, this course takes a functional approach in the analysis of the structure of words, phrases, and sentences. Morpho-syntactic structures, such as affixation, cliticization, simple and complex constructions, and information structure, are examined from a wide variety of languages to provide students with the skills they will need for the linguistic description and analysis of any language.

LING 304: Semantics (3 credits)
Prerequisites: LING 217
This course is a study of word meaning in human languages, especially English, and introduces students to the subtlety and richness of the cognitive capacities and explains how a cognitive system computes the meanings of complex linguistic expressions in an infinite variety of thoughts and experiences. Various theoretical approaches of meaning formation within semantics, including an analysis of the relation between words in a language system, words and concepts/objects, parts of words and sentences, approaches to context and inference, modality, componential analysis, reference, sense, mental images/representations, prototypes, dictionary definitions and lexical relations will be discussed in this course.

LING 306: Introduction to Digital Humanities for Linguistics (3 credits)
Prerequisites: LING 217
This course introduces the interdisciplinary field of Digital Humanities methods in linguistics. The course will explore the theories, methods, and tools that underpin the study of language and linguistics using digital technologies. It will also provide students with practical skills in digital analysis, as well as critical thinking and interpretation of results.

LING 308: Translation Studies (3 credits)
Prerequisites: LING 217
The course introduces some of the major concepts in translation theory and focuses on their application to translation practice. It deals with the issues of equivalence, formal properties of texts as objects for analysis at linguistic, semantic, discourse, and pragmatic levels, and emphasizes the importance of adopting a functional approach to translation practice, and a descriptive and sociological approach to translation research. Students will be provided with a comprehensive overview of the discipline of translation studies, making them aware of both the diversity of possible approaches to translation and the relationships between these approaches.

LING 309: Teaching English as a Second Language (3 credits)
Prerequisites: LING 217
Teaching reading and writing to second language students; research and theory; connections to first language/literacy models, techniques, materials and tasks that facilitate the acquisition of second language literacy.

LING 315: World Englishes (3 credits)
Prerequisites: LING 217
This course provides in-depth analysis of various varieties of English. The similarities and differences of multiple linguistics elements such as phonetic, phonological, semantic, syntactic, pragmatic and social among various varieties of English besides unparalleled growth of English as a language form the crux of this course.

LING 319: Pragmatics (3 credits)
Prerequisites: LING 217
Pragmatics helps us gain insight into inter and intra-cultural communication. This course studies conversations and different genres through the theories of pragmatics (strategies, routines, politeness, turn taking patterns, speech acts and motivations). The intended meaning will be broken down into speaker meaning, contextual meaning, extra-linguistic communication and relative distance. This course also helps with individual cultural nuances, experiences, and worldviews.

LING 320: Historical Linguistics (3 credits)
Prerequisites: LING 217
Historical Linguistics is a diachronic exploration of language change in terms of phonology, morphology, syntax, semantics and discourse. This course will focus on the theoretical frameworks which address why and how languages change within themselves and cross linguistically in the aforementioned areas of any language and the sociolinguistic influences which cause creole, convergence and language death.

LING 333: Bilingualism and Multilingualism (3 credits)
Prerequisites: LING 217
Bilingualism or multilingualism is an undeniable socio-psychological phenomenon which is accepted in every society. This course aims at introducing the role of socio-psychological aspects in being bilingual/multilingual and exploring theories, processes and issues involved in bilingualism and multilingualism. The concept of bilingualism and multilingualism will be viewed at three levels: individual, community and state. The students will learn about the process of code switching and mixing language in oral communication at individual level, the intervening factors which make a group give up its ancestral language and shift to a new one at community level and the language planning and policies at government level which support or hinder bi/multilingualism.

LING 340: Language and Gender (3 credits)
Prerequisites: LING 217
This course explores the relationship between language and society, with particular reference to the differences in linguistic behavior between women and men, from a cross-cultural perspective. Topics include a historical overview of linguistic stereotyping and discrimination, a sociolinguistic analysis of sex differentiation and conventions of politeness. Sex differences reflected in discourse and their social consequences are also examined. In addition, the course will consider issues concerning language structure and ideology, including sexism in English and the relative success of gender-based language reform efforts.

LING 343: Language Variation and Change (3 credits)
Prerequisites: LING 217
This course combines aspects of historical linguistics and sociolinguistics. The social factors driving language change as well as the typological constraints limiting language change are discussed and exemplified through real-world case studies. Other topics include dialects, pidgins and creoles, language maintenance, and quantitative analysis techniques.

LING 353: Second Language Acquisition (3 credits)
Prerequisites: LING 217
The course introduces students to the principal findings, concepts, and models in the field of first and second language acquisition. The pivotal question addressed is: how (healthy) children acquire grammar (including structure of sounds, words, and sentences) of their native language in a relatively short period of time apparently without extensive external assistance; emphasizing primarily on phonetics, phonology, morphology, and syntax, the course surveys and examines theories that have been proposed to explain the observed developmental phenomena in these domains. Issues related to second language acquisition, particularly the ways it differs from first language acquisition, shall also be briefly discussed.

LING 370: Language, Culture and Identity (3 credits)
Prerequisites: LING 217
The course aims at developing an understanding of what constitutes identity and how it is related to or shaped by language and culture. The course also seeks to conceptualize views of language, literacy and cultural practices in different contexts. Some topics that will be discussed include types of identity (religious, ethnic, linguistic, cultural, and national), the issue of identity in multicultural societies, identity crisis, language attitudes, ethnic conflicts, linguistic conflicts, linguistic inequality, linguistic imposition, cross-cultural communication and culture shock.

LING 379: Language Planning and Policy (3 credits)
Prerequisites: LING 217
This course explores the main theories and issues of language planning and policy, a field that continues to grow in importance due to migration, greater recognition of minorities, and technological advances. It examines the ideologies behind language planning and policy as well as their social, political, educational, and historical consequences. This course also delves into how the spread of English has affected the language policy of various countries around the world. In addition, students will receive insight into language maintenance and revitalization. While examples from around the world are discussed in this course, special focus is given to the policies and planning related to the languages of Pakistan.

LING 410: Critical Discourse Analysis (3 credits)
Prerequisites: LING 217
This course aims to determine critical discourse analysis, its aims, special methods, and theoretical foundation. CDA mainly focuses on the study of power, dominance and social inequality using theoretical and empirical approaches in texts and non-verbal communications, while providing information as to how they are constructed through social relations, identity, knowledge and power in any written and spoken text in communities, cultures and literature. This makes it a highly trans-disciplinary course which helps to critically analyze both talk and text.

LING 413: Sociolinguistics (3 credits)
Prerequisites: LING 217
This course addresses the interdependence of language and culture in various sociological contexts and covers basic sociolinguistic theoretical models and methodologies including social network theory and ethnography. It also focuses on various aspects of human behavior and sociocultural interaction that affect language use, and explores diversity in language in relation to age, gender, region, social class, ethnicity and national origin. An exploration of attitudes and ideologies about the language varieties and choices with an emphasis on speech community, dialect and vernacular will be of particular importance to understanding this relationship in diverse cultures.

LING 414: Psycholinguistics (3 credits)
Prerequisites: LING 217
This course focuses on the psychological components of the English language. It covers areas such as lexical ambiguity, language comprehension, language production, language acquisition and methodology to understand and help change human behavioral patterns. Students will learn about the nature of language, how it is used, how it illuminates understanding of the properties of the mind and brain and has an influence on human language.

LING 415: Forensic Linguistics (3 credits)
Prerequisites: LING 217
This course prepares students to examine the complex relationship between language and law through a multidisciplinary investigation of spoken and written texts, linguistic behavior, forensic phonetics and legal issues/scenarios as they relate to detective investigations, criminal or civil disputes. The course content will be composed of theories, techniques and observations which are necessary to analyze linguistic evidence and understand characteristics of legal language based on a range of topically relevant areas, including dispute of meaning and utterance, speaker/author profiling, authorship analysis and attribution, voice/text comparison, plagiarism detection, forgery, language/behavioral crimes, and courtroom discourse analysis.

LING 422: Corpus Linguistics (3 credits)
Prerequisites: LING 217
This course aims to provide a general introduction to corpus-based language study by analyzing large digital collections of text (corpora). Students will explore the use and manipulation of language in society by analyzing and transcribing electronic texts used in conjunction with computer tools to uncover, quantify and exploit the patterns of linguistic variation by mainly looking at concordances, collocations and frequency lists within various genres

LING 429: Assessment in Second Language Acquisition (3 credits)
Prerequisites: LING 217
This course explores the theories and practices of language assessment and testing.

Students will examine, present and evaluate classroom activities and create various assessment tools in different contexts to understand the theoretical and practical implications of the construction, interpretation and utilization of tests of second/foreign languages.

LING 441: Language Documentation (3 credits)
Prerequisites: LING 217
This course covers the basic principles of language and culture documentation, including issues such as how to collect data, choose proper equipment and use linguistic software. In this course, students learn how to properly plan, archive, and manage language data. This course also explores the different ethical and ideological issues related to documentation of endangered languages.

LING 442: Statistics for Linguistics (3 credits)
Prerequisites: LING 217
As usage-based approaches to linguistic analysis spread, it is increasingly important for linguists to be aware of the principles of statistics and be able to statistically model language data. This course provides students with the basic principles of descriptive and inferential statistics and focuses on the methods necessary for quantitative linguistic analysis, such as ANOVA, correlation analysis, linear and logistic regression, conditional inference trees, and principal components analysis. These methods are demonstrated with real linguistic data and the programming language R.

LING 450: Stylistics (3 credits)
Prerequisites: LING 217
This course helps in equipping students to critically appreciate literary and non-literary texts using literary stylistics. By studying the language of the text, the course helps students to determine the communicative strategies, linguistic style and the purpose of the writer. The course will inform how the language used in texts differs from everyday language in purpose and function by studying the patterns of lexis, phonetic and metrical organization.

LING 495: Research Methods in Linguistics (3 credits)
Prerequisites: LING 217
This course prepares students for their final thesis. It covers methods of linguistic analysis, appropriate research questions in linguistics, as well as data-collection techniques. In addition, students learn how to create literature reviews, how to use a linguistic theoretical framework in their data description, and how to organize and draft a linguistic research paper. This course also addresses ethical concerns in linguistic research as well as IRB processes.

LING 498: Internship (3 credits)
Prerequisites: Senior year students who have passed three core courses of linguistics
Students are advised to opt for the internship in their Senior year or must have completed 90 credit hours (General Education + 3 Linguistics core courses). LING 498 is offered in summer. It introduces students to multiple job opportunities and experiences. The internship will assist students in applying their newly gained knowledge of linguistics in a number of professional domains.

LING 499: Thesis (6 credits)
Mandatory final Assessment for Linguistics Majors
Prerequisites for Linguistics majors: LING 217, LING 495
Presenting a well-thought thesis, using primary and secondary sources, synthesizing and analyzing these sources to develop a critical, well-thought, well-argued and theoretically apt 8,000-10,000 words research paper (following the latest APA style of referencing and

bibliography) under the supervision of the instructor.

DEPARTMENT OF ENVIRONMENTAL SCIENCES

Introduction

Environmental Science is an interdisciplinary subject that draws upon knowledge from the Biological, Physical, Earth and Social Sciences. Study of the subject gives students the opportunity to find out how we, through our use of water, land, and energy resources, are affecting our surroundings and the world at large. Knowledge is also gained about the actions that could be taken to reduce, control and, in some cases, reverse the damage caused to the environment. A degree in Environmental Sciences from FCCU will not only make the graduate a very well-informed person about some of the greatest challenges faced by humanity today, but also point to several avenues for higher studies or gainful employment, both locally, nationally, and internationally, as worldwide demand for such professionals is growing. The Department of Environmental Sciences is part of the Faculty of Natural Sciences.

BS (Hons) in Environmental Sciences is based on core courses that will strengthen the student's understanding of the broad subject of Environmental Sciences. Students can then broaden their knowledge of a specific area by studying several courses out of a large selection of elective courses on offer. At the end of six semesters, students meeting the minimum requirements can either opt for an internship or a research project while others must take two additional courses from the electives.

The core courses, offered by the department and as cross-listed courses by other departments at FCCU, begin for example with an Introduction to the subject of Environmental Sciences and the Sources of Energy, after which the student is exposed to the Earth's Physical Realm and the Statistical Techniques used for data collection and analysis. The remainder of the courses cover Environmental Analysis, Ecology and Evolution, and Environmental Impact Assessment. The final selection of courses includes Environmental Chemistry, Microbiology, and Toxicology. The elective courses are similarly available in the Departments of Chemistry, Economics, Environmental Sciences, Geography, and Physics.

The Department of Environmental Sciences has local and foreign trained faculty who are well-qualified and highly experienced in teaching and researching the broad subjects making up Environmental Sciences. Their aim is to make studying Environmental Sciences at FCCU a good, rewarding, and meaningful experience.

Vision

The vision of the BS Environmental Sciences program is to contribute to the improvement of the environment globally but with an emphasis on Pakistan and to sustainable development through the efforts of its graduates.

Mission

The mission of the BS Environmental Sciences program is to prepare students for employment in environment-related areas and/or to pursue advanced degrees in environmental sciences related fields by imparting knowledge and developing understanding and relevant practical techniques and skills of environmental sciences.

Program Objectives

- To instill in our graduates an understanding of environmental (air, water, soil), chemical, waste management, energy and mineral resources, ecological and sustainability concepts.
- Inculcate in our students an understanding of the institutional framework regarding the formulation and implementation of environmental laws and regulations.
- Develop an understanding of the tools used for environmental risk assessment and

evaluation of the environmental impacts.

- To develop our student's critical evidence-based thinking and communication skills
- Instill in our students the knowledge and skills in an ethical manner that reflects the values of the discipline and the Core Values of FCCU.
- To prepare students for careers, citizenship, and environmental stewardship through experimental curricular and co-curricular opportunities.

Program Learning Outcomes

1. To instill in our graduates an understanding of environmental (air, water, soil), chemical, waste management, energy and mineral resources, ecological and sustainability concepts.
2. Inculcate in our students an understanding of the institutional framework regarding the formulation and implementation of environmental laws and regulations.
3. Develop an understanding of the tools used for environmental risk assessment and evaluation of the environmental impacts.
4. To develop our students' critical evidence-based thinking and communication skills.
5. Instill in our students the knowledge and skills in an ethical manner that reflects the values of the discipline and the Core Values of FCCU
6. To prepare students for careers, citizenship, and environmental stewardship through experimental curricular and co-curricular opportunities.

Program Learning Outcomes

1- Subject knowledge:
Demonstrate knowledge to characterize and analyze human impacts on the environment.

2- Methodology and skills:
Be able to design and evaluate strategies, methods, and technologies, to sustainably manage environmental systems and to remediate or restore degraded environments.

3- Subject knowledge of environmental laws and regulations:
Be able to appraise and implement environmental laws and regulations when addressing environmental problems.

4- Knowledge application on risk and impact assessment:
Be able to apply the scientific tools and techniques needed for environmental risk and impact assessment. Be able to apply the scientific tools and techniques needed for environmental risk and impact assessment.

5- Subject knowledge communication:
Be able to communicate complex environmental information to both technical and non-technical audiences through written reports and oral and visual presentations.

6- Higher order critical thinking:
Be able to demonstrate and apply critical thinking and problem-solving skills, allowing for the interdisciplinary nature of environmental sciences, to address environmental issues.

7- Values:
Be able to apply the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.

8- Knowledge application:
Be able to apply the acquired knowledge within an interdisciplinary context in solving environmental issues in different professional and research contexts.

9- Future:
Be able to identify/ describe/list opportunities for higher studies and career advancement in the field of environmental sciences.

Requirements for the Environmental Sciences Major

Students wishing to major in Environmental Sciences should take Core Courses as given below and, in addition to ENVR 498 or ENVR 499 (for students attaining a CGPA of 2.75 or more) sufficient number of courses from the Elective Courses to meet the degree requirements of the university. Students with CGPA of less than 2.75 should take two more

300 or 400 level courses from the Electives.

Core Courses (Major)

ENVR 151/PHYS 151*, ENVR 201, ENVR 210/GEOG 210*, STAT 212/ENVR 212/BIOL 212*, ENVR 311/CHEM 311*, ENVR 323/BIOL 323*, ENVR 345/GEOG 345*, ENVR 411, ENVR 413, ENVR 340/CHEM 340*

Elective Courses (Major)

ENVR 160/CHEM 160*, ENVR 211/PHYS 221*, ENVR 240/GEOG 240*, ENVR 252, ENVR 255/PHYS 255*, ENVR 304, ENVR 305, ENVR 306/ECON 303*, ENVR 308, ENVR 309, ENVR 314/GEOG 314*, ENVR 320/CHEM 320*, ENVR 330/CHEM 330*, ENVR 351/PHYS 351*, ENVR 402, ENVR 403, ENVR 404, ENVR 405, ENVR 406, ENVR 414, ENVR 415, ENVR 416, ENVR 417/GEOG 416*, ENVR 442/CHEM 442*, ENVR 451/PHYS 451*, ENVR 452/PHYS 452*, ENVR 474/GEOG 474*, ENVR 498, ENVR 499

Requirements for the Environmental Sciences Minor

Students wishing to have Environmental Sciences as a Minor should take Core Courses as given below and, a minimum of three (3) Elective Courses of 300 or 400 level.

Core Courses (Minor)

ENVR 201, ENVR 311/ CHEM 311*, ENVR 323/ BIOL 323*, ENVR 411, ENVR 340/ CHEM 340*

Elective Courses (Minor)

ENVR 304, ENVR 305, ENVR 306/ ECON 303*, ENVR 308, ENVR 309, ENVR 311/CHEM 311*, ENVR 314/GEOG 314*, ENVR 320/CHEM 320*, ENVR 330/CHEM 330*, ENVR 351/PHYS 351*, ENVR 402, ENVR 403, ENVR 404, ENVR 405, ENVR 406, ENVR 414, ENVR 415, ENVR 416, ENVR 417/GEOG 416*, ENVR 442/CHEM 442*, ENVR 451/PHYS 451*, ENVR 452/PHYS 452*, ENVR 474/GEOG 474*, ENVR 498, ENVR 499

Theme Courses

ENVR X95: Themes (1-3 credits)
Sections:
A-E of 1 credit F-J of 2 credits K-Z of 3 credits

*** Cross listed Courses:**
Courses with two designators (coding) are marked with a * to identify them as cross listed courses. Students must select the correct designator for their applicable program to be counted towards the degree.

Courses that are cross-listed with lab courses in BIOL CHEM and PHYS will be counted towards the fulfillment of the Gen Ed. requirements.

Course Descriptions

ENVR 151/ PHYS 151*: Introduction to Sources of Energy and Environment (3 credits)
Not recommended for first semester Freshmen
Conventional energy resources, fossil fuels including petroleum, natural gas, coal and tar sands, the promise and problems of nuclear energy, alternative energy sources, wind, solar, biogas, tidal etc., energy conservation, environmental pollution and its global effects.

ENVR 160/ CHEM 160*: Introduction to Organic and Biochemistry (4 credits)
Prerequisite: Intermediate or A-Level Chemistry
Bonding and structure of organic compounds, study of hydrocarbons including additions to multiple bonds and substitution reactions of benzene, petroleum products, chemistry of food and its components including carbohydrates, proteins, lipids, nutrition and caloric intake.

ENVR 201: Introduction to Environmental Sciences (4 credits)
Prerequisite: Instructor's approval required
Biological and physical environmental problems focusing on geological hazards, water quality, water supply, solid waste, introduced and endangered species, preservation of wetland ecosystems, social and political approaches to environmental management.

ENVR 210/ GEOG 210*: Earth's Physical Realms (3 credits)
Spatial and functional dynamics of major physical phenomena relating to the planet Earth – its evolution, interior state, atmosphere, lithosphere, hydrosphere and ecosphere, physical phenomena and related cycles and man-environment interactions.

ENVR 212/ BIOL 212/STAT 212*: Research Methods and Statistics for Natural Sciences (3 credits)
Research and its types, overview of research study designs, planning and implementation, ethics in research, selection of research topic, hypothesis formation, effective literature review and citation using software tools, Descriptive and Inferential Statistical methods, data collection and analysis tools, hypothesis testing, ANOVA, design of experiments and its significance. Training on software (e.g. SPSS, Mendeley, Qualtrics)

ENVR 220: Environmental Management (3 credits)
This course provides an overview of the key concepts and principles in environmental management, areas of global and national environmental concern, and strategies and tools for effective environmental management. It will attempt to understand the genesis of environmental problems and the concerns that have led to various international and national initiatives to tackle them that have been made in this course. Various tools which can be used to address environmental problems, and the role that professionals can play in managing the environment in their respective areas will be discussed.

ENVR 221/ PHYS 221*: Electricity and Magnetism (4 credits)
Prerequisite: PHYS 103 or PHYS 104
Electrostatics, magneto-statics, electric current, laws of magnetism, Maxwell's Equations, electromagnetic energy and electromagnetic wave equations, laboratory.

ENVR 240/ GEOG 240*: Global Environmental Issues (3 credits)
Earth's ecosystems, major issues relating to the human use and misuse of environmental resources and possible courses of action for their conservation.

ENVR 252: Environmental Pollution (3 credits)
This course deals with major problems related to pollution of air, soil and water resources. It covers processes responsible for the occurrence and release of pollutants in the environment, dispersion mechanisms, the hazards associated with different types of pollutants, problems of accumulation of toxic substances, and procedures for the reduction of emissions and remediation of contaminated environments.

ENVR 255/ PHYS 255*: Introduction to Meteorology (3 credits)
Prerequisite: PHYS 102 or PHYS 103 or PHYS 151
Study of the physical processes of condensation, precipitation, radiation and radiative

transfer, solar radiation, atmospheric motion measuring properties of the atmosphere, ionosphere and magnetosphere, Earth's magnetic field and charge density movement in the atmosphere.

ENVR 304: Environment and Biodiversity of Pakistan (3 credits)
This course provides the students with a comprehensive knowledge about the environmental resource base of Pakistan including geography, demography, economy and agriculture in order to learn its efficient utilization for sustainable development. Major ecological zones, ecosystems & wetlands, Biomes, biodiversity, water resources, urbanization and concept of pollution with special reference to Pakistan.

ENVR 305: Population Dynamics and Urbanization (3 credits)
Relationship of population, resources and sustainability, factors affecting human population size, population age structure, consequences of increase or decrease in population, population projections, population growth models and methods of controlling population, population growth in relation to resource utilization and sustainability, history and future trends of population in Pakistan integrated with the economic realities.

ENVR 306 /ECON 303*: Environmental Economics (3 credits)
Prerequisite: ECON 101
Introduction to the economic and ecological principles essential for a clear understanding of contemporary environmental and natural resource management issues, integrated understanding of the field combining economic, legal and ecological perspectives to better understand the causes and solutions to market failure and environmental degradation, economic efficiency and market failure, property rights, externality, measuring social welfare and welfare improvements, demand for environmental goods, environmental valuation methodologies, environmental benefit-cost analysis and other making criteria, environmental policy and environmental regulations, common pool resource management, depletable resource management.

ENVR 308: Environmental Laws and Policies (3 credits)
It covers federal laws and acts concerning environmental quality standards and the use of resources, legal procedures for enforcing laws, and problems concerning enforcement. This course offers a review of the National Conservation Strategy, Agenda 21, and the Pakistan Environmental Protection Act 1997.

ENVR 309: Introduction to Environmental Modeling (3 credits)
Models and computer simulations are increasingly important in understanding environmental science, in designing solutions to problems in natural resource management and environmental monitoring, and in predicting future environments under changing climates. The emphasis of this course will be on the application and development of models in the context of terrestrial ecosystems.

ENVR 311/ CHEM 311*: Fundamental Analytical Chemistry (4 credits)
Open to Juniors and Seniors
Gravimetric and volumetric methods of analysis including buffers, complexometric titrations, redox titrations, non-aqueous titrations, Karl-Fischer titrations, UV/VIS spectroscopic analysis, IR Spectroscopy, treatment of measurement errors; usage and handling of standards, sampling, precision, accuracy, signal-to-noise ratio, limits of detection and quantitation, statistical evaluation of data; quality control and quality assurance.

ENVR 314/ GEOG 314*: Hydrosphere Resources (4 credits)
Prerequisite: GEOG 101 or GEOG 210
Origin, structure and shape of the ocean basins, composition, thermodynamics, circulation and oscillations of marine water, maritime resources and their use by humans, water resources on land, their origin, distribution, availability and quality, use and conservation as a resource for mankind.

ENVR 320/ CHEM 320*: Industrial Chemistry (4 credits)
Open to Juniors and Seniors
Efficiency and yield, common chemical industries with special reference to Pakistan including cement, surfactants, paper and pulp, glass and ceramics, leather, metallurgies of important metals, liquid crystals and inorganic polymers. Environmental industrial impacts and industrial environmental management.

ENVR 323/ BIOL 323*: Ecology and Evolution (4 credits)
Basic principles of Ecology such as interaction of organisms with their environment, species and population dynamics, principles of evolution, community structure and human interactions with
natural populations and ecosystems. Application of Ecological Knowledge in Solving Environmental Issues; Sustainable Agricultural Practices; Pollution Control through Ecology: Phyto-remediation and Bioremediation; Conservation and Management of Forests and Rangelands in Pakistan; Ecological restoration.

ENVR 330/ CHEM 330*: Biochemistry (4 credits)
Prerequisite: CHEM 160 or equivalent
Detailed structure and physiological function of primary metabolites including carbohydrates, proteins, lipids and nucleic acids, nature and role of enzymes and coenzymes, metallo-proteins and enzymes, mechanism of enzyme action, kinetics and regulation of enzymes and their industrial applications.

ENVR 340/ CHEM 340*: Environmental Chemistry Fundamentals (3 credits)
Prerequisite: CHEM 100 or Chemistry at Intermediate/A Level
Viewing the earth as five integrating systems i.e. the hydrosphere, the atmosphere, the geosphere, the astrosphere and the biosphere, the course deals with the chemical phenomenon involved in these systems and how human activities are affecting these. With a strong emphasis on the Chemical Aspects of Environmental Science, the course covers such topics as Water Chemistry; Oxidation/Reduction; Phase Interaction; Chemicals Pollutants: Origin, Fate & Hazards; Atmospheric Chemistry; Chemicals and other Air Pollutants; Photochemical Smog; and Hazardous Waste Chemistry.

ENVR 345/ GEOG 345*: Environment Impact Assessment (3 credits)
The aim of this course is to ensure that environmental factors are considered in the decision- making process of a development project, possible adverse environmental impacts are identified and avoided or minimized, and the public is informed about the project proposal.

ENVR 351/ PHYS 351*: Environmental Physics (3 credits)
Prerequisite: PHYS 103 or PHYS 151
Introduction to environmental physics, radiation, radiation balance, heat and mass transfer, micrometeorology of crops.

ENVR 402: Solid Waste Management (3 credits)
Sources, classification, generations, onsite handling and storage, collection, transfer recycling and disposal techniques of municipal solid waste (MSW), land filling, thermal

conservation, compositing, concept of integrated solid waste management, existing practices and their hazards, economic evaluation of the systems, hospital waste management.

ENVR 403: Occupational Health and Safety (3 credits)
Principles of occupational health at work, values system for industrial workers, OHS systems in different industrial sectors, components of OHS plan related to different activities such as industry, municipality etc., industrial hygiene and safety, accident prevention and elimination, safety equipment, pollution due to petroleum industry.

ENVR 404: Air and Noise Pollution (3 credits)
Prerequisite: ENVR 252
In this course the physics, human and environmental health impact are considered covering the physics of the atmosphere, the pollutants themselves and their physics, detailed human health impacts as well as the serious consequences of air pollution on the environment. Various pollutants are covered in more detail as part of the various cycles that exist in the atmosphere.

We spend a lot of our time in-doors, hence indoor air pollution is an integral part of this course. Quantification of pollutants is critical in our understanding and management of the problem hence monitoring systems and strategies and control will be studied. Lastly, noise pollution is considered. Aspects of the impact and control of noise pollution make up the bulk of the material covered.

ENVR 405/ BIOL 404 *: Conservation Biology (3 credits)
The objective of this course is to familiarize the students with different forms of biodiversity, threats to biodiversity and an overview of different strategies for its conservation.

ENVR 406: Climate, Past, Present and Future (3 credits)
Climate-definition, early climates, factors controlling the climates, major climatic turnovers during Paleozoic, Mesozoic and Cenozoic eras, Pleistocene ice age, sub recent and recent climate, tropical, temperate and arctic climates, Paleomagnetic calendar, role of climatic factors in shaping, generating and controlling evolutionary forces, major climatic upheavals in the subcontinent and their signatures in the outcrops, future climatic trends.

ENVR 411/BIOL 411 *: Environmental Microbiology (3 credits)
Open to all programs under Biological Sciences
This course will provide an awareness and understanding to the students about the role of microorganisms in the environment. After completion of this course, students will be able to understand the significance, role and application of microorganisms in the environment.

ENVR 413: Environmental Toxicology (3 credits)
The course will introduce the concepts of adverse effects of environmental chemicals, from natural and anthropogenic sources, on human and other living organisms. It is focused on providing knowledge related to dose response relationship, acute and chronic effects on organ system, their containment and control strategies; Toxicokinetics; Immunological considerations in toxicology; Toxicant testing techniques: *In vitro* and *in vivo*; Risk assessment and management.

ENVR 414: Sustainable development (3 credits)
This course includes the ideological and political underpinnings of development and environment that are prevalent and practiced in the modern world. It will further investigate the patterns and impacts of geographically uneven development and the role factors that have shaped the present sustainability concerns. The concept of Green Economy

inculcates understanding and its linkages with sustainable practices.

ENVR 415: Environmental Management Systems (3 credits)
This course will deliver understanding about the Environmental Management Systems (EMS) and how EMS leads to environmental benefits to industries. Introduction of ISO 14000 series of standards and their role in environmental management; Certification of EMS; Principles of Cleaner production, tools of sustainable consumption and production (eco label, eco-design, cleaner technologies, etc.), Corporate social responsibility (CSR).

ENVR 416: Wastewater treatment (4 credits)
Pre-requisites: CHEM 100 or 160
This course is introduced as a new elective course and highlights different techniques for the treatment of wastewater and effluents. The course will also enable the students to understand various types of methods and technologies employed in wastewater treatment. They will learn about urban water services, focusing on basic drinking water and wastewater treatment technologies.

ENVR 417/ GEOG 416*: Natural Hazards and Management Issues (3 credits)
Prerequisite: ENVR 240/GEOG 240
The course analyzes the natural phenomenon causing hazards, related issues and problems; means and techniques of ascertaining their distribution, impact on human life and possibilities of recurrences; options for disaster preparation and loss mitigation.

ENVR 418: Water Treatment (3 credits)
This course provides a thorough understanding of the key concepts and principles involved in water treatment and management. The core is the unit operations involved in surface and ground water treatment (physical and chemical processes), the effect of treatment on water quality and the importance of the unit processes in the treatment chain. Several case studies throughout the course will illustrate how water utilities are incorporating multiple treatment processes into their water treatment plants. Overall, this course will provide thorough understanding of the theory of the water treatment processes, as well as the real-world application of each unit process.

ENVR 442/ CHEM 442*: Green Chemistry (4 credits)
Open to Juniors and Seniors
Green chemistry, principles, evaluating materials, feed stocks and starting materials, types of reactions in chemical transformation, evaluation of methods to design safer chemicals, green chemistry and future trends.

ENVR 451/ PHYS 451*: Sources of Energy (3 credits)
Prerequisite: PHYS 222
Study of the different sources of energy, including thermal, hydroelectric, solar, nuclear and thermonuclear.

ENVR 452/ PHYS 452*: Atmospheric Physics (3 credits)
Prerequisite: PHYS 322
General description of the atmosphere, atmospheric thermodynamics, solar and terrestrial radiation, atmospheric aerosol and cloud microphysical processes, atmospheric electricity and dynamics.

ENVR 474/ GEOG 474*: Geographical Information Science (4 credits)
Prerequisite: GEOG 201 or GEOG 202 or GEOG 203
Principles of geographical information science, functions of geographic information systems, relationship between GIS and remote sensing.

ENVR 498: Internship (6 credits)
Students with CGPA 2.75 or above will be eligible for internship
Duration of the Internship, in a reputed industry or environment related organization, is 6 to 8 weeks. Usually offered to Juniors in Summer.

ENVR 499: Project/ Research (6 credits)
Students with a CGPA 2.75 or above will be eligible for this research project. Students with CGPA less than 2.75 will have to take two additional courses from electives of their concentration.

FORMAN LANGUAGE CENTER

Introduction

Based on the awareness of the necessity of a foreign language program, FCCU initiated language courses in Fall 2017. This is truly a revival of FCCU's rich tradition and is a valuable asset to its status as a liberal arts university and to students who will benefit through a languages program. The Forman Language Center at FCCU is unique and comprehensive; it aims to meet standard benchmarks in the field. Currently the FLC conducts courses in four foreign languages to meet the rapidly rising needs of students. The FLC will make continuous efforts to offer exemplary language courses to FCCU's students who are aware of the importance of language acquisition for their future.

Program Objectives

FCCU offers foreign language courses at two levels in French, German, Chinese and Korean. In the basic level courses, students learn to understand and use familiar and everyday expressions and very simple sentences which relate to their needs. In the higher-level course, they learn to communicate at a more complex level. Communication skills are taught through the four competencies of reading, writing, listening and speaking. The courses are taken by students who are interested in different languages as part of their general education requirements.

FREN 101: French I (3 credits)

This course provides an introduction to the French language and its various aspects. Students will learn basic language skills, including listening, speaking, reading, and writing. Culture studies will include the history and geography of France with a focus on Paris, and also French-speaking countries all over the world. Each lesson introduces new vocabulary and grammar concepts through listening comprehension, speaking, and writing activities. Students learn to talk about themselves and others, describe their surroundings and use numbers for dates and time. Regular verbs are introduced in the present tense. Simple grammatical structures are practiced in innovative and interesting ways with a variety of learning styles in mind. This course includes a broad range of lessons and activities that offer a variety of modalities for ultimate student engagement and content retention. Students develop an ability to communicate in real-life situations by acquiring reading, writing, listening, and speaking skills.

FREN 102: French II (3 credits)

Prerequisite: FREN 101

This course focuses on teaching how to communicate in a simple manner if the person they are speaking to speaks slowly and clearly and is willing to help. The communication skills will be taught through the four competences, i.e. writing, reading, listening and speaking. At the end of the course students will be able to talk about their tastes and interests, express preferences and desires and justify their choices, accept and refuse invitations, use the near future tenses, and talk about their activities in the past.

GRMN 101: German I (3 credits)

This basic level course focuses on understanding and using everyday simple expressions which relate to the satisfying of concrete needs such as information about yourself and your family; daily routines and punctuality; hobbies and professions; shopping and directions in a new city; time with friends and celebrations. This course also presents essential vocabulary and grammar, and develops pronunciation, listening, reading, and writing skills necessary for basic communication and comprehension. At the end of the course students will be able to communicate everyday survival tasks including asking questions, counting numbers, giving directions, expressing needs, and making requests in a simple manner.

GRMN 102: German II (3 credits)
Prerequisite: GRMN 101
This course teaches students how to communicate in a simple manner if the person they are speaking to speaks slowly and clearly. Communication skills are taught through the four competences, i.e. writing, reading, listening and speaking. At the end of the course, students will be able to talk about their daily work routine, health, home, studies and professions, clothes and holidays. Moreover, they will be able to write emails, text messages and blogs in the present and perfect structure combination. Additionally, students are prepared for the A1 Level of Common European Framework (CEFR).

CHIN 101: Chinese I (3 credits)
This basic level course teaches students how to recognize the (Mandarin) Chinese language in Pinyin and also the basic character set and its pronunciation. The course introduces students to Chinese culture to gain knowledge and understanding of the Chinese-speaking world. At the end of the course, students will be able to communicate at basic everyday survival tasks including self-introduction, asking questions, counting numbers, giving directions, expressing needs, and making requests in a simple manner.

CHIN 102: Chinese II (3 credits)
Prerequisite: CHIN 101
This course teaches students to communicate about basic tasks requiring a simple and direct exchange of information on familiar and routine matters. It enables students to describe in simple terms aspects of their background, immediate environment and matters in areas of immediate need e.g. basic personal and family information, shopping, etc. At the end of the course students will be able to understand the main ideas and supporting ideas when people talk about familiar topics and will know how to carry on a conversation on a variety of topics that are familiar to them. They will also understand short, simple readings on familiar topics and be able to write a series of simple sentences on topics of interest.

KORN 101: Korean I (3 credits)
This basic level course teaches students to read and write the Korean alphabet and learn its pronunciation. It also introduces Korean culture to gain knowledge and understanding of Korea. At the end of the course students will be able to communicate with native Korean speakers at basic everyday survival tasks such as introducing themselves and expressing their needs, asking questions and making requests in a simple manner, counting numbers, and giving directions.

KORN 102: Korean II (3 credits)
Prerequisite: KORN 101
This course teaches students to communicate about basic tasks requiring a simple and direct exchange of information on familiar and routine matters. It also teaches students how to describe in simple terms aspects of their background, immediate environment and matters in areas of immediate need. Students will learn more about Korean culture to gain further knowledge and understanding of Korea. At the end of the course, students will be able to understand the main ideas and supporting ideas when people talk about familiar topics and will know how to carry on a conversation on a variety of topics that are familiar to them. They will also understand short, simple readings on familiar topics and be able to write a series of simple sentences on topics of interest.

DEPARTMENT OF GEOGRAPHY

Introduction

The Department of Geography has the distinction of being pioneers in the subject in this part of the sub-continent, with glorious traditions and 98-year distinctive history. Geography is a systematic discipline that studies the spatial and temporal interactions between people and their environment and explores the means to synthesize them for the benefit of society.

Vision

The vision of the Department of Geography is to provide its students with educational experiences of the finest quality, exciting a new, global generation of interdisciplinary thinkers to find ground-breaking outcomes to the interconnected environmental, social, and technological challenges facing our planet. We are committed to outstanding teaching and scholarly activities within the framework of academic freedom, the diversity of people and ideas, a spirit of inclusiveness, and a global perspective.

Mission

The Department's mission is to groom students as contributing persons to humanity and as inspiring leaders in the nation-building process besides focusing on intellectual acumen to take on labyrinthine challenges of today and the future. Its vision is to acknowledge the innovative and versatile community that can be looked upon to foster scholastic partnerships in seizing emerging horizons of knowledge.

Learning Objectives

Department embarks upon the following objectives:

- Analyze and synthesize in-depth knowledge of different concepts and processes of physical, human and regional geography
- Demonstrate competency in the use of fundamental geographic tools/techniques for data collection, display and analysis
- Productive individuals in the service of humanity and develop themselves to become inspiring leaders in the progress and uplift of the country
- Design an independent research project with competence to build a spatiotemporal profile of the phenomena under investigation that helps in reaching recommendations for development
- Employ knowledge and skills that help in an advanced study in the discipline for job placement

The Department of Geography is part of the Faculty of Social Sciences.

Courses Recommended for General Education Requirement:

Any open course in lower or upper division. Options for other upper division course(s) may be considered by the chair on recommendation by the instructor.

Academic Programs

The Department of Geography is offering two majors under its umbrella:

Requirements for the Major:

Bachelor of Studies Major (Human Geography): A minimum of 39 credits are required to complete the degree. The coursework includes (core): GEOG 101, 201, 274, 301, 311, 313, 471, and a Senior Project (GEOG 499) for six (6) credits; minimum four (4) elective courses at the 300/400 level from Human Geography with at least (2) two of them relating to GIS.

Program Objectives

1- Describe what geography and human geography are.
2- To ensure a general grounding of the fundamental knowledge of geography, its epistemological development, and its research methods.
3- To ensure that students can put theoretical, methodological, and instrumental knowledge into practice, make comprehensive analyses, interpret spatial problems and processes and make territorial diagnoses.
4- To be able to explain territorial diversity and complexity, and the interrelations of natural environmental phenomena with economic, social, and cultural phenomena.

Program Learning Outcomes

1- **Nature and Society:**
Able to articulate the theories, philosophies, and concepts in the field of geography, including fundamental themes of spatial patterns and processes of the interrelationship between people and places, and the interactions between nature and society.
2- **Human Spatial Patterns:**
Understand global and regional patterns of cultural, political and economic institutions, and their effects on preservation, use and exploitation of natural resources and landscapes.
3- **Geospatial Technologies:**
Apply mapping and geospatial technologies to analyze geographic data in geographic research and analysis.
4- **Research Skills:**
Capable to clearly and effectively communicate geographic knowledge and research in oral, written, and visual form.
5- **Problem Solution:**
Recognize and evaluate how geographic concepts apply in the workplace and in everyday life to solve real-world problems.

Student Learning Outcomes:

- Able to articulate the theories, philosophies, and concepts in the field of geography, including fundamental themes of spatial patterns and processes of the interrelationship between people and places, and the interactions between nature and society
- Understand global and regional patterns of cultural, political and economic institutions, and their effects on the preservation, use, and exploitation of natural resources and landscapes
- Apply mapping and geospatial technologies to analyze geographic data in geographic research and analysis
- Capable to clearly and effectively communicate geographic knowledge and research in oral, written, and visual form
- Recognize and evaluate how geographic concepts apply in the workplace and in everyday life to solve real-world problems

Bachelor of Studies Major (Physical Geography): A minimum of 48 credits are required to complete the degree. The coursework includes (core): GEOG 101, 201, 274, 301, 311, 313, 471, and a Senior Project (GEOG 499) for six (6) credits; minimum seven (7) elective courses at the 300/400 level from Physical Geography with at least (3) three of them relating to GIS.

Program Objectives

1- Understand the physical principles and processes governing the circulation and characteristics of the atmosphere and climates on Earth.
2- To develop the specific skills related to work techniques, particularly those related to the analysis, process and representation of geographical information and fieldwork.
3- Students will learn geographic theory and its use in understanding real world processes.
4- Determined the directional and locational systems employed on the surface of the Earth.
5- Be able to use and analyze maps

Program Learning Outcomes

1- Human Environment Interactions:
Understanding of physical geographic processes, the global distribution of landforms and ecosystems, and the role of the physical environment on human populations.

2- Environmental Support System:
Able to explain the basic operations of environmental systems (biosphere, lithosphere, hydrosphere, atmosphere).

3- Geospatial Technologies:
Apply mapping and geospatial technologies to analyze geographic data in geographic research and analysis.

4- Research Skills:
Capable to clearly and effectively communicate geographic knowledge and research in oral, written, and visual form.

5- Problem Solution:
Recognize and evaluate how geographic concepts apply in the workplace and in everyday life to solve real-world problems.

Student Learning Outcomes

- Understanding of physical geographic processes, the global distribution of landforms and ecosystems, and the role of the physical environment on human populations
- Able to explain the basic operations of environmental systems (biosphere, lithosphere, hydrosphere, atmosphere)
- Apply mapping and geospatial technologies to analyze geographic data in geographic research and analysis
- Capable to clearly and effectively communicate geographic knowledge and research in oral, written, and visual form
- Recognize and evaluate how geographic concepts apply in the workplace and in everyday life to solve real-world problems

Requirements for the Minor:

18 credits; courses including (core courses): GEOG 210 (Earth's Physical Realms), GEOG 220 (Human Domains of Geography) and GEOG 270, (Maps and their Interpretation); a minimum of two electives at the 300/400 level courses.

Course Categories				
General	**Physical Geography**	**Human Geography**	**Regional Geography**	**Geographical Techniques and Methods**
101	210	220	133	201
191	240	221	232	202
192	311	222	233	203
301	312	322		270
495	313	323		274
	314	324		371
	396	325		372
	411	326		374
	416	421		471
		422		474
		426		498
				499

Course Descriptions

GEOG 101: Fundamentals of Geography (3 credits) General
Builds perspective about geography as a discipline; familiarizes its thematic domains and fundamental concepts.

GEOG 133: Geographical Profile of Pakistan (3 credits) Regional Geography
It relates to major features of the physical environment, resources, culture, communications and trade of Pakistan. Analyses the major problems confronted by Pakistan relating to cross cultural relationships, socio-economic viability, environmental conservation, resource sustainability and development.

GEOG 191: ArcGis I (2 credits)
Familiarizes the essential skills needed to navigate and operate ArcGIS at a basic level using hands-on practices. Includes how to utilize GIS notions, approaches and procedures in conjunction with problem solving techniques to accomplish assigned real world examples.

GEOG 192: Remote Sensing Data Acquisition and Processing (2 credits)
A set of comprehensive practical hands-on approaches to navigate, search, acquire, integrate and process Remote Sensing data including Satellite Imageries, Digital Elevation Models (DEMs) and Environmental parameters datasets.

GEOG 201: Introduction to Geospatial Information Science and Technology (3 Credits) (2+2) Geographical Techniques and Methods
The course brings the use of geotechnologies, such as Global Positioning System (GPS),

Remote sensing (RS), and Geographic Information Systems (GIS) to think about problems spatially without being encumbered by overlay complex software.

GEOG 202: Fundamentals of Remote Sensing (3 Credits) (2+2) Geographical Techniques and Methods
The course describes basic concepts in Remote Sensing and discusses how Remote Sensing tools may be used to study the Earth's environments and solve real world problems.

GEOG 203: Spatial Databases 3 Credits (2+2) Geographical Techniques and Methods
Geospatial database design, implementation, management, and access course in organizing spatial and non-spatial data in geospatially enabled enterprise Database Management Systems (DBMS). Students will gain practical database experience utilizing commercial database management system software and geographic information systems software to design and use spatial and non-spatial data.

GEOG 210/ENVR 210: Earth's Physical Realms (3 credits) Physical Geography
This course expresses the spatial and functional dynamics of major physical phenomena relating to the planet Earth - its evolution, interior state, atmosphere, lithosphere, hydrosphere and ecosphere. It further explores physical phenomena and related cycles, and man-environment interactions.

GEOG 220: Human Domains of Geography (3 credits) Human Geography
The course focuses on concepts relating to the spatial and systematic organization of economic, cultural, political, demographic and occupancy milieu, arising out of human use of the earth's environment. It also deals with the importance of human attitudes and values in resource use and shaping of the patterns.

GEOG 221: Geography of Tourism (3 credits) Human Geography
This course focuses on physical and cultural factors affecting the location & relative importance of recreational areas and tourist attractions. Spatial analysis of tourist flows, modes of transportation, effects on regional economies, and impacts on environments.

GEOG 222: Globalization – An Introduction (3 credits) Human Geography
This course aims to focus on evolution and dynamics of globalization and its impact on spatiotemporal patterns of human culture.

GEOG 232: World Regional Geography (3 credits) Regional Geography
The emphasis is placed on the location, spatial distribution and interaction of human activities and resource patterns in a global context.

GEOG 233: Geography of South Asia (3 credits) Regional Geography
The course examines South Asia's Physiography, climate, settlement, population, historical geography, economic activities, and cultural landscape. It will also give an understanding of the major geographical patterns, processes, issues and problems of the region.

GEOG 240/ENVR 240: Global Environmental Issues (3 credits) Physical Geography
This course describes the earth's ecosystems; major issues relating to the human use and misuse of environmental resources, and possible courses of action for their conservation.

GEOG 270: Maps and their Interpretation (3 credits) Geographical Techniques and Methods
The course builds up the capability to understand & interpret different types of maps and their applications.

GEOG 274: Fundamentals of Cartography and Field Surveying (3 credits) Geographical Techniques and Methods
Lab Course
The course develops basic skills of map making, their use and contemplation techniques. Also, it aims to train students in the collection and processing of field data. It also includes basic training in field surveying for map making.

GEOG 301: Workshop on Geographical Thought and Concepts (2 credits) General
The course analyzes the current philosophical themes in geography, as well as the systematic doctrines and concepts that overwhelm the mainstreams of the discipline. Implications of the current strides on the cognitive domains are assessed and their impact on the future course of geographical avenues is envisaged.

GEOG 311 Principles of Atmospheric and Hydrospheric Dynamics (3 credits) Physical Geography
Prerequisite: GEOG 101 or 210
The course examines elements and forces generating weather phenomena, their dynamics and impact, climatic system and their classification. Features and dynamics of marine masses are also discussed; and a generalized appraisal of the water resources on land is reviewed.

GEOG 312: Meteorology and Climatology (4 credits) Physical Geography
Prerequisite: GEOG 101 or 210
The course focuses on the elements and forces producing lower atmosphere phenomena; the dynamics of heat flows, air movements, pressure changes, mass density, volume relationships and vaporization, release of moisture as applied to the changing state of the atmosphere, and production of disturbances and storms. It also examines the evolution of climatic systems, their spatial and temporal transformations and impact.

GEOG 313: Geodynamics and Geomorphology (3 credits) Physical Geography
Prerequisite: GEOG 101 or 210
The course provides comprehension about restructuring, isostatic balancing, geotectonics and modulation; processes, agencies and cycles of landscape sculpturing and evolution, including their temporal and spatial variations.

GEOG 314/ENVR 314 *: Hydrosphere Resources (4 credits) Physical Geography
Prerequisite: GEOG 101 or 210
The course examines origin, structure and shape of the ocean basins; composition, thermodynamics, circulation and oscillations of marine water; maritime resources and their use by humans; water resources on land, their origin, distribution, availability and quality; use and conservation as a resource for mankind.

GEOG 322: Economic Geography (3 credits) Human Geography
Focuses on principles governing multivariate interactions underlying the evolution and distribution of various economic activities and functions, the role of temporal and spatial variables responsible for changes in the economic systems and regions.

GEOG 323: Population Geography (3 credits) Human Geography
Deals with spatial, temporal and structural aspects of population characteristics including growth, distribution, density, composition and migration; the relationship of demographic variables to cultural, economic and environmental factors.

GEOG 324: Settlement Patterns and Processes (3 credits) Human Geography
Human settlement patterns: location, evolution, size, spacing, shapes and functional systems produced by interactive multivariate processes, forms and structures. Also includes problems relating to growth, congestion and evolution of ghettos.

GEOG 325: Political Geography (3 credits) Human Geography
The course emphasizes the comparative study of global political regions and related systems. Varied approaches are explored such as power analysis, genetic analysis, functional analysis, thematic analysis and ethnic analysis of political units.

GEOG 326: Urban Environmental Issues (3 credits) Human Geography
The course deals with the dynamics of urban environment degradation and analysis of rectification mechanisms and policies. Focus upon current environmental issues of urban centers in Pakistan.

GEOG 371: Digital Cartography (3 credits) Geographical Techniques and Methods
Prerequisite: GEOG 201
Knowledge of computer software applications is preferred.
The course completely focuses on skill development in computerized map making and interpretation / analysis.

GEOG 372: Web GIS (4 Credits) Geographical Techniques and Methods
Prerequisite: GEOG 203
Knowledge of computer software applications is preferred.
The primary purpose of this course will be to examine such web-based technologies, and to help students develop the knowledge and skills necessary to plan, design, develop and publish a web-based GIS solution. Students will learn how GIS on the internet differs from the desktop experience, and how to adequately prepare spatial information for the web.

GEOG 374: Aerial and Satellite Imaging (3 credits) Geographical Techniques and Methods
Prerequisite: GEOG 202
Knowledge of computer software applications is preferred.
It includes the elements and interpretation processes pertaining to aerial photographs, remote sensing of earth resources and occupancy patterns; global positioning system [GPS]; geographic information science & systems [GIS]; digital image processing [DIP].

GEOG 396: Physical Geography Seminar (2 credits) Physical Geography
Prerequisite: GEOG 101 or 210
It comprises a departmental seminar investigating a selected field of Physical Geography. (Topic announced by the chair, prior to registration.)

GEOG 411: Sustainable Management of Natural Resources (3 credits) Physical Geography
Prerequisite: GEOG 240 or instructor permission
It analyzes the parameters and principles governing sustainability of the Earth's resources. International and regional efforts to achieve sustainability are also focused.

GEOG 416/ENVR 417: Natural Hazards and Management Issues (3 credits) Physical Geography
Prerequisite: GEOG 240 or instructor permission
The course analyzes the natural phenomena causing hazards, related issues and problems; means and techniques of ascertaining their distribution, impact on human life and possibilities of recurrences; options for disaster preparation and loss mitigation.

GEOG 421: Cultural Geography (3 credits) Human Geography
Prerequisite: GEOG 220 or instructor permission
It deals with the patterns and processes of the world cultural realms such as language, religion, social traits and ethnicity serving as foci for an in-depth understanding of the world and its people and cross-cultural interactions.

GEOG 422: Spatial Planning for Economic Development (3 credits) Human Geography
Prerequisite: GEOG 322 or instructor permission
Theories of location and systematic modeling in describing nodes and hierarchy of economic clusters in terms of multivariate functional analysis and synthesis examined at evolving developmental modes.

GEOG 426: Spatio-Temporal Dynamics of Global Power Politics (3 credits) Human Geography
Prerequisite: GEOG 325 or instructor permission
The course provides an in-depth appraisal of the global power-politics patterns through times, their dynamics, evolution, exigencies, impact and fate.

GEOG 471: Qualitative and Quantitative Techniques in Geography (4 credits) Geographical Techniques and Methods
Prerequisite: Basic knowledge of computer software applications or instructor consent. The course provides the information on qualitative methodologies and quantitative techniques used by geographers in analysis and synthesis of systematic spatial phenomena. Application of statistical methods and thematic models for geographical analysis including the use of computer software and hands on experience.

GEOG 474/ ENVR 474 *: Geographical Information Science (4 credits) Geographical Techniques and Methods
Prerequisite: GEOG 201 or GEOG 202 or GEOG 203
The course relates to principles of Geographical Information Science, functions of geographic information systems, and relationship between GIS and remote sensing.

GEOG X95: Themes (1-3 credits)
General
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

GEOG 498: Internship (3 credits) Geographical Techniques and Methods
Prerequisite: Open to the juniors/seniors with CGPA $\geq$ 2.75 and 90 completed credit hours with at least 9 upper division credit hours from Geography/GIS courses
An internship in a related industry, working with a private or public sector organization for six to eight weeks during summers. After the successful completion of training a student will have to submit a comprehensive report about the tasks done for his/ her evaluation.

GEOG 499: Directed Project (A & B) (3+3 credits) Geographical Techniques and Methods

Prerequisite: Knowledge of computer software applications or instructor consent.

A session on orientation / hands on training in techniques of project planning, designing, operational management, report preparation and presentation after Junior Year followed by independent / participated research in field, laboratory, or library under the direction of a member of geography faculty (appointed by the chair) and preparation and presentation of research report / thesis.

DEPARTMENT OF HEALTH AND PHYSICAL EDUCATION

Introduction

The Health and Physical Education Department at FCC provides a range of sports activities to students for the total development of their personality. It focuses on the following areas, which contribute and are indispensable for growth and strength of sports in the university:

- Sports culture
- Coaching
- Officiating
- Competition opportunities and organization
- Facilities and equipment
- Scientific support

FCC has a very comprehensive sports program. Its sports facilities include an 8-lane standard 400m grass track and a short course; 25m swimming pool, five tennis courts and a playing field for cricket, football, hockey and handball. The Lucas Center has a well-equipped gymnasium, table tennis hall, basketball and badminton courts and offices for sports faculty and staff.

Intramural competitions in the above-mentioned sports take place all year round. Deserving sportsmen are awarded Medals of Distinction, College Colors and Certificate of Merit.

Vision

Sports is one of the important mediums through which we contribute towards the physical and mental development of individuals and the total development of the personality of a student.

The Health and Physical Education Department provides several different sports activities to ensure the physical, social, emotional wellbeing and development of students. As students, they will personify physical strength and learn the value of healthy activity and habits in their lives.

Mission

The Health and Physical Education Department's first commitment is to provide an opportunity for students to fully develop their sports potential. By way of practice, training and competition, the department strives to develop in each student:

- Good Sportsmanship
- Offering a diverse range of sports
- Promoting Sports culture among the students
- Promoting an environment of healthy competition
- To make them responsible and good citizens.
- Providing praise-worthy sports facilities from several sports fields

Learning Objectives

1. Demonstrate during play the rules and regulations by which various games/sports are played.
2. Demonstrate skills in sports and athletics.
3. Apply the techniques and skills needed to pursue positions in both school-based and commercial settings.
4. Demonstrate ethical sportsmanship while competing in individual and team sports.

Course Descriptions

Entry into any course requires students to be physically fit.

HPED 101: Cricket (1 credit)
Techniques of running, batting, bowling and fielding, working together both in offense or defense.

HPED 102: Football (1 credit)
Techniques of running, passing, kicking, tackling, blocking, heading and dribbling, coordination for offensive and defensive teamwork.

HPED 103: Hockey (1 credit)
Techniques of passing, dribbling, dodging, pushing with agility, speed and endurance.

HPED 104 (i): Swimming (1 credit)
Basics of freestyle swimming.

HPED 104 (ii): Swimming (1 credit)
Basics of the backstroke in swimming.

HPED 104 (iii): Swimming (1 credit)
Basics of breaststroke in swimming.

HPED 105: Volleyball (1 credit)
Techniques for passing, blocking and smashing.

HPED 106: Physical Exercises (1 credit)
General physical exercises, benefits of physical activities.

HPED 107 (i): Athletics (1 credit)
Techniques for sprints and javelin throw.

HPED 108: Table Tennis (1 credit)
Techniques to play table tennis for recreation or competition.

HPED 109: Badminton (1 credit)
Techniques to play badminton for recreation or competition.

HPED 110: Basketball (1 credit)
Skills of ball holding, dribbling, passing and shooting.

HPED 111: Tennis (1 credit)
Fundamental skills of playing tennis for recreation or competition.

HPED 112: Handball (1 credit)
Skills and knowledge of the game: ball holding, handling, dribbling, passing and shooting.

HPED 150: Advanced First Aid (4 credits)
The purpose of this course is to help students identify and eliminate potentially hazardous conditions in their environment, recognize emergencies, and make appropriate decisions of how to provide first aid with minimal or no equipment. Topics included are electric shock, fainting, drug overdose, accidents, bandaging techniques, CPR, burn injuries, natural disasters, hypothermia, hyperthermia, bleeding, crush injuries, bites, and poisons.

Learning Objectives/By the end of the course students will be able to:

- Provide immediate attention to a sick or injured person at the scene.
- Understand how and when to administer first aid.
- To minimize injury and future disability until the arrival of medical assistance.

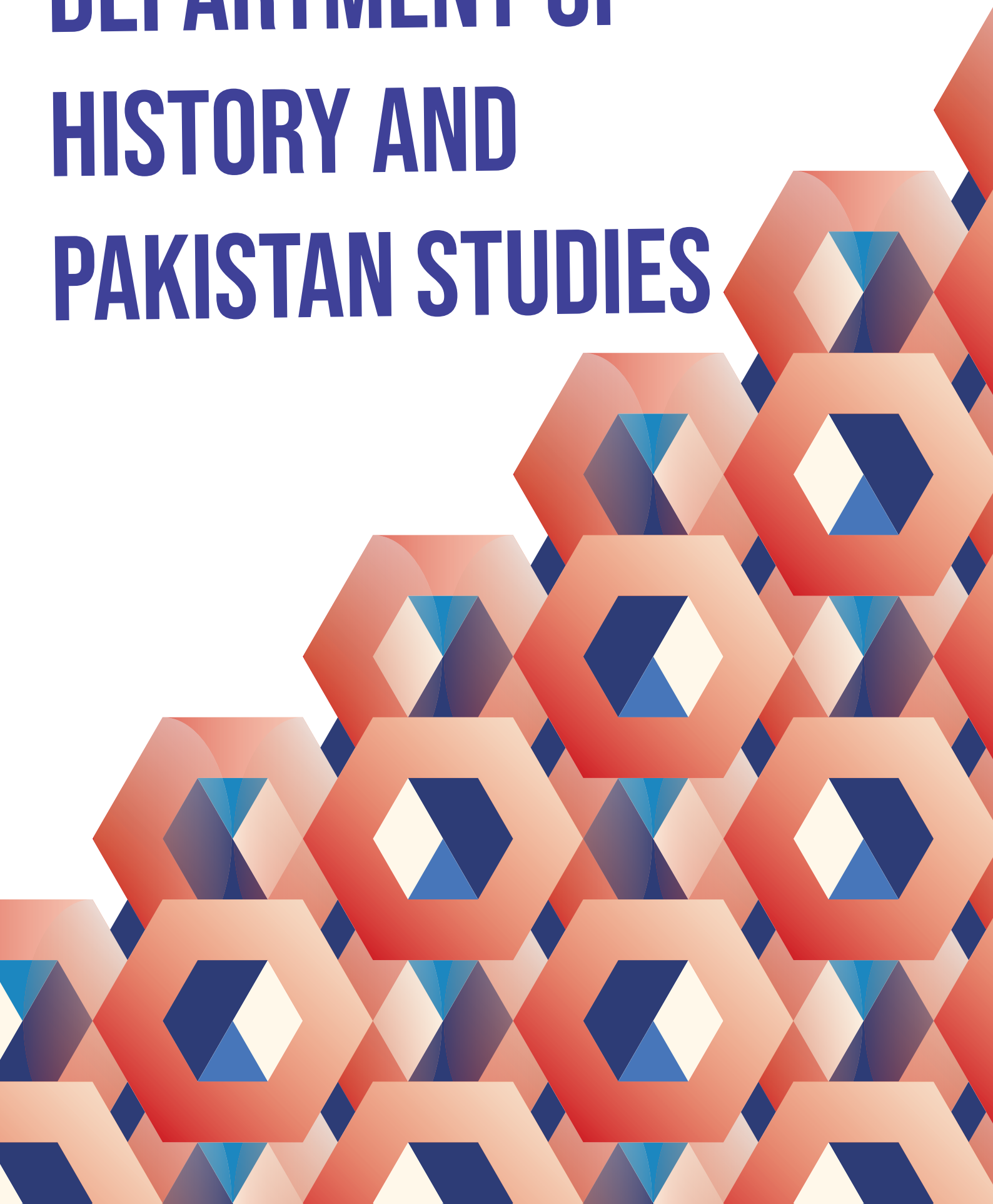
HPED 151: SPORTS INJURIES (2 credits)

This course helps identify common sports injuries, prevention strategies, and treatment options. Topics include sprains, strains, contusions, fractures, dislocations, overuse injury, and skin injuries. This course is helpful for athletes, coaches, parents, and other active individuals. The course will cover athletic injury assessment, remedial exercises, diagnosis, treatment, and prevention of sports injuries.

Learning Objectives/By the end of the course students will be able to:

- The types of injuries are now so complex, and the sportsman so competitive, that he/ she must return to competition as soon as possible.
- This course will teach athletes Injury Assessment, Remedial Exercises, Diagnosis, Treatment and Prevention of Sports Injuries.
- This course is helpful for parents, coaches, athletes and anyone who is active and gets or worries about injuries.

DEPARTMENT OF HISTORY AND PAKISTAN STUDIES



Introduction

The Department of History and Pakistan Studies is one of the oldest departments in FCCU. It has produced many luminaries who have been associated with it as members of the learned faculty, such as Professor Griswold, Professor Brush and Dr ZH Zaidi. The Department, through its courses, aims to develop in the students an analytical, critical, scientific, argumentative and methodical thinking for assessing the past occurrences in order to draw conclusions which help to broaden their mental horizons, enrich their vision and enhance their knowledge. The Department of History is part of the Faculty of Social Sciences.

Learning Objectives

1. To provide a wide range of knowledge of historical concepts, theories, and trends across. South Asian and world history.
2. To Develop the knack of communication, diversity, and inclusivity.
3. To Integrate and apply the knowledge of historical concepts, theories, facts, and trends into inter disciplinary mode and employment.
4. To encourage students to have a life-long love and engagement with historical learning.

Program Learning Outcomes

1- Academic Experience:
What should students be able to do with what they know as the result of their academic experience in the degree program?

2- Critical and Analytical Skill:
Students will select and apply appropriate research methods and critical and analytical skills

3- Knowledge and Understanding:
Students will demonstrate effective written and oral communication skills to convey historical knowledge and historical understanding.

4- Diversity, Inclusiveness:
Students will develop skills to understand diverse cultures and religions and learn, plurality, inclusiveness and values of peaceful co-existence.

Major and Minor Major Requirements

Major Requirements

At least 39 credit hours including core courses: HIST 101, HIST 102, HIST 201, HIST 301, HIST 400, HIST 496, HIST 499. In addition, electives from the categories defined below must be studied:

1. Two courses in Mughal or pre-Mughal South Asia: HIST 250, HIST 255, HIST 302, HIST 305, HIST 308.
2. One course in Post-Mughal South Asia: HIST 308, HIST 310, HIST 311, HIST 313, HIST 315, HIST410
3. One course in either US/British/European History: HIST 202, HIST 204, HIST 207, HIST 320
4. Two electives from: HIST 306, HIST 303, HIST 312, and any other elective offered by the department.

Minor Requirements

A minimum of 18 credits including: HIST 101, HIST 102, HIST 201 and:

1. One course in Post-Mughal South Asia: HIST 308, HIST 310, HIST 311, HIST 313, HIST 315, HIST410

2. One course in non-South Asia: HIST 202, HIST 204, HIST 207, HIST 306, HIST 312, HIST 320
3. One elective is also required: HIST 303, HIST 306, HIST 312 or any other elective offered by the department.

Course Descriptions

PKST 101: Pakistan Studies (3 credits)
Beginning from an examination of the idea of Pakistan, this interdisciplinary course will cover the history, geography, economy, politics, and society of Pakistan through an identification of major themes, personalities, and events which have affected and continue to have an impact on the development of the country.

HIST 101: Survey of South Asia (3 credits)
The course gives students a basic understanding of the general history of South Asia from the Indus Valley Civilization to modern times. The study of this course, which will be a prerequisite for all courses on South Asia in the department, will allow the students to become familiar with the broad periods of South Asian history, so that an in-depth analysis of historical periods and themes can be undertaken in upper-level courses.

HIST 102: Survey of Western Civilization (3 credits)
This course is a general survey of Western Civilization from Ancient Greece and Rome to the French Revolution in 1789. The aim of the course is to familiarize students with the broad periods and themes which have shaped Western Civilization, including an understanding of the scholarly debate on the issues. This course will be the basic prerequisite course for all upper-level courses in the West.

HIST 103: Introduction to Archaeology (3 credits)
This is an introduction to the methods, goals, and theoretical concepts of archaeology. Archaeology analyzes the physical remains of the past, from million-year-old fossilized remains of our earliest human ancestors to 20th century buildings in South Asia, in pursuit of a broad and comprehensive understanding of human culture. Archaeology offers a unique perspective on human history and culture and helps us understand not only where and when people lived on the earth, but also why and how they have lived, examining the changes and causes of changes that have occurred in human cultures over time, seeking patterns and explanations of patterns to explain everything from how and when people first came to inhabit the South Asia, to the origins of agriculture and complex societies. Unlike history, which relies primarily upon written records and documents to interpret great lives and events, archaeology allows us to delve far back into the time before written languages existed and to glimpse the lives of everyday people through analysis of things they made and left behind.

HIST 201: Research Methods (3 credits)
This course teaches steps in the research process and the tools and techniques of data collection. It is oriented towards Social Sciences research and will not include historiography, which, being a specialized field, will be taken up in the higher-level course.

HIST 202: Survey of Modern Europe (3 credits)
This course is a general survey of Europe from the French Revolution, and will concentrate on the major events, such as revolutions in Europe, the unification of Italy and Germany, the high noon of imperialism, the Russian Revolution, the two world wars and the Cold War. The course also discusses the key personalities and themes which shaped these developments.

HIST 204: History of the United States (3 credits)
This course is a survey of the United States since the American Revolution, concentrating on issues like the early development of the nation, the civil war, reconstruction, westward expansion, international relations, participation in the two world wars, and the emergence of the US as the superpower.

HIST 207: British History: From the Restoration to the Present (3 credits)
This course introduces students to basic themes, ideas, and influences in British History, from the restoration of the monarchy in 1660 to the present. The course will examine how Britain was transformed both at home and in its international role through the two world wars, imperial decline, Cold War, and in the present post-Cold War era in the twenty-first century. The purpose will be to situate the development of Britain internally and internationally up to the present times.

HIST 250: History of the Delhi Sultanate (3 credits)
This course studies the Sultanate period in Delhi (1206-1526), its origins, main features, and causes of its decline. The course will enable the students to analyze the development of art, culture, and architecture of the age, along with the evolution of state and society under the rule of the Sultans.

HIST 255: The Indus Valley Civilization (3 credits)
This course focuses on the inception, life, and eventual decline of the Indus Valley Civilization. The course will utilize current and early research and debates on the subject as well as visits to relevant sites to understand the period.

HIST 301/PHIL304*: Philosophy of History (3 credits)
This course studies in-depth the ideas behind the study of history, the different schools of thought in history, and the underlying theories. Special attention will be given to the development of South Asian and Muslim philosophy of history.

HIST 302: Mughal Rule in India (1526-1857) (3 credits)
Prerequisite: HIST 101
This course is a thorough study of the Mughal Empire from its inception to its decline and fall. Topics covered will include the condition of India before the Mughals, the rule of the great Mughals, their social, economic, religious, and political policies, and the development of art and culture during the period. The reasons for the fall of the empire as well as the rise of regional kingdoms will also be examined.

HIST 303: International Relations and Diplomacy (3 credits)
Prerequisites: HIST 102 or PLSC 101
This course focuses on the international system from the start of the First World War. The study begins with an examination of the key concepts in international relations, theory and practice, followed by an in-depth analysis of the relations between the great powers till the end of the Cold War.

HIST 305: Ancient History of the Subcontinent (3 credits)
This course will focus on a hugely diverse and dynamic span of history of ancient India. This will provide a systematic framework of the socio-political map of the ancient subcontinent starting from the Indus valley and culminating in the Gupta period. This will include the fundamental themes of polity, economy, philosophy and society. The times of glory, invasion, anarchy, factions and frictions will be discussed, highlighting Indus Valley Civilization, Epic Age, Buddhism and Class Structures. Culture and spiritual leanings throughout this span of time will be the focus of historical inquiry, exhibited in political ambition and philosophical thinking, art and literature that gave depth to one of the earliest periods of human history.

HIST 306: Islamic History (3 credits)
This survey course on the Caliphate, Umayyad and Abbasid periods examines their central and provincial administrations, expansion and conquests, religious policy, fiscal policy, foreign relations, the development of art and culture, and the causes of their downfall.

HIST 308: History of Lahore (3 credits)
Prerequisite: HIST 101
This course traces the history of Lahore from its origin to the present day. Topics like the importance of Lahore in different ages, its contribution to the development of art, architecture and culture, and its urban and rural dimensions are studied.

HIST 310: Issues in Pakistan's History (3 credits)
Prerequisites: HIST 101, HIST 201
This junior year seminar course focuses on particular issues in Pakistani history such as, but not limited to, the bureaucracy, army, judiciary, parliament, Kashmir issue, provincial autonomy, East Pakistan debacle, ethnicity and human rights.

HIST 311: India since Independence (3 credits)
Prerequisite: HIST 101
This course introduces students to themes in Modern India from independence to the beginning of the liberalization period in 1991. This course will provide students' knowledge of themes like nationalism, the Nehruvian system, domestic politics in India and the rise of Hindutva.

HIST 312/ PLSC 310 *: Modern Muslim World (3 credits)
Prerequisites: PLSC 101
This course explores the post- Second World War history of the Middle East with a special emphasis on the rise of Arab nationalism, Muslim solidarity, Israeli-Palestinian issue, the creation of modern states, and developments in state, society, religion and economy of the region.

HIST 313: British Rule in India (1757-1947) (3 credits)
Prerequisite: HIST 101
This course focuses on the political rise of the East India Company in 1757, the expansion of British influence through treaties and conquests, the Revolt of 1857 and the coming of the Raj, its policies, and its effect on the society, politics, economy and religious life of India.

HIST 315: Freedom and the Nationalist Movement in the Subcontinent (1857-1947) (3 credits)
Prerequisite: HIST 101
This course charts the start of the nationalist movement in South Asia with a focus on the key events and personalities which shaped the society, politics and economy of the region during the period. The rise of Muslim separatism and the creation of Pakistan will also be studied.

HIST 320: Reformation and Renaissance (3 credits)
Prerequisite: HIST 102
This course focuses on Europe from the advent of the Protestant Reformation to the Catholic Counter Reformation, religious wars, the rise of the nation state, and the Enlightenment period. Special attention will be given to the renaissance in art, science, literature and culture during the period, up till the French Revolution.

HIST 400: Research Methodology (3 credits)
Prerequisite: HIST 201
This higher-level course shall build on the 200-level course on Research Methods to familiarize students with qualitative research and to introduce them to Historiography, its major traditions and debates. It will also focus on the use of sources in historical research.

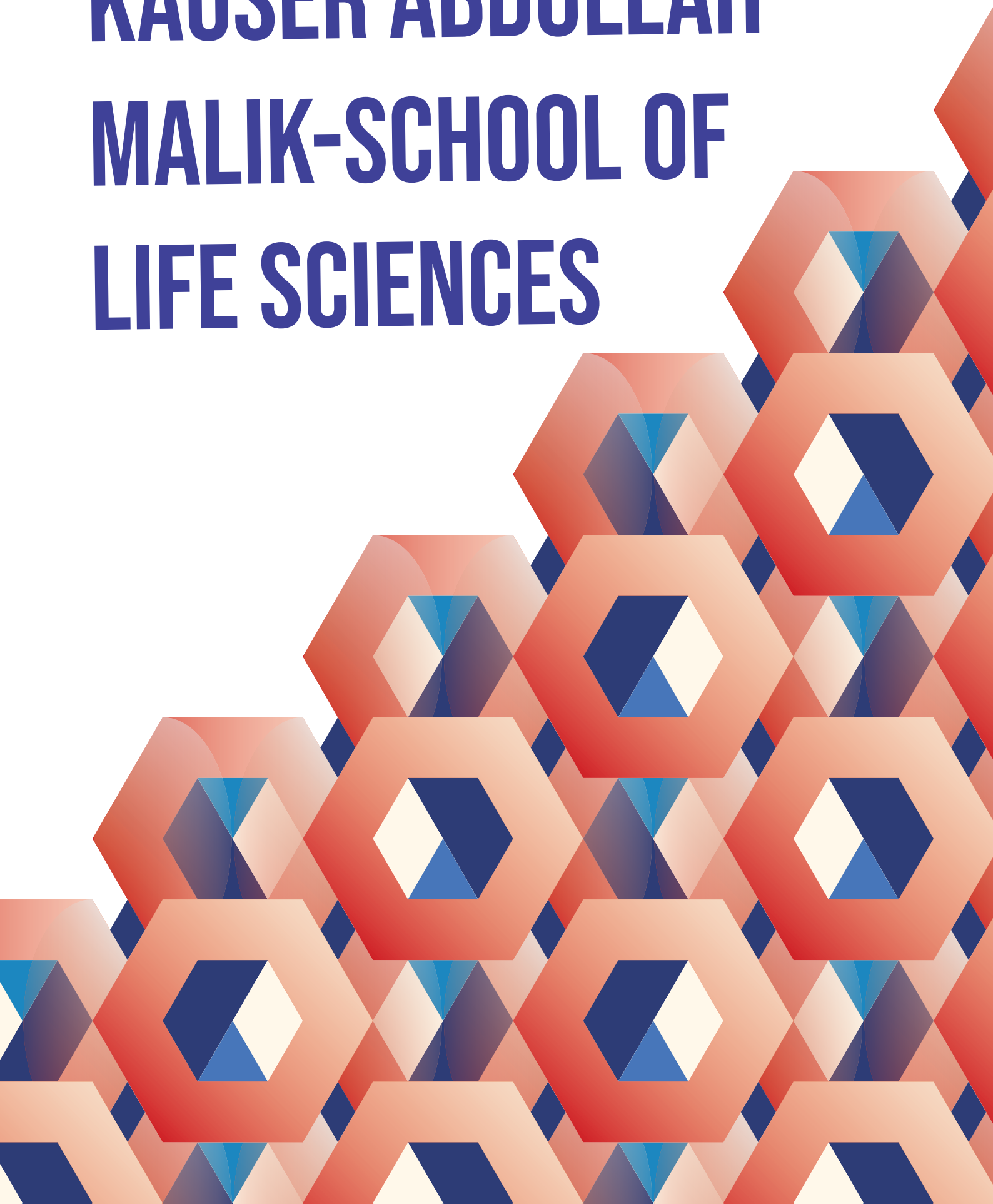
HIST 410: Colonial Punjab, 1848-1947 (3 credits)
Prerequisites: HIST 101, HIST 201
This thematic course examines Punjab's history during colonial rule with a focus on several themes which shaped the period. The focus will be on the geography of the Punjab in historical perspective, the support of local elites for colonial rule, the growth of the agrarian economy, and the political, social, and economic effects of these developments on the province.

HIST X95: Themes (1-3 credits) Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

HIST 496: Senior Seminar in History (3 credits)
Prerequisites: HIST 101, HIST 201
This seminar course comprises extensive readings on a selected topic (varying each semester) under the leadership of a faculty member who will facilitate in-depth analysis and discussion. The course will prepare students for independent research through a series of short papers and a final term paper on the course topic.

HIST 499: Independent Research (6 credits)
Prerequisites: HIST 400, HIST 496
In this course the student will articulate a question to be investigated, draw up a plan of research, glean information from primary and secondary sources, analyze the material, and present his or her arguments and conclusion with 10,000 words count paper. The paper should integrate the methods learned in prior classes about historical analysis and research. Students will conduct their research under the guidance of a member of the History faculty or any other person approved by the Head of the Department.

KAUSER ABDULLAH MALIK-SCHOOL OF LIFE SCIENCES



BS BIOLOGICAL SCIENCES

Mission of BS Biological Sciences Program

The aim of the B.S Program in Biological Sciences is to provide a comprehensive learning experience in Biological Sciences to produce lifelong learners for higher education and careers in plant, animal, environmental and health-related sciences, while maintaining the tradition of the liberal arts education. The program concentrates on a strong theoretical background and responsible lab and field work experience to empower students for employment and higher education in life sciences.

Program Objectives

1. To give a thorough and comprehensive knowledge of fundamental concepts in biological sciences
2. To enable students to interpret scientific literature
3. To develop and enhance creative thinking skills in order to ethically solve real life problems.
4. To train the students to conduct and analyze scientific experiments
5. To produce competent and valuable future biologists for the betterment of society.

Program Learning Outcomes

1- **Knowledge/concepts:**
Will apply and formulate the key concepts effectively

2- **Techniques:**
Will be able to implement and administer different techniques learnt in their research work

3- **Scientific Literature:**
Will be able to evaluate scientific literature

4- **Critical Thinking:**
Will solve different thermotical exercises involving higher level thinking and justify their thoughts logically

5- **Research:**
Will differentiate and identify local microbial, plants and animals' species by following standard lab procedures

6- **Career:**
Will demonstrate application of biological tools in academia and industry.

Requirements for the Major in Biological Sciences

A total of at least 48 credit hours in Biological Sciences divided as follows:

Core: 29 credit hours of BIOL 201, 203, 221, 222, 313, 315, 323, 403

Students majoring in Biological Sciences must take 8 credit hours of Chemistry courses (of any level, 100 to 400) in consultation with the faculty advisor.

Electives: Remaining 19 credit hours from 200 and above courses offered by the department or BIOL 498* (internship 3 credits) or BIOL 499* (Research 6 credits)

* Students with CGPA 2.75 or above will be eligible for research/Internship. Research or Internship will be allotted to the students on the recommendation of the Departmental Committee.

Requirements for the Minor in Biological Sciences

A minor in Biological Sciences is open to students in the following disciplines: Chemistry and Physics with a minimum CGPA of 2.5

Core Courses required for Minor: BIOL 201, BIOL 203, BIOL 221 and BIOL 222 and 3 courses of 300 or 400 level, from list available in catalog.

BS MICROBIOLOGY

Mission of BS Microbiology Program

The mission of our school to launch this major is to foster a community of ambitious microbiologists dedicated to harnessing the power of microorganisms for the advancement of society. Trained in scientific inquiry, a commitment to excellence, ethical values, BS Microbiology aims to provide students with a comprehensive education that nurtures curiosity, critical thinking, and a deep appreciation for the microbial world.

Learning Objectives

1. The graduate students will be able to demonstrate a solid comprehension of the fundamental concepts of microbiology, including the diversity, structure, function, and classification of microorganisms.
2. They will acquire lab techniques skills, the roles of microorganisms in causing diseases, their modes of transmission, and the principles of disease prevention and control, agriculture, environment and industry.
3. Additionally, students will be equipped to apply microbiological knowledge to real-world scenarios, such as diagnosing infections, developing vaccines, and improving food safety.
4. Graduates will effectively communicate scientific concepts and findings to both expert and non-expert audiences through written reports, presentations, and discussions. They will be able to recognize the ethical considerations involved in microbiological research, including biosafety, biosecurity, and responsible conduct of research.
5. Qualities of a good scientist like critical thinking, evaluating scientific literature, assessing experimental validity, and generating hypotheses, planning experiments, performing and analyzing data, interpreting as well as publishing, will be developed in students

Requirement for BS Microbiology

A total of at least 48 credit hours in Microbiology courses divided as follows:

Core: 30 credit hours of MBIO 201, 202, 203, 204, 313, 315, 316, 319 and 333

Electives: Remaining 18 credit hours from 200 and above Microbiology courses offered by the department including MBIO 498* (internship 3 credits) or MBIO 499* (Research 6 credits)

* Students with CGPA 2.75 or above will be eligible for research/Internship. Research or Internship will be allotted to the students on the recommendation of the Departmental Committee.

BS BIOTECHNOLOGY

School of Life Sciences offers a program which is learner-centered, and job oriented in

different specializations of Biotechnology. It will establish an environment of collaborative and reflective learning based on modern concepts of Biotechnology.

Mission of BS Biotechnology Program

The mission of BS Biotechnology program is to produce competent biotechnologists with excellent knowledge who are capable to apply practical skills in different areas of Biotechnology for employment and higher education through providing curriculum based on liberal arts education to ensure greater breadth of knowledge along with in-depth knowledge of Biotechnology offering an opportunity to learn and experience various aspects of Biotechnology under one roof.

Learning Objectives

1. To impart fundamental knowledge and skills in biotechnology
2. To train the students to conduct and interpret scientific experiments
3. To emphasize on scientific communication skills
4. To use biotechnology knowledge for betterment of the society
5. To produce competent future biotechnologists

Program Learning Outcomes

1- **Knowledge:**
Explain the key concepts and principles of biotechnology

2- **Application:**
Apply the basic techniques used in biotechnology

3- **Analysis:**
Be able to analyze and interpret the experimental data

4- **Critical thinking:**
Demonstrate the use of various biotechnological mechanisms for human welfare

5- **Scope:**
Develop technical skills by hands-on training to use biotechnology tools in academia and industry.

Requirements for the Biotechnology Program

A total of at least 54 credit hours in biotechnology:

Core: 45 credit hours of BIOL 201, BIOL 203, BIOL 313, BIOL 315, BIOT 201, BIOT 202, BIOT 301, BIOT 302, BIOT 313, BIOT 314, BIOT 408, BIOT 411, BIOT 412

Electives: Remaining credit hours from 200 and above level courses offered by the Department, *BIOT 498 (Internship 3 credits) or *BIOT 499 (Research 6 credits).

During Freshman and Sophomore years, students are recommended to take the following courses which will prepare them for higher level courses.

- Students who did not study Biology at higher secondary school or A-level or equivalent have to take BIOL 100; those who studied Biology at these levels, should not take BIOL 100, rather opt for BIOL 102 and/or BIOL, 105.
- Those who have not studied Chemistry at higher secondary school or A-Level or equivalent must take CHEM 100
- Those who have not studied Physics at higher secondary school or A-Level or equivalent must take PHYS 100

* Students with CGPA 2.75 or above will be eligible for research/Internship. Research or Internship will be allotted to the students on recommendation of the Departmental Committee.

Course Descriptions

BIOL 100: Introductory Biology (4 credits)
Only for students who have not studied Biology in higher secondary school or A level or equivalent
The course includes basic concepts of biology with the cell as a building block, its function, reproduction, genetics, inheritance, principles of living systems, classification of plants and animals. The course is designed to provide non-science students with an overview of modern biology and to elucidate its importance in everyday life. How human beings depend upon other organisms, which fundamental processes are essential for living organisms? How does digestion and circulation take place? How DNA controls heredity characters? This course will answer all such questions.

BIOL 102: Introductory Plant Biology (4 credits)
Only for students who have studied Biology in higher secondary school/A -Level or equivalent
This course covers the structure-function relationship of plants, basic principles of genetics and molecular genetics and Biotechnology as well as its use in modifying plants. Ecosystems, environmental issues and the relevance of flowering plants in human life are also examined.

BIOL 105: General Zoology (4 credits)
Only for students who have studied Biology in higher secondary school/A- Level or equivalent
Classification, structure and function of all major animal groups including protozoa, porifera and metazoa (invertebrates and chordates).

BIOL 201 / MBIO 201: Cell Biology (3 credits)
Introduction to the course, applications of cell biology, research in cell biology, evolution of cell, comparison of plant and animal cells, biological molecules (carbohydrates), structure and function of plant cell wall, its comparison with prokaryotic cell wall, biological molecules (lipids and protein), ultra structure of cell: plasma membrane, movement across cell membrane and its significance, structure and function of chloroplast and mitochondria – comparison, the cytoplasm: endoplasmic reticulum, golgi complex, lysosomes and vacuoles. Peroxisomes and glyoxysomes, the cytoskeleton, significance of cytoskeleton, the nucleus: structure and function of nucleus, nuclear material, cell cycle, cell division and its control, apoptosis – programmed cell death, comparison to necrosis, introduction to cellular communications, types of cellular secretions, cellular communication – properties of receptors, cell signaling pathways, G coupled protein, tyrosine kinase and adhesion receptors.

MBIO 202: Microbial Taxonomy (3 credits)
This course will cover the structure of microbial communities, including the roles of microbes within an ecosystem, and the impact of environment on the community, the participation of diverse microorganisms in maintaining elemental cycles, physiological and molecular diversity within a community of microbes, methods and approaches used to study relationships and evolution (phylogeny) of microbes, particularly Bacteria and Archaea, and current classification of microbe groups, explore taxonomic strategies and approaches used to name microorganisms, and criteria used to define bacterial species and subspecific divisions within species, principles and methods behind studying and identifying cultured and uncultured microorganisms.

BIOL 203 / MBIO 203: General Genetics (3 credits)
Introduction, Mendelian genetics, incomplete dominance, codominance, over dominance, multiple alleles, blood group system, gene interaction, lethality, environmental factors affecting phenotypes, sex determination mechanisms, sex linked inheritance, dosage compensation, nondisjunction phenomenon, linkage and crossing over, cytoplasmic inheritance, quantitative inheritance, variation in chromosome number, variation in chromosome structure, population genetics, problems related to the theoretical course.

MBIO 204: General Immunology (3 credits)
This course is designed for undergraduate students who are interested in developing a basic understanding of our immune system. It provides an overview of the immune system and functions of the organs involved. This course covers the basics of what goes into a functional immune system, how it has evolved to respond to our environment, and how it changes with time. Additionally, this course will give students an appreciation of how our immune system adapts to growing threats and how scientists have used this understanding to lead immunology centered disease treatments. For students who are interested in further studies, it prepares them for a more advanced molecular immunology course.

BIOL 207: Applied Botany (3 credits)
This course will cover the study of plants from an economic point of view. The improvement of plants for better yield of their products and the strategies for the domestication and preservation of economically important plants. Plants as a source of food; beverage, herbs and spices; medicinal plants, psychoactive plants, poisonous and allergy plants, fibers, dyes, tannins, hydrogel, latexes and resins, wood cork and bamboo. Cultural and molecular approaches for the improvement of economic products, domestication and preservation of economically important plants

BIOL 208: Applied Zoology (3 credits)
Pests of public health importance, parasites of human and animals, mites and ticks and their control, household insects, insect pests of cash crops, industrial aspects including apiculture (honey bee culture), lac culture, sericulture (silk-worm culture), aquaculture, snake venom, poultry industry, economic importance of mammals, leather industry, dairy industry, wool industry, pharmaceuticals from animals, bioactive substances from animals, pearl culture, wildlife and its management with values, conservational approaches

BIOL 212/STAT 212/ENVR 212 / MBIO 212: Research Design and Biostatistics (3 credits)
Stages of research, selection of research topic, hypothesis formation, selecting the right materials and methods for the research being performed, experimental design and its significance, controls, data collection and analysis, hypothesis testing. Training on statistical software (e.g. SPSS, MINITAB)

BIOL 221: Plant Form and Function (4 credits)
This course is an introduction to plant structure and function. It deals with a general survey of plant kingdom and evolutionary trends in plants, morphology, anatomy, and physiology of plants. The aim of the course is to emphasize how structural botany is integrated with other modern fields. It provides knowledge and understanding in plant science for future employment in Biotechnology, agriculture, horticulture, and environmental areas.

BIOL 222: Animal Form and Function (4 credits)
Comparison of animals with one another: similarities and differences among the major phyla of animal kingdom, challenges in animal form and function, external and internal variations in organs and systems; integumentary, reproductive diversity among animal groups, digestive, sensory, cardiac systems and adaptations that enable them to live

successfully in their respective environments.

BIOL 306: Integrated Pest Management (4 credits)
Prerequisite: BIOL 222
People, plants and pests, dynamics of pest populations, intensive agriculture, pest problems, concepts of Integrated Pest Management (IPM), cultural control, host plant resistance, parasitoids and predators, microbial control, botanical pest control, synthetic organic insecticides biotechnology approaches, bio-rational and other innovative approaches, IPM achievements, potential and challenges.

BIOL 313 / MBIO 313: Biochemistry (4 credits)
Prerequisite for non-science students: CHEM 160
This course is designed to provide a solid understanding of the organic structure of living systems. The topics include chemistry, structure and specific roles of: carbohydrates, lipids, amino acids, proteins and nucleic acids. General characteristics and properties of enzymes including enzyme kinetics will also be covered.

BIOL 315 / MBIO 315: Fundamentals of Microbiology (4 credits)
This course deals with History of microbiology, study of microbial life including bacteria, fungi, virus, protozoa, algae; comparison of prokaryotic and eukaryotic cells; pure culture techniques, microscopy, bacterial morphology, bacterial growth in different environments and on different media, control of microbes by using different methods, sterilization, BSL labs; bacterial genetics, mutation and its types, mutagens, transcription and translation in eukaryotes and prokaryotes; antimicrobial resistance; mechanisms microbes use for their protection; antimicrobial drugs and their mode of action; microbial products, applications of microbes in the food industry, biotechnology, environmental science, wastewater treatment, biofuels.

BIOL 319 / MBIO 319: Mycology (4 credits)
This course will deal with the study of structural specialization, diversity, and economic importance of fungi.

BIOL 323/ENVR 323 / MBIO 323: Ecology and Evolution (4 credits)
Introduction to ecology, climate and habitats, light, temperature, and water; Populations, distribution, species interaction, competition; Communities, their nature, species diversity, ecosystems, flow of energy, nutrient cycle, and food webs; Succession and stability in communities. Evolution and society, Darwinian natural selection, genetic variation and natural selection, mutation and migration, speciation; Interrelationships between ecology and evolution, evolution as an ongoing process.

BIOL 325: Human Physiology (3 credits)
This course is designed to provide students with an understanding of the physiology of the human system. Course content will include cell physiology and membrane permeability; gastrointestinal system; muscle physiology; cardiovascular system; respiratory system; excretory system; nervous system; sensory organs; endocrine system; homeostasis; reproductive system.

BIOL 327: The Molecular Biology of Cancer (3 credits)
Pre-requisites: BIOT-313: Molecular biology
This course will review the field of cancer research in depth. The molecular mechanisms and factors that invoke a normal cell to develop into a cancerous cell and the mechanisms that help cells avoid and fight cancer will be methodically surveyed. These include DNA damage and repair mechanisms, the regulation of gene expression in eukaryotes, tumor causing viruses, proto-oncogenes, oncogenes and tumor suppressor genes/proteins in

cancer development, cellular and genetic basis of carcinogenesis, tumor growth and metastasis, genetic alterations that result in development of cancer molecular mechanisms and the biological principles that are a result of the above described alterations and the methodologies relevant to measure the extent and examine different cancer types.

BIOL 328: Taxonomy and Dendrology (3 credits)
In this course students will learn about the biology of woody plants (trees and shrubs), their identification of morphological, ecological, and molecular aspects. It will introduce them to many economically important woody plants which are widely distributed in areas of Punjab. DNA barcoding techniques, various molecular techniques used in identification and preservation of important trees along with different strategies including conservation of local flora. It also includes the role of important trees in phytoremediation. Students will also be introduced to the science of dendrochronology and dendroecology.

BIOL 329: Applied Endocrinology (4 credits)
This course is designed to provide students an understanding of the hormonal control and regulation of the animal bodies. Applied aspects of endocrinology will be discussed. Course contents will include an overview of endocrine systems in animals and humans, classical and non-classical endocrinology, hormone biosynthesis and metabolism, mechanisms of hormone action, interactions among hormones and environmental interactions with hormonal systems. Clinical disorders associated with endocrine glands and hormones will also be covered. Clinical case studies and endocrine-related technologies will also be included with emphasis on diagnosis and treatment.

BIOL 330: Radiobiology (4 credits)
Prerequisite: BIOL 201 or BIOL 203
This course will deal with the basic concepts of radiation, its sources, nature, types and properties and effects. Emphasis will be laid on the role of radiobiology in the health sciences and health care industry in terms of diagnosis and injury. Besides this, the course will also elaborate on the factors that affect the dose response elements processes by which radiation is absorbed, the biologic effects of radiation, including cell killing, carcinogenesis and mutation, radio-sensitivity, fractionated radiation, cell survival curves, concepts of linear energy transfer, radioprotection and applications of radiation in daily life.

BIOL 403: Plant Physiology (3 credits)
Prerequisite for non-science students: BIOL 221
Application of physical and biological principles to the understanding of plant processes involved in assimilation, metabolism and regulation of growth and development.

BIOL 404/ ENVR 405 *: Conservation Biology (3 credits)
The objective of this course is to familiarize the students with different forms of biodiversity, threats to biodiversity and an overview of different strategies for its conservation.

BIOL 408: Applied Entomology (4 credits)
Prerequisite BIOL 222
This course will cover all applied aspects of entomology in a broader perspective and will focus on; insects in the service of man, insects as enemies of man, causes of success of insects, collection and preservation of insects, classification and considerations for life histories, agricultural entomology, veterinary entomology, medical entomology, arthropods borne diseases including dengue, industrial entomology, forest entomology, forensic entomology and nutritional entomology.

BIOL 411/ ENVR 411 / MBIO 411: Environmental Microbiology (3 credits)
This course will provide an awareness and understanding to the students about the role of

microorganisms in the environment. After completion of this course, students will be able to understand the significance, role and application of microorganisms in the environment.

BIOL 412 Neurobiology (3 Credits)
Prerequisite: BIOL 201
Introduction, basic anatomy of nervous system, cellular organization of brain, neuronal morphology, synapses and spines, different neuronal types: inhibitory and excitatory neurons, neuromodulatory neurons, neuroglial cells, astrocytes, cerebral vasculature. Modes of neuronal communication, catecholamines, serotonin, GABA neurotransmitters, biosynthesis, roles and release. Classical and non-classical neurotransmitters, excitatory and inhibitory amino acid transmitters, unconventional transmitters. Neurotransmitters receptors: ionotropic receptors, nAcCR, 5HT3, GABA receptors, glycinergic and glutamate receptors. NMDA and non-NMDA receptors, G-protein coupled receptor, adrenergic, purinergic and dopamine receptors. Quantal release of neurotransmitters: excitation - secretion coupling, short term synaptic plasticity.

BIOL 413 Developmental & Regenerative Biology (4 credits)
Prerequisite: BIOL 201 and BIOT 313
Focused on animals and human beings, this course provides current knowledge of the processes involved and phases of development and differentiation from embryo to adulthood emphasis on molecular mechanisms using examples from current studies. The course also includes the complex process of development of behavior, the underlying principles of regeneration in invertebrates and vertebrates and medical implications.

BIOL 414: Plant Growth Regulation (4 credits)
Prerequisite: BIOL 221
This course focuses on recent developments related to plant growth regulation; it covers hormones, senescence, abscission, phytochromes, photomorphogenesis, phototropic and gravitropic responses with emphasis on molecular mechanism of hormones and signal transduction.

BIOL 415 / MBIO 415: Food Microbiology and Safety (4 credits)
Prerequisite: BIOL 319 OR BIOL 201 OR BIOL 315
Food microbiology and microbial lab safety, overview of microbial cellular structures, identification of microbial food contaminants, cell growth and kinetics of probiotics, microbial metabolism and application of metabolites in food system, probiotics and their influence on gut microflora, microbial aspects of food preservation, food safety and quality, Principle and applications of HACCP in food chain, quality assurance (QA) and total quality management (TQM) as combined approach towards food safety.

BIOL 416 / MBIO 416: Medical Microbiology (3 credits)
Prerequisite: BIOL 201 OR BIOL 315
Introduction to Medical Microbiology, commensal and pathogenic microbial flora in humans, sterilization, disinfection and antisepsis, general principles of laboratory diagnosis, innate and antigen specific immune responses to infectious agents, antimicrobial vaccines, classification of microbes (bacteria/viruses/fungi/parasites), structure and replication of microbes, mechanisms of pathogenesis and laboratory diagnosis of infectious agents, brief introduction to antimicrobial agents, intestinal and urogenital protozoa, blood and tissue protozoa, nematodes, cestodes, arthropods.

BIOL 469: Plant Pathology (4 credits)
Prerequisite: BIOL 221 OR BIOT 202 OR BIOL 102
This course deals with basic principles of plant pathology, disease symptoms, groups of plant pathogens and plant diseases; diseases of economically important plants; methods

of plant disease control.

BIOL 473 / MBIO 473: Industrial Microbiology (3 credits)
Prerequisite: BIOL 315 OR BIOL 201 OR BIOL 319
This subject is designed to extend the student's understanding and appreciation of the attributes of microorganisms and the applications of modern techniques in the applied areas of industrial and environmental microbiology. It will also develop an advanced understanding of the applications of microorganisms in the industrial production of foods and other useful products.

BIOL X95: Themes (1-3 credits)
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits
Taught by multiple faculty members including guest and foreign faculty. Advanced students in the life sciences explore exciting topics in modern biology. Covering several topics over a semester expands the breadth and depth of student learning. The format will be review and journal articles. Topic possibilities are numerous and may include biological rhythms, epigenetics in development, inheritance, and disease, emerging diseases, and co-evolution of species.

BIOL 495: Human Genetics (2 Credits)
Pre-requisites: BIOT-313
It will cover different inheritance patterns and molecular genetics in humans. Students will be taught to identify and characterize the genetic basis, diversity of the normal human traits and genes involved in human diseases. The course can be modified so that current issues relevant to human and medical genetics are included.

BIOL 495: RNA Structure, Function and Metabolism (2 Credits)
Pre-requisites: BIOT-313
Introduction to RNA Biology, RNase P and RNase MRP RNA in tRNA and rRNA processing, snoRNAs, signal recognition particles (SRP) and telomerase RNA, trans splicing, RNA processing and its regulation: alternative splicing and alternative polyadenylation, RNA splicing couples to NMD, mRNA export from the nucleus to the cytoplasm, mRNA quality control, RNA modifications, The power of 5'UTR and 3'UTR on translational regulation, Internal ribosomal entry sites, Diverse roles of nuclear non coding RNAs in eukaryotic gene expression, Role of RNAi splicing.

BIOL 498: Internship (3 credits)
Students with CGPA of 2.75 or above will be eligible for internship. Internships will be allotted to the students on recommendation of the Departmental Committee. The duration of internship is from 6 to 8 weeks, and it is offered in summer to the students of junior year.

BIOL 499: Research (6 credits)
Students with CGPA 2.75 or above will be eligible for research. Research will be allotted to the students on the recommendation of the Departmental Committee. It is offered in summer to the students of junior year.

BIOT 201: Introduction to Biotechnology (3 credits)
Biotechnology- definition and history; tools of biotechnology, foundations of biotechnology and interdisciplinary pursuit; branches and/or applications of biotechnology in medicine, industry, environment, agriculture (food, livestock, fisheries, algae, fungi, etc.); protection of biotechnological products; safety in biotechnology; public perception of biotechnology;

biotechnology and ethics; biotechnology and the developing world.

BIOT 202 / MBIO 212: Protoplast, Cell and Tissue Culture (4 credits)
A brief history of tissue culture technique, plant growth regulators, culture media, microbial contamination and prevention procedures; plant cell, tissue and organ culture, animal cell culture, multiplication and differentiation of cells. Callus, suspension, and cell line culture, isolation, culture and fusion of protoplasts and application of tissue culture techniques.

BIOT 211 / MBIO 211: Biosafety and Biosecurity (3 credits)
Prerequisite: BIOL 102 or BIOL 105 or FSc Premedical
This course provides an overview of biosecurity/biosafety, and practices, equipment, and facilities for the safe and secure handling of dangerous pathogens in a laboratory setting. Students attending this course will be able to have knowledge about the operation or maintenance of laboratories handling infectious agents.

BIOT 301 / MBIO 301: Analytical Techniques in Biology (3 credits)
Introduction, microscopy, different types of microscopes; centrifugation; types of centrifuges, principle, significance and applications; flow cytometry, spectroscopy: UV-visible, FTIR; electrophoretic separation, types of electrophoresis, SDS PAGE, DNA gel electrophoresis; western, southern and northern blotting; immunochemical techniques, ELISA; types of ELISA, principles and applications of ELISA, chromatography: gel filtration, HPLC, FPLC, TLC, ion exchange; spectrometry: LC-MS, GC-MS, ESI-MS, MS-MS, MALDI- TOF-MS, applications; microtomy; bioanalytical techniques, types of PCR; RT-PCR, real time PCR, gradient PCR: overview of sequencing techniques.

BIOT 302: Fundamentals of Enzymology (4 credits)
Prerequisites: BIOL 313
The course covers a brief history of enzymes, the enzyme structure, an introduction to the amino acids that make up protein structure and determine function relationships, specificity of enzyme action, physical organization of enzymes (multienzyme complex), chemical and enzymatic kinetics, enzyme-substrate interaction and the roles that enzymes play as the fountain of life.

BIOT 305: Commercialization of Biotechnology Products (3 credits)
An overview of commercial products and services that Biotechnology offers. General aspects related to the quality control and criterion for industrially important bioprocesses, their management and impact on the current market. Resource planning and management of bio-inoculant; antimicrobial agents; metabolites, enzymes and therapeutic proteins. Biotechnology and intellectual property rights. Industry interaction and technology transfer. Basics of effective marketing and promotion of Biotechnology products. Steps involved in commercialization of biotechnological merchandise.

BIOT 307 / MBIO 307: Molecular Immunology (3 credits)
Prerequisites: BIOL 201
Introduction to immunology; the basic processes involved in triggering the immune system and rendering it resistance or susceptibility to different infections. The study of molecular and biochemical events that influence immune responses. This course also includes innate (non-specific) and adaptive (specific) immunity, immunoglobulins: structure and functions, antigens, antibody formation and hypersensitivity.

BIOT 309 / MBIO 309: Microbial Biochemistry (3 credits)
Prerequisites: BIOL 313
Microbial growth: mathematical expression of growth, growth curve, measurement of growth and growth yields; synchronous growth and continuous culture. Metabolic diversity

among microorganisms, metabolism of carbohydrates, lipids, amino acids, purines and pyrimidines in prokaryotes. Antimicrobial agents: mode of action and resistance to antibiotics.

BIOT 313/MBIO 313: Molecular Biology (4 credits)
Prerequisite: BIOL 201
History, structure and function of DNA, DNA replication in prokaryotes and eukaryotes, structure, function and types of RNA, transcription, post transcriptional processing, translation, post translational processing in prokaryotes and eukaryotes, control of gene regulation in prokaryotes and eukaryotes, mutation and mutagens, DNA damage and repair, recombination and transposable elements.

BIOT 314: Bioenergetics and Metabolism (3 credits)
Prerequisite: BIOL 102 or BIOL 105 or FSc Prerequisite: BIOL 313
This course covers intermediate metabolism in biological systems. Pathways of breakdown and synthesis of biological molecules such as carbohydrates, lipids and nitrogenous compounds will be examined. Emphasis will be placed on the thermodynamics of the reactions and the regulatory mechanism of pathways.

BIOT 315 / MBIO 315: Genomics and Tools of Bioinformatics (4 credits)
Prerequisite: BIOT 313
Introduction to genomics, techniques involved in studying of genomes i.e. manual and automated DNA sequencing, genotyping, mapping and assembling a genome, an introduction to pharmacogenomics, personal genomics, SNP, RFPL, microsatellite DNA markers, brief history and introduction of bioinformatics, use of online data banks for nucleic acid and protein analysis, prediction of attributes of proteins and nucleic acids on the basis of tabulated data, DNA microarray, proteomics and survey of a genome of a model organism using bioinformatics tools.

BIOT 316 / MBIO 316: Fundamentals of Virology (3 credits)
Prerequisites: BIOL 201 OR BIOL 203
Origin and nature of viruses, taxonomy and classification, ultra structure of viruses, virus isolation, purification and identification, models of viral replication, viral genome analysis, chemotherapy of viral infections, virus host interaction, immunity to viral infections, important viral families of human importance; family characteristics, transmission, epidemiology and pathogenicity.

BIOT 407: Aquaculture Technology (4 credits)
Prerequisites: BIOL 105 OR BIOL 201 OR BIOL 222
Introduction, sources and quality of water, culture systems (open, semi-closed and closed system). Water flow and pumps, filtration and water treatment, culture methods for seaweed, molluscs, crustacean fishes and higher vertebrates, natural food, artificial feed harvesting techniques and policies on leasing.

BIOT 408 / MBIO 408: Recombinant DNA Technology (4 credits)
Prerequisites: BIOT 313
This course includes the central dogma of molecular biology and structural aspects of gene expression in prokaryotes and eukaryotes which introduces a good knowledge of promoter, CDS and terminator sequences; the laboratory bacterial strains and their genotypes, maintenance of genotypes and preservation of modified bacterial strains; isolation of DNA from different types of tissues and isolation of synthetic and natural plasmids from bacteria; different types of plasmid vectors for bacterial, animal and plant systems; restriction enzymes, their types and utilization in recombinant DNA technology, other DNA modifying enzymes and their uses with particular emphasis on gene cloning; transformation systems

for bacteria, animal cells and plant tissues; screening of transgenics through various technologies, e.g., southern hybridization, PCR and RT-PCR.

BIOT 409: Food and Dairy Technology (3 credits)
Status of food industry in Pakistan & abroad; classification of foods: perishable, semi perishable and foods with longer shelf life. Processing of milk and dairy products: pasteurization, UHT for milk, cream, butter and concentrated dried milk. Fermented dairy products: microbiology of starter cultures, cheese technology, yogurt, acidophilus milk etc. Nutritional and therapeutic benefits of fermented milk products. Food preservation by chemical & physical methods, food spoilage, food packaging, recent trends in food technology, Use of genetically modified foods, food safety; Concept of Hazard Analysis Critical Control Points (HACCP).

BIOT 411: Agriculture Biotechnology (3 credits)
Prerequisite: BIOT 201
Introduction and origin of Biotechnology; soil biotechnology; microbial interactions in agriculture, microbial control of fungal plant pathogens and importance of microorganisms for soil fertility, plant growth promoting rhizobacteria, secondary metabolites with antifungal activities, methods to produce transgenic plants with biotic and abiotic resistance, genetic manipulation of fruit ripening, engineering plant protein composition for improved nutrition, genetic manipulation of crop yield by enhancement of photosynthesis, production of high value proteins in plants, vaccines from plants and biofuels.

BIOT 412 / MBIO 412: Medical Biotechnology (3 credits)
Prerequisites: BIOT 313
Nanobiotechnology, cancer immunotherapy, gene therapy, stem cell biotechnology, knockout mice and gene inserts, siRNA, genetically engineered animals, infectious diseases, diagnostics and antibiotic resistance, biomaterials in regenerative medicine, vaccine technology, novel antimicrobial agents, their design and other future medical biotechnologies.

BIOT 413: Structural and Computational Biology (3 credits) – 46th AC
Prerequisites: BIOT 313 and BIOT 315
The course will focus on the fundamentals of nucleic acid and protein sequence analysis, introduction of analysis and modeling of complex biological systems. DNA sequencing technologies, library complexity and short read alignment (mapping), genome assembly and annotation, metagenome/microbiome data analysis, ChIP-seq analysis; DNA-protein interactions, simultaneous ChIP-seq peak discovery and motif sampling, RNA-sequence analysis: expression, isoforms, biological functions and prediction, probabilistic grammatical models of RNA structure, introduction to protein structure; structure comparison and classification, predicting protein structure, and predicting protein interactions.

BIOT 498: Internship (3 credits)
Students with CGPA 2.75 or above will be eligible for internship. Internships will be allotted to the students on recommendation of the Departmental Committee. Duration of internship is from 6 to 8 weeks, and this is offered in the summer to the students of junior year.

BIOT 499: Research (6 credits)
Students with CGPA 2.75 or above will be eligible for research. Research will be allotted to the students on the recommendation of the Departmental Committee. Research is offered in summer to the students of junior year.

MICR 200: Microbial Taxonomy (3 credits)
This course will cover the structure of microbial communities, including the roles of microbes within an ecosystem, and the impact of environment on the community, the participation of diverse microorganisms in maintaining elemental cycles, physiological and molecular diversity within a community of microbes, methods and approaches used to study relationships and evolution (phylogeny) of microbes, particularly bacteria and archaea, and current classification of microbe groups, explore taxonomic strategies and approaches used to name microorganisms, and criteria used to define bacterial species and subspecific divisions within species, principles and methods behind studying and identifying cultured and uncultured microorganisms.

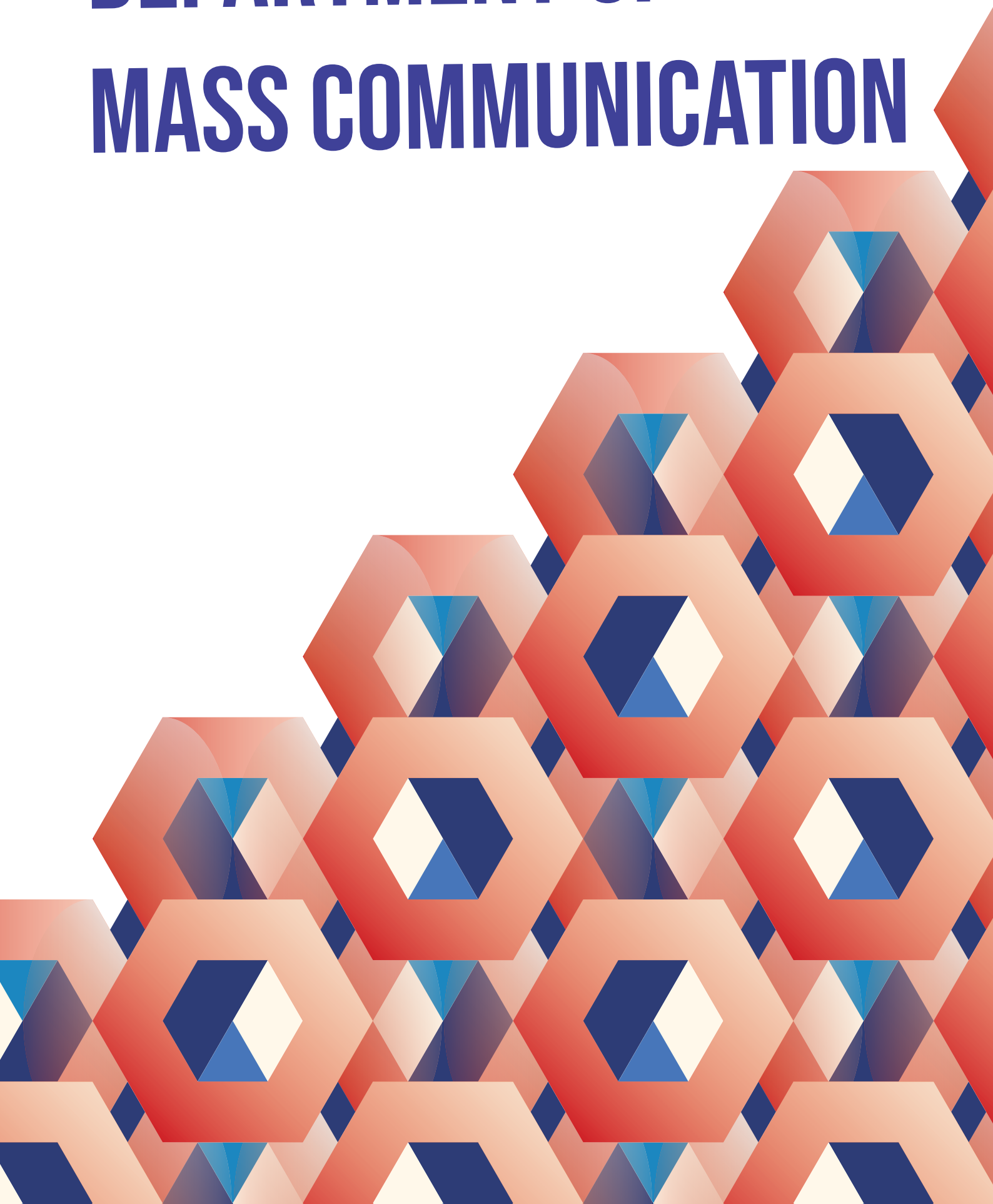
MICR 203: General Immunology (3 credits)
This course is designed for undergraduate students who are interested in developing a basic understanding of our immune system. It provides an overview of the immune system and functions of the organs involved. This course covers the basics of what goes into a functional immune system, how it has evolved to respond to our environment, and how it changes with time. Additionally, this course will give students an appreciation of how our immune system adapts to growing threats and how scientists have used this understanding to lead immunology-centered disease treatments. For students who are interested in further studies, it prepares them for a more advanced molecular immunology course.

MBIO 498: Internship (3 credits)
Students with CGPA 2.75 or above will be eligible for internship. Internships will be allotted to the students on recommendation of the Departmental Committee. Duration of internship is from 6 to 8 weeks, and this is offered in the summer to the students of junior year.

MBIO 499: Research (6 credits)
Students with CGPA 2.75 or above will be eligible for research. Research will be allotted to the students on the recommendation of the Departmental Committee. Research is offered in summer to the students of junior year.

*** Cross listed Courses:**
Courses with two designators (coding) are marked with a * to identify them as cross listed courses. Students must select the correct designator for their applicable program to be counted towards the degree.

DEPARTMENT OF MASS COMMUNICATION



Introduction

The Department of Mass Communication was established in 2003. It aims to equip its students with all the tools that are required to secure a job or pursue higher research degrees. This is made possible by a dedicated faculty, a state-of-the-art Forman Media Center, and links with the media industry. Particular attention is paid to the topics of research/project offered by the department to ensure that our students learn and properly implement research methodologies suiting their audio-video projects. Students get the individual attention of research/project supervisors at every stage. The department offers a Bachelor of Studies (BST) degree and is a part of the Faculty of Humanities.

Learning Objectives

1. To provide a program that develops critical thinking among students
2. To provide a program with an emphasis on ethical decision making in a variety of media-related contexts
3. To provide a program with an emphasis on communication research
4. To provide a program with a focus on journalistic writing, and editing
5. To provide students hands on training of media production

Program Learning Outcomes

1- Knowledge of communication related concepts:
Graduates will demonstrate knowledge of communication related concepts and critically analyze media messages.

2- Evaluation of legal and ethical dynamics of Mass Media:
Graduates will be able to evaluate the legal and ethical dynamics of mass media.

3- Communication Research:
Graduates will conduct research in the field of communication to solve contemporary world problems.

4- Content Production:
Graduates will design and produce original content for different media platforms, including media messages appropriate to the audience, purpose, and context.

5- Market Readiness:
Graduates will describe further opportunities in career and education related to the field of mass communication

Major in Mass Communication WITHOUT Specialization			
6 Core courses (18 credits)	10 Elective courses (30 credits)	Total 16 courses (48 credits)	
Major in Mass Communication WITH Specialization			
6 Core courses (18 credits)	5 Specialization courses (15 credits)	5 Elective (15 credits)	Total 16 courses (48 credits)

NOTE: The Department of Mass Communication offers specializations in the following:

1. Print & Electronic Media
2. Advertising & Public Relations

However, students may opt for a simple Major in Mass Communication without specializations.

Requirements for the Major

48 credit hours including the CORE COURSES mentioned below (6 core + 10 electives):
MCOM 201, MCOM 301, MOCM 310, MCOM 409, MCOM 499, MCOM 498 (mandatory internship).

Additional courses required for specializations in Mass Communication:
6 CORE COURSES (mentioned above) + specialization courses (mentioned against respective specializations)

1. **Print and Electronic Media** specialization requires the additional study of the following courses: MCOM 202, MCOM 302, MCOM 401, MCOM 402, MCOM 410
2. **Advertising and Public Relations** specialization requires the additional study of the following courses: MCOM 200, MCOM 304, MCOM 303, MCOM 400, MCOM 415

Courses recommended for Major in Mass Communication:
ECON 100, URDU 207, URDU 208, SOCL 100, CSCS 210, ENGL 207, and SOCL 355

Requirements for the Minor

18 credit hours including: MCOM 101, MCOM 201, MCOM 301 and MCOM 310.

Course Descriptions

MCOM 101: Introduction to Communication Studies (3 credits)

The course gives a brief introduction to print, electronic, and online journalism as well as advertising and public relations. It encompasses functions of news organizations, introduces students to the basics of news writing, reporting and editing. The students are also exposed to the content of various media.

MCOM 110: English Writing for Journalists (3 credits)

The course deals with the use of English for specific purposes i.e., Mass Communication with a special focus on jargon used specifically in media content.

MCOM 195: Media and Human Conflict (1 credit)

This course discusses how media reports and presents human conflict. It also explores the relationship of social, cultural, and political conflicts with the media. The main focus of the course is to discuss the role of media in war and conflict sensitive situations. Students will analyze various aspects of global challenges posed by war and the threat of war and will make proposals for conflict resolution.

MCOM 200: Copywriting (3 Credits)

Prerequisite: MCOM 101

The course introduces copy designing and copy management skills required for the advertising and public relation industry. It also covers copywriting techniques for public relations and advertising media including print, electronic, outdoor and digital.

MCOM 201: News Reporting (3 credits)

Prerequisite: MCOM 101

The course explores the mechanics, elements, value and structure of stories for print and

electronic media. It also introduces news sources for print and electronic media, as well as qualifications and functions of a reporter. The course introduces basics of camera and microphone reporting, interpretative and investigative reporting, reporting beats and interview techniques.

MCOM 202: Sub-Editing (3 credits)

Prerequisite: MCOM 101

This course incorporates introduction, importance and process of sub-editing. It also covers functions and qualifications of a sub-editor, source of news, types and trends in headline making, techniques of news editing and caption writing for pictorial display.

MCOM 203: Media & Peace Building (3 credits)

Prerequisite: MCOM 101

The course introduces interactive communication approaches and tools of Mass Communication in conflict resolution. It also explores tools for conflict analysis, analyzes the role of theater and music in the peace building process, and further elaborates art for peace, vision and framework for social justice.

MCOM 207/ENGL 207*: Media and Literature (3 credits)

Prerequisites: WRCM 101, WRCM 102

This course centers around the role of media as a means of understanding literature; importance of language and literature with reference to specific social and cultural issues.

MCOM 290: Fundamentals of Research Methods (3 credits)

Prerequisites: MCOM 201

This course is designed to develop the basic understanding of students about the social-scientific process of research used in the field of Mass Communication. This course will give an insight into the concepts, process, elements, measurement and methods of Mass Communication research. It will also enable students to explore the mass media phenomenon in society, gauge the effects and impacts of mass communication through using the basic understanding of research. The prospective students of this course are those who have already taken the prerequisites of the Mass Communication course.

MCOM 301: Media Systems (3 credits)

Prerequisite: MCOM 201

The historical development of an institution in a society is primarily a struggle for more room to assert/express by the institution, while society plays a regulatory or punitive role through its political arm, the government. The study of media in this case, means the study of the interplay of these forces. Press laws are a direct result of the performance of the media and vice versa. The media laws and media institutions form what we call the media system. It will help us discuss the rise, growth, and present status, along with the prospects for the future, in a better context. Instead of teaching linear chronologically, we will focus on a more teleological approach, looking at the interplay of power within the media and the political system (government).

MCOM 302: Opinion writing (3 credits)

Prerequisite: MCOM 201

This course covers the various aspects of the newspaper content. It elaborates on the importance of editorial page, editorial writing, and qualification of editorial writers. It also deals with techniques of newspaper column, feature, article and blog writing.

MCOM 303: Principles of Public Relations (3 credits)

Prerequisite: MCOM 200

It covers various aspects of public relations in Pakistan including corporate/ organizational public relations, consumer public relations, media management, and conflict management. The students are also introduced to press release, press note, Handout, Press communiqué writing.

MCOM 304: Principles of Advertising (3 credits)

Prerequisite: MCOM 200

The course introduces scope, function, and socio-economic aspects of advertising. It also looks at advertising research, functions of advertising agencies, designing and evaluation of advertising campaigns.

MCOM 308: Online Journalism (3 credits)

Prerequisite: MCOM 201 *and students majoring in Mass Communication*

The field of journalism has drastically changed ever since the emergence of the Internet in the 1990s. Newsrooms of today make full use of digital tools to gather, write and present news. The ways in which news is disseminated by media and consumed by users have also changed with the proliferation of websites, mobile apps and social networks. Web desks have become a staple in newsrooms and terminologies such as online journalism, digital journalism, multimedia journalism, computer-assisted reporting are being used extensively among journalists and academia. It has, thus, become necessary that students of mass media are equipped with the knowledge and skills of digital media.

MCOM 310: Mass Communication Studies (3 credits)

Prerequisite: MCOM 201

The course introduces models of communication and mass communication, media literacy, public opinion and propaganda, two-step flow of communication, gatekeeping and information control.

MCOM 315: Media and Crime (3 credits)

Prerequisite: MCOM 201

This course provides an overview of coverage and portrayal of crime and social justice in news media and popular culture. It aims to critically assess the role of media in selection and portrayal of crime content and how it influences public's attitude towards social justice and criminal law. It further discusses the ethical issues of conflict and crime reporting. The course also entails discussion on George Gerbner's contribution to the field of media, crime and violence.

MCOM 350: Risk and Crisis Communication (3 credits)

Prerequisite: MCOM 303

This course focuses on two vital activities of public relations: Risk and Crisis Communication. It also provides a profound understanding of trends and developments that could have a significant impact on an organization or society.

MCOM 400: Media Management in Ad & PR (3 Credits)

Prerequisite: MCOM 304 & MCOM 303

This course covers the media management areas including managing media relations, media buying, media selling, media monitoring and audience analysis for advertising and public relations industry. This course will involve the application of strategic management principles to the development of public relations and advertising plans and programs.

MCOM 401: Radio Broadcasting: A Theoretical Introduction (3 credits)

Prerequisite: MCOM 301

The course introduces the origin and development of radio, functions of broadcasting house, distinctive features of radio news, interviewing for radio programs, duties of a radio producer, trends in FM radio in public and private sectors in Pakistan.

MCOM 402: Television Production (3 credits)

Prerequisite: MCOM 301

The course focuses on the set-up and working of television programming, duties of a TV producer, program shooting and editing. It also includes program research and script writing, and details of different phases of TV production.

MCOM 403: International Journalism (3 credits)

Prerequisite: MCOM 201

This course is an introduction to theories and research on the media systems across the globe. Emphasis will be placed on the study and application of theories and research methods that have relevance for professional practice in the fields of communication and journalism. Students will learn about the structures of media systems in the U.S. and other social and political cultural contexts.

MCOM 404: Community Journalism (3 credits)

Prerequisite: MCOM 201

Community Journalism analyzes the status and issues regarding women, children, minorities and human rights in the local community with special emphasis on Pakistan. It also covers media coverage, role of NGOs and mass awareness campaigns in Pakistan, as well as the role of mass media in reporting human rights events.

MCOM 409: Theories of Mass Communication (3 credits)

Prerequisite: MCOM 310

Extensive as well as intensive study of theories of Mass Communication is covered in this course. Awareness is given about how theories have evolved with the passage of time and how media and society have adapted according to these theories and propositions made by theorists.

MCOM 410: Documentary Making (3 credits)

Prerequisite: MCOM 402

The course explores the various types and modes of documentary making. It also provides a comparative analysis of national as well as international documentaries. Technical skills of script writing, cinematography and editing are also taught in this course.

MCOM 412: International Communication (3 credits)

Prerequisite: MCOM 310

This course evaluates the different approaches to international communication, with special reference to global media and its influence on different regions. It also discusses issues of free flow of information, foreign policy and trans-border data flow.

MCOM 413: Media, Society & Culture (3 credits)

Prerequisite: MCOM 409

This course aims to understand the relationship between media, society and culture. It explores the processes of cultural socialization, homogenization, acculturation, cultural

diversity, pluralism and relativism.

MCOM 414: Research Methodology

Prerequisites: MCOM 290 and 310, only for students majoring in Mass Communication.
This course explores the advanced components of Mass Communication research that have academic and industry implications. Students in this course will learn about the significance of qualitative and quantitative research and understand the process, types, methods and techniques employed in experimental research, descriptive research, content analysis and case studies. Students will also be trained in how to generate sound research results through using the techniques of reliability and validity and appropriate statistical analysis for testing of the hypotheses. Awareness about the current trends in communication research will also develop the interest of students to explore their research education in the field of mass media and communication.

MCOM 415: Communication Campaign Design (3 Credits)

Prerequisite: MCOM 303 & MCOM 304

This course will cover designing of different campaigns including health communication, political communication, public awareness, capacity building and media advocacy campaigns. It will also encompass the evaluations of campaigns by international organizations like WHO, UNDP, USAID and CIDA.

MCOM 430: Media Lab (4 Credits)

Prerequisite: MCOM 304 or MCOM 402
MCOM 430 is a specialized lab course, which will cover essential media skills including layout designing for magazines & circulars as well as video editing through professional software. Students will be provided with knowledge about camera specifications, camera handling, support equipment, and techniques of videography. In addition, students will be provided with the opportunity to practice through field assignments.

MCOM X95: Themes (1-3 credits)

Sections:

A-E of 1 credit

F-J of 2 credits

K-Z of 3 credits

MCOM 498: Internship (3 credits)

Only for students majoring in Mass Communication
An internship will allow students to experience the functioning of media organizations. Students will register for the internship course only after the 6th semester.

MCOM 499: Research Thesis/Project (3 credits)

Only for students majoring in Mass Communication Prerequisite: MCOM 414
Students are required to submit one research Thesis/Project on any assigned topic at the end of the 8th semester.

DEPARTMENT OF MATHEMATICS

Introduction

The Department of Mathematics has established a profound reputation for providing excellent education as par international standards through earnest efforts of its faculty. This Department is an integral part of the Faculty of Computer and Mathematical Sciences. It offers a Baccalaureate degree in Mathematics that provides a broad range of introductory and advanced courses incorporating areas of pure, applied and computational Mathematics. Over the years, our highly esteemed faculty members have ensured to inculcate critical and analytical skills in our students. The department is elevating students' proficiency in the subject through cross listing of courses with departments of Physics, Statistics and Computer Sciences. Significant efforts are made for both individual and communal characteristics development of our students. We aim to nurture students in a healthy and competitive environment to enable them to have an active role in higher echelons of the mathematics community. The success and recognition of our program can be gauged through the acceptance of a large number of our students in national and international universities for advanced degrees.

Mission

The mission of the B.S Mathematics degree program is to impart computational and analytical skills to its students to cultivate an aptitude of logical and quantitative rationale towards practical and scholarly interests. The program seeks to further its mission by teaching mathematics to the students aspiring to achieve a primary degree in the subject and to the students' pursuing degrees in other subjects requiring computational and interpretive acumen for comprehensive knowledge. Our program also aims to cater to the students in pursuit of careers in academia and industry, and to enable them to employ their scientific proficiency to devise efficient solutions of problems in our community.

Learning Objectives

1. To equip students with fundamental knowledge of mathematical principles and its development into a profound theoretical and computational framework.
2. To furnish students with quantitative and metaphysical skills to transmit the knowledge into reproducing, creating and assimilating the situations with an intent of significant outcome.
3. To reinforce the extensive capacity of mathematical education into implementation and materialization.
4. To integrate mathematical logic and precision into impartial conduction of affairs through contemplation of principles of ethics, integrity and accountability.
5. To prepare students to pursue advanced studies, research and professional outlook employing mathematical qualifications and skills.

Program Learning Outcomes

1- Understanding:
Students will demonstrate diverse mathematical principles and their specific employment in applied and theoretical branches of the discipline.

2- Analyzing:
Students will solve problems using analytical and computational methods.

3- Evaluation:
Students will demonstrate subject knowledge into building up a theoretical and critical premise for the solutions of problems of abstract nature.

4- Application:
Students will apply mathematical expertise to assimilate and interpret the information in other disciplines and scientific pursuits.

5- Human Development Element:

Students will be able to employ logical reasoning and methodical insight into conducting their affairs in consideration with principles of ethics and integrity.

6- **Future:**
Students will be able to pursue advanced degrees, research and careers in related domains.

BS (Hons) Mathematics

The 4-year degree program in Mathematics was launched in 2005. Students majoring in Mathematics take 48 credit hours in their major as well as 47 or 48 in general education and 35 or 34 respectively as free electives. Students majoring in Mathematics take courses as free electives from the mathematics department or cross-listed courses with the other departments. A degree in Mathematics develops clear logical thinking. The coursework looks at topics in Mathematics: from pure Mathematics to how Mathematics is used in the real world. Cross listing of courses with the other departments further helps students to analyze Mathematics as a real-world tool. Students obtain a secure understanding of Mathematics with a good choice of topics in pure and applied Mathematics at an advanced level.

Requirements for the Major

A major consists of 48 credit hours which include:

36 credit hours taken from:

Core Courses:
MATH 201, MATH 202, MATH 203, MATH 209, MATH 213, MATH 301, MATH 302, MATH 307, MATH 309, MATH 310, MATH 311, MATH 313, and

12 credit hours taken from:

Elective Courses:
MATH 212, MATH 303, MATH 304/STAT 313, MATH 308, MATH 312, MATH 314/STAT 304, MATH 315/STAT 311, MATH 316/PHYS 341, MATH 401, MATH 402, MATH 403/CSCS 403, MATH 404, MATH 407, MATH 409, MATH 410/PHYS 461, MATH 411/PHYS 462.

See the Chair of Mathematics or the undergraduate adviser for a degree plan during the first year of study at FCC. An asterisk (*) indicates that the course is cross listed with other departments.

Requirements for the Minor

A minor consists of 18 credit hours, which includes:

9 credit hours taken from:

Core Courses:

MATH 102/MATH 111, MATH 103/CSCS 202, MATH 201/CSCS 201,

and

9 credit hours taken from:

Elective Courses (Non-CS Students Only):
MATH 202, MATH 203, MATH 209, MATH 212, MATH 213, MATH 301, MATH 302, MATH 303, MATH 304/STAT 313, MATH 307, MATH 308, MATH 309, MATH 310, MATH 311, MATH 312, MATH 313, MATH 314/STAT 304, MATH 315/STAT 311, MATH 316/PHYS 341, MATH 401,MATH 402, MATH 403/CSCS 403, MATH 404, MATH 406, MATH 407, MATH 409, MATH 410/PHYS 461, MATH 411/PHYS 462.

9 credit hours taken from:

Elective Courses (CS Students Only):
MATH 203, MATH 212, MATH 303/COMP 113, MATH 304/STAT313, MATH 403/CSCS 403.

Course Descriptions

MATH 100: Quantitative Skills (3 credits)
Basic Algebra and number theory, rounding, estimating, scientific notation, algebraic expressions, fractions, factoring, solving equations, two equations with two unknowns and their applications to daily life problems, quadratic equations and their applications, percentage problems (profit, loss, discount, interest, commission, taxation), ratio and proportion, work problems, distance problems (time, distance, speed), basic geometry, mean, median and mode.

MATH 101: Pre-Calculus & Trigonometry (3 credits)
Fundamentals, solution of equations and inequalities, lines, functions, linear and quadratic functions, polynomial and rational functions, operations on functions, inverse functions, synthetic division, remainder and factor theorem, partial fractions, exponential, logarithmic and trigonometric functions, trigonometric identities, solution of right and oblique triangles.

MATH 102: Calculus I (3 credits)
Prerequisite: MATH 101 or A-Level Mathematics or Intermediate with Mathematics
Functions, graph of functions, translation, stretching and compressing graphs, limits, continuity and differentiability, differentiation and its basic rules, indeterminate forms, L'Hopital's rule, integration and its techniques, fundamental theorem of calculus, evaluating definite integral.

MATH 103: Introductory Linear Algebra (3 credits)
Prerequisite: MATH 101 or A Level Mathematics or Intermediate with Mathematics
Introduction to system of linear equations, matrices and matrix operations, elementary matrices, Gaussian elimination, Gauss Jordan method for solving a system of linear equation determinants and their properties, vector spaces, subspaces, linear independence, bases and dimensions.

MATH 105/STAT 102*: Probability and Probability Distributions (3 credits)
Note: Please see the contents from the list of Statistics courses.

MATH 107 / STAT 101*: Statistical Methods (3 credits)
Note: Please see the contents from the list of Statistics courses.

MATH 201: Calculus II (3 credits)
Prerequisite: MATH 102
Applications of derivative: increasing and decreasing functions, maxima and minima of a function, concavity, inflection points of a function, Rolle's Theorem, the mean value theorem, Taylor's theorem, applications of integration: area and arc length, volume and

surface of revolution, introduction to improper integrals, infinite series, power series, introduction to conic section.

MATH 202: Ordinary Differential Equations (3 credits)
Prerequisite: MATH 102
Introduction and classification of differential equations, basic concepts, formation, separable and reducible to separable equations, homogeneous and reducible to homogeneous equations, exact and inexact equations, integrating factors and linear equations, Bernoulli and Clairaut equations, second order homogeneous and non-homogeneous equations, initial and boundary value problems, homogeneous equations with constant coefficients, linear Independence and Wronskian, solving non-homogeneous equations with the methods of undetermined coefficients and variation of parameters, Cauchy-Euler equation, Laplace and inverse Laplace transformations, and their properties, to solve ordinary differential equations.

MATH 203: Vector Analysis (3 credits)
Prerequisite: MATH 102
Scalars and vectors, laws of vector algebra, scalar and vector fields, product of two vectors and their applications, scalar and vector triple products, ordinary and partial differentiation of vector fields and its use in basic differential geometry, gradient of a scalar field, divergence and curl of a vector field, ordinary integration of vector fields, line integrals, surface integrals and volume integrals, divergence, and Stokes theorem.

MATH 209: Linear Algebra (3 credits)
Prerequisites: MATH 103 and MATH 102
Review of vector spaces, subspaces and bases, row space, column space, rank, nullity, inner product spaces, orthogonal basis, Gram Schmidt process, orthogonal matrices, eigenvalues and eigenvectors, diagonalization, orthogonal diagonalization, positive definite and negative definite matrices, linear and inverse linear transformation.

MATH 210: Set Theory (3 credits)
Prerequisites: MATH 101 or A Level Mathematics or Intermediate with Mathematics
Sets and basic operations on sets, relations, functions, cardinal numbers, computing cardinals, denumerable and countable sets, power of continuum, cardinal arithmetic, Cantor-Bernstein theorem, ordered sets, ordinal numbers, axioms of choice, well ordering theorem, and Zorn's lemma.

MATH 212: Elementary Number Theory (3 credits)
Prerequisite: MATH 101 or A Level Mathematics or Intermediate with Mathematics
Division algorithm, divisibility properties, Euclidean algorithm, properties related to greatest common divisor and least common multiple, Diophantine linear equations, prime numbers, fundamental theorem of arithmetic, prime numbers, and divisibility, congruences, properties of congruences, Euler's Phi function, Fermat's theorem, residue classes modulo n, solution of congruences, the Chinese remainder theorem.

MATH 213: Introduction to Scientific Computing (3 credits)
Prerequisite: MATH 102 and MATH 103
This course is designed to enhance the computational and programming strengths of mathematics major students using technical computing language. However, all science majors can capitalize on this opportunity to improve their mathematical programming skills. By taking this course, students will develop skills to write moderate-sized programs for solving various mathematical problems as well as utilize built-in functions to expedite the computations. The course will consist of interactive lectures and guided workshops where students will be engaged in hands-on activities to work on building their programming

command.

MATH 301: Multivariable Calculus (3 credits)
Prerequisite: MATH 201
Vectors, analytic geometry in 3-space, sphere, cylindrical surfaces, quadric surfaces, cylindrical and spherical coordinates, functions of multiple variables, limit and continuity, partial and directional derivatives, chain rule and implicit differentiation, tangent plane, normal vector and normal line, maxima and minima of function of more than one variable, Lagrange's multipliers, double integrals over rectangular and non-rectangular domains, double Integral in polar coordinates, triple integral in rectangular, cylindrical and spherical coordinates, change of variables in multiple integrals, line integral, conservative vector field and Green's theorem.

MATH 302: Mechanics (3 credits)
Prerequisite: MATH 203
Composition and resolution of forces, friction, kinematics, and dynamics of a particle.

MATH 303: Discrete Mathematical Structures (3 credits)
Prerequisite: MATH 101 or A-Level Mathematics or Intermediate with Mathematics
Propositional logic and logical connectives, logical equivalence, methods of proofs, mathematical induction, recurrence relations, relations on sets, equivalence relation and equivalence classes, partial order relations, basic counting principles, pigeonhole principle, permutation and combinations, inclusion-exclusion rule, counting techniques, introduction to graphs.

MATH 304/STAT 313*: Operations Research (3 credits)
Prerequisite: MATH 103 or STAT 102
Introduction to operations research, graphical solution, Simplex method, two phase method, M-method, sensitivity analysis, primal dual relationship, dual simplex method, transportation model, assignment models, transshipment models, network models, queuing theory.

MATH 307: Complex Analysis (3 credits)
Prerequisite: MATH 201
Algebra of complex numbers, geometric representation of complex numbers, Euler's and Demoivre's formulas, powers and roots of complex numbers, definition of a function of complex variable, limit and continuity, differentiable and analytic functions, C-R equations, entire functions and harmonic functions, exponential, trigonometric hyperbolic and logarithmic functions and inverse trigonometric and hyperbolic functions, sequence and series of complex numbers, geometric series, convergence and divergence tests of series including nth root test, ratio and comparison tests with proofs, power series and radius of convergence, complex integration, contour integrals, Green's theorem, Cauchy-Goursat theorem, deformation theorem of contours, Cauchy-Integral formulae, Taylor and Laurent's series, singularities, poles and residues, calculus of residues, Cauchy' residue theorem with applications to solve trigonometric integrals.

MATH 308: Differential Geometry (3 credits)
Prerequisite: MATH 301 or MATH 203
Arc length parametrization, moving trihedron (tangent, normal, binormal), osculating, normal and rectifying planes, curvature and torsion, Serret-Frenet equations, natural equation of a curve, involute and evolute, tangent planes and surface normal, fundamental existence theorem of space curves, first and second fundamental forms of surfaces.

MATH 309: Real Analysis (3 credits)
Prerequisite: MATH 201
Sets and functions, finite, infinite, countable and uncountable sets, algebraic and order properties of set of real numbers, triangle inequality, completeness property of set of real numbers, archimedean property, limits of sequences, algebra of limits, convergent and divergent sequences, convergence of monotone sequence, Bolzano Weierstrass theorem, limits of functions, sequential criterion for limits (convergence and divergence), squeeze theorem, continuous functions, composition of continuous functions, uniform continuity, differentiable functions, and Caratheodory's theorem.

MATH 310: Numerical Analysis (3 credits)
Prerequisite: MATH 102 or MATH 103
Solution of system of linear equations, solution of nonlinear equations, error analysis, interpolation by polynomials, Lagrangian interpolation, numerical differentiation, numerical integration, computer programming will be done by using any suitable software like MATLAB, MAPLE or MATHEMATICA.

MATH 311: Topology and Metric Spaces (3 credits)
Prerequisite: MATH 210
Metric spaces, neighborhoods, open and closed sets, topological spaces, limit point, interior point, closure, dense subsets, basis and sub basis, induced topology, product and quotient topology, continuity, homeomorphism, convergence and Cauchy sequences, complete metric space, separation axioms, compactness, and connectedness.

MATH 312: Integral Equations (3 credits)
Prerequisite: MATH 202
Integral equations and their types, Abel's problem, resolvent and iterated kernels, eigenvalues and functions, Leibniz rule of differentiation under the sign of integration, conversion of multiple integral to single integral, conversion of initial and boundary value problems to Volterrra and Fredholm integral equations, solution of homogeneous Fredholm integral equation of the second kind with separable kernels, Fredholm theorem, Fredholm alternative theorem and an approximate method, method of successive approximations and resolvent kernels, solution of Fredholm integral equation by successive approximation, solution of Volterra integral equation by successive approximation, Neumann series, solution of Volterra integral equation of second kind by reducing to differential equation, solution of integral equations using Hilbert Schmit method. application of Laplace transformation to solve Volterra integral equation with convolution type kernels.

MATH 313: Group Theory (3 credits)
Prerequisite: MATH 103 and MATH 210
Definition and examples of group, subgroups, cyclic groups, cosets, Lagrange's theorem, normalizer, centralizer, the center of a group, conjugacy classes, normal subgroups, quotient groups, homomorphism, isomorphism and automorphism, kernel and image of homomorphism, isomorphism theorems, permutation groups, the cycle decomposition of a permutation group, Caley's theorem, direct product of two groups.

MATH 314/STAT 304*: Distribution Theory (3 credits)
*Prerequisite: MATH 105/STAT 102**
Note: Please see the contents from the list of “Statistics” courses.

MATH 315/STAT 311*: Mathematical Statistics (3 credits)
*Prerequisite: MATH 105/STAT 102**
Note: Please see the contents from the list of “Statistics” courses

MATH 316/PHYS 341*: Methods of Mathematical Physics (3 credits)
Prerequisite: PHYS 221 or MATH 203
Note: Please see the contents from the list of “Physics” courses

MATH 402: Ring Theory (3 credits)
Prerequisite: MATH 313
Definition and examples of rings and subrings, units, invertible element, zero-divisors, nilpotent, idempotents. Ideals, operations on ideals, prime ideals, maximal ideals, quotient ring, ring homomorphism, integral domains, the Chinese remainder theorem, divisibility in integral domains, greatest common divisor, least common multiple, Euclidean ring, principal ideal domain, unique factorization domains, finite field, polynomial ring in several variables, symmetric polynomials and its fundamental theorem.

MATH 403/CSCS 403*: Graph Theory (3 credits)
Prerequisite: MATH 303/COMP 113
Graphs and graph models, connected graphs, common classes of graphs, operations on graphs, regular graphs, degree sequence, isomorphic graphs, characterization and properties of trees, spanning trees, connectivity, Eulerian graphs, Hamiltonian graphs, planar graphs, Euler identity, Kuratowski's theorem, vertex and edge coloring, digraphs.

MATH 404: Partial Differential Equations (3 credits)
Prerequisite: MATH 202
Introduction, formation of first order partial differential equations (PDEs), Lagrange's equations, integral surfaces passing through a given curve, surfaces orthogonal to a given system of surfaces, the Cauchy's problem for quasi linear first order PDEs, classification of second order PDEs, reduction to canonical (or normal) forms, solutions of elliptic, parabolic and hyperbolic PDEs, the method of separation of variables, boundary value problems, the vibrating string, conduction of heat in solids, Laplace's Equation, introduction and properties of Laplace transform, Laplace transforms of elementary functions, inverse Laplace transform, convolution theorem, solution of PDEs by Laplace transform, Fourier integral representation, Fourier transform pair, transform of elementary functions, Fourier sine and cosine transform, solutions of PDEs by Fourier transforms.

MATH 407: Functional Analysis (3 credits)
Prerequisite: MATH 311
Normed spaces, Banach spaces, convex spaces, equivalent norms, quotient spaces, linear operators, finite dimensional normed spaces, continuous and bounded linear operators, dual spaces, inner product spaces, orthonormal sets and bases, Hilbert spaces, annihilators, projections, decomposition theorem in Hilbert spaces, linear functionals on Hilbert spaces, reflexivity of Hilbert spaces.

MATH 409 Continuum Mechanics (3 credits)
Prerequisite: MATH 203 and MATH 209
Algebra of vectors, transformation laws for basis vectors and components, algebra of Cartesian tensors, eigenvalues and eigenvectors of Cartesian tensors, configurations, and motions of continuum bodies, displacement, velocity, acceleration fields, gradients and related operators, material, spatial derivatives, deformation gradient, strain tensors, rotation, stretch tensors with
applications like SIMPLE SHEAR deformation and balance laws.

MATH 410/PHYS 461*: Quantum Mechanics I (3 credits)
Prerequisite: MATH 302 or PHYS 301 and PHYS 341
Note: Please see the contents from the list of “Physics” courses

MATH 411 / PHYS 462*: Quantum Mechanics II (3 Credits)
Prerequisite: MATH 410/PHYS 461: Quantum Mechanics I
Note: Please see the contents from the list of “Physics” courses

* **Cross listed Courses:**
Courses with two designators (coding) are marked with a * to identify them as cross listed courses. Students must select the correct designator for their applicable program to be counted towards the degree.

DEPARTMENT OF PHARMACY

Introduction

Pharmacy profession has historic roots as the art and science of preparing and dispensing medications. This role of pharmacists had been transformed to wide ranging activities: pharmaceutical care (community, hospital and clinical pharmacy), pharmaceutical & biotechnology industry, research (drug discovery, drug design and drug delivery), drug regulatory agencies, academics and training of health workers.

FCCU's Department of Pharmacy has been established with an ultimate goal to be the center of excellence in the field of pharmaceutical sciences. The department is located in the Peter H Armacost Science Building and consists of modern lecture rooms, seminar rooms with audio-visual arrangements, and modern laboratories equipped with all instruments / equipment. The institution has a facility of 200 bedded tertiary care United Christian Hospital and FCCU Mercy Health Center for practical training / residency in clinical, hospital and community pharmacy. MOUs have been signed with Pakistan Council of Scientific & Industrial Research, Lahore; HEJ Institute of Chemistry Karachi University; Chughtai Diagnostic Laboratory and NovaMed Pharmaceuticals and CCL Pharma for providing training, internships and research facilities.

The Department of Pharmacy is part of the Faculty of Natural Sciences.

Vision

The vision of the Department of Pharmacy is to be the center of excellence for education and training in the life saving profession of pharmacy instilling FCCU core values.

Mission

The Doctor of Pharmacy Program at FCCU prepares graduates capable of providing high quality patient-centered care in healthcare settings, striving for excellence and innovation in pharmacy practice, community wellness, product development, pharmaceutical industry, drug delivery and drug discovery by educating them fundamental and applied concepts, knowledge and laboratory techniques / skills of pharmaceutical sciences.

Learning Objectives

1. Develop trained and skilled graduates to excel in dosage form design, formulation development, manufacture / dispensing of quality & safe medications for use by the patients, and innovations in drug delivery.
2. Develop trained and skilled graduates capable to implement patient care plans and pursue discovery & development of new drug molecules
3. Develop professional skills and management abilities in the students to excel in clinical, hospital, community, nuclear pharmacy settings, regulatory agencies, marketing, and research
4. Develop and train the students to excel in drug discovery, quality control of pharmaceutical products, and synthesis of drug substances
5. Develop and train the students to excel in the isolation & characterization of phytochemicals, production and standardization of natural products
6. To prepare pharmacy graduates having the understanding of basic principles of Pharmacy ethics.
7. To prepare graduates as professionals and researchers to cultivate highly competent pharmacy practitioners.

Program Learning Outcomes

1- Pharmaceutics:

Graduates will demonstrate fundamental and applied knowledge about all the processes

of turning pure drugs into a dosage form able to be safely and effectively used by the patients pursuing pharmaceutical formulation development and pharmaceutical technology.

2- **Pharmacology:**
Graduates will demonstrate knowledge of basic mechanisms of drug discovery, pharmacokinetics, and pharmacodynamics of chemicals / drugs on biological systems.

3- **Pharmacy Practice:**
Graduates will apply scientific knowledge in pharmaceutical practice to provide optimum patient care

4- **Pharmaceutical Chemistry:**
Graduates will apply the knowledge of organic chemistry in combination with structural & chemical biology and pharmacology to design, structure, and synthesis of pharmaceuticals and biologically active molecules

5- **Pharmacognosy:**
Graduates will apply the knowledge of physical, chemical, and biological properties in discovery and development of drug substances, excipients, nutraceuticals, and cosmeceuticals of natural origin, ethnos pharmacology & toxicology of crude drugs

6- **Ethics:**
Graduates will demonstrate professional ethics, attitudes, and appropriate legal conduct towards patients, colleagues and community with integrity, excellence, discipline, and respect.

7- **Skills:**
Graduates will effectively communicate by listening, speaking and writing in a manner that facilitates positive interaction with patients, health professionals and the public

8- **Careers:**
Graduates will describe future career opportunities and higher education opportunities available in the field of pharmacy.

Doctor of Pharmacy (PharmD) Program

Keeping in view the ever-increasing demand of professionally skilled pharmacists in the country and abroad, Department of Pharmacy has taken the initiative to start Doctor of Pharmacy (PharmD), a five-year professional degree program to cater the needs of ever growing pharmaceutical industry in research & development, manufacturing, quality assurance, clinical research, marketing, drug regulatory affairs (a major area of pharmacy jobs in the country) and the requirements of pharmaceutical care.

The training in industry as per GMP/cGMP requirements and healthcare settings is the essential component of FCC Doctor of Pharmacy (PharmD) program to develop pharmacy professionals whose scientific knowledge, training and skills enable them to deliver excellence in pharmaceutical industry and pharmacy practice. This would strengthen the pharmaceutical industry to manufacture quality and cost-effective pharmaceutical products. This makes FCCU's Doctor of Pharmacy (PharmD) program distinct from other institutions. The program will be conducted as per the requirements of the Pharmacy Council of Pakistan.

Requirements for Doctor of Pharmacy (PharmD) Program

The Doctor of Pharmacy (PharmD) degree program at FCC follows the curriculum approved by the Pharmacy Council of Pakistan and Higher Education Commission. Courses of this curriculum are offered in each semester. Additionally, students have to take general education courses as per university policy.

Course Descriptions

1st Semester (1st Professional PharmD)

PHRM 101: English-A (Functional English) (3 credits)
Learn and practice the basics of grammar, comprehension, discussion on general topics, everyday conversation, listening, translation skills, paragraph writing, presentation skills, essay writing and technical Report writing.

PHRM 110: Pharmaceutics-IA (Physical Pharmacy) (4 credits)
Introduction to the pharmacy profession. Explanation of physicochemical principles: solubilization, adsorption, ionization, hydrolysis and micromeritics. Pharmaceutical dispersions (colloids, suspensions and emulsions), their types, and methods of preparation.

PHRM 111: Pharmaceutical Chemistry-IA (Organic) (4 credits)
Basic concepts of chemical bonding, hybridization, conjugation, resonance, hyper conjugation, aromaticity, inductive effect, electrometric effect, hydrogen bonding, steric effect, effect of structure on reactivity of compounds, tautomerism of carbonyl compounds, nomenclature of organic compounds. General methods of preparation, properties, identification tests and pharmaceutical applications of alkane, alkenes, alkynes, aromatic compounds, alkyl halide, alcohol, phenols, ethers, amines, ketones, aldehydes, esters, and amides. Nucleophilic and electrophilic substitution reaction.

PHRM 112: Pharmaceutical Chemistry-IIA (Biochemistry) (4 credits)
General introduction and basic biochemical principles, role of pharmaceutical biochemistry in the health profession, nature of biochemical reactions, basic chemistry (nature, classification, properties etc.) and pharmaceutical importance of biomolecules (carbohydrates, lipids, proteins, nucleic acids, vitamins, hormones, enzymes).

PHRM 113: Physiology-A (4 credits)
Chemical composition of the body, cell structure, protein activity and cellular metabolism, genetic information and protein synthesis, movement of molecules across cell membranes, neural control mechanisms, the sensory systems, principles of hormonal control systems, muscle, control of body movement, consciousness and behavior.

PHRM 114: Anatomy & Histology (4 credits)
Anatomical terminology, structure of cell, body tissues, integumentary system, cardiovascular system, alimentary system, urinary system, reproductive system, endocrine system, nervous system, principles of histological techniques (preparing, staining and mounting of sections), histological examination of stained sections.

2nd Semester (1st Professional PharmD)

PHRM 103/URDU 101: Communicative Urdu (3 credits)
Course contents are same as URDU 101

PHRM 102: English-B (Communication & Writing skills) (3 credits)
Enhance real life communication skills, paragraph writing, CV writing, translation skills, study skill, summary and précis writing, academic writing skills (letter/memo writing, minutes of meetings), scientific writing (research proposal, article), presentation skills, personality development, pharmacy writing and oral communication.

PHRM 115: Pharmaceutics-IB (Physical Pharmacy) (4 credits)
Rheology, physicochemical processes (precipitation, crystallization, efflorescence, deliquescence, lyophilization, fusion, adsorption, decantation, evaporation, vaporization, centrifugation, desiccation, levigation and trituration), extraction processes (maceration, percolation, liquid-liquid extraction, large scale), rate order of reactions, kinetic principles of stability testing (theoretic considerations).

PHRM 116: Pharmaceutical Chemistry-IB (Organic) (4 credits)
Heterocyclic chemistry, reaction mechanisms (Arndt-Eistert, Baeyer-Villiger oxidation, Diels Alder reaction; Grignard's reaction, Metal hydride reduction and Wolff Kishner reduction, Friedel Crafts, Perkinn, Cannizzaro's, Mannich reaction), reactive intermediate and free radicals, carbonium ion rearrangements, carbanions (condensation reactions).

PHRM 117: Pharmaceutical Chemistry-IIB (Biochemistry) (4 credits)
Metabolic fate of biomolecules: carbohydrates, lipids, proteins, amino acids and bioenergetics. Regulation of metabolic processes: role of vitamins, receptor mediated regulation (hormones), secondary messengers, gene expression (replication, transcription and translation). Introduction to clinical chemistry: importance, laboratory tests (uric acid, cholesterol, bilirubin and creatinine).

PHRM 118: Physiology-B (4 credits)
Coordinated body functions: circulation, respiration, excretions & electrolyte balance, digestion and absorption, regulation of organic metabolism (endocrine and neural control), reproduction, and defense mechanisms of the body.

1st Semester (2nd Professional PharmD)

PHRM 104: Islamic Studies (3 credits)
Introduction to Quranic Studies, study of selected text of Holy Quran, seerat of Holy Prophet (S.A.W), introduction to Sunnah, selected study from text of Hadith, introduction to Islamic law & jurisprudence, Islamic culture & civilization, Islam & science, Islamic economic system, political system of Islam, Islamic history, social system of Islam.

PHRM105/CRST 152: Christian Ethics (3 credits)
Course contents are same as CRST 152

PHRM 210: Pharmaceutics-IIA (Dosage Form Science) (4 credits)
Pharmaceutical calculations, introduction to dosage form, galenical preparations (infusions, decoctions, extracts, fluid extracts, tinctures, aromatic waters), solvents used in pharmaceutical preparations, preparation of oral solutions(syrups, elixirs and spirits), preparation of oral suspensions, emulsions, magma and gels, preparation and importance of topical and transdermal drug delivery systems (ointments, creams, pastes, poultice, plasters, lotions, liniments, topical gels, topical tinctures, topical solutions, topical powders), ophthalmic, nasal and otic preparations.

PHRM 211: Pharmaceutics-IIIA (Pharmaceutical Microbiology & Immunology) (4 credits)
Introduction and pharmaceutical importance of microbiology. Micro-organisms: the bacteria (morphology, structure, functions, classification and bacterial cultures), viruses (introduction, classification, cultivation and replication), fungi and protozoa. The normal flora: microbiology of air, soil, normal flora of body (skin, intestinal tract, ear, nose).

PHRM 212: Pharmacology and Therapeutics-IA (4 credits)
Introduction to pharmacology, routes of drug administration, pharmacokinetics and pharmacodynamics. Drugs acting on autonomic nervous system (ANS): Organization of ANS, neurotransmitters, sympathetic agonists and antagonists, parasympathetic agonist and antagonists, ganglion stimulants and blockers and neuromuscular blockers. Drugs acting on gastrointestinal tract: emetics & anti-emetics, purgatives, anti-diarrheal agents, drugs used in treatment of peptic & duodenal ulcer, chronic inflammatory bowel diseases and affecting bile flow.

PHRM 213: Pharmacognosy-IA (Basic) (4 credits)
Introduction of pharmacognosy, traditional medicine systems, herbal Pharmacopoeia and modern concepts about Pharmacognosy. Crude drugs: preparation, therapeutic classification, methods of cultivation, evaluation and adulteration. The study of the crude drugs families of medicinal importance: Ranunculaceae, Papaveraceae, Leguminosae, Umbelliferae, Apocynaceae, Asclepiadaceae, Compositae, Solanaceae, Scrophulariaceae, Labiatae, Liliaceae, Zingiberaceae.

PHRM 214: Pharmacy Practice-IA (Pharmaceutical Mathematics) (3 credits)
Algebra (solution of Linear and Quadratic equations, arithmetic, geometric and harmonic progressions, permutations and combinations, binomial theorem), trigonometry, analytical geometry, differential calculus, integral calculus.

PHRM 107: Fundamental of Speech (3 credits)

2nd Semester (2nd Professional PharmD)

PHRM 106/PKST 101: Pakistan Studies (3 credits)
This course is designed to develop a vision of historical perspective, government, politics, contemporary Pakistan, and the ideological background of Pakistan. Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

PHRM 215: Pharmaceutics-IIB (Dosage Form Science) (4 credits)
Suppositories and enemas: preparation, packaging and storage. Aerosols, inhalations and sprays: principle, container and, propellants, filling, testing, packaging, labeling and storage. Powders, capsules, tablet dosage forms: preparation of powders, granules, effervescent granulated salts, hard gelatin capsules, soft gelatin capsules and tablets. Introduction to parenterals: official types of injections, solvents and vehicles for injections, added substances. Brief introduction to oral hygiene products

PHRM 216: Pharmaceutics-IIIB (Pharmaceutical Microbiology & Immunology) (4 credits)
Industrial Microbiology: Introduction to sterilization & fermentation. Pharmaceutical products are produced by fermentation process. Immunology: introduction and types of immunity, specific and non-specific, antigen-antibody reactions, hypersensitivity, allergy, vaccination. Factory & hospital hygiene: good manufacturing practices. Introduction to diseases: dengue fever, bird flu, SARS or other prevailing diseases of bacteria and viruses.

PHRM 217: Pharmacology and Therapeutics-IB (4 credits)
Autacoids and their antagonists, drugs acting on respiratory system, drugs acting on cardio- vascular system, drugs acting on genitourinary system, anti-anemic drugs, agents affecting endocrine function, drugs used for therapy of Diabetes Mellitus.

PHRM 218: Pharmacognosy-IB (Basic) (4 credits)
Drugs of animal origin, biologics, surgical dressings, pesticides, growth regulators, poisonous plant allergens and enzymes obtained from plant and animal source.

PHRM 219: Pharmacy Practice-IB (Biostatistics) (3 credits)
Application of statistics in Biological and Pharmaceutical Sciences. Organizing and displaying data, summarizing data and variation, curve fitting, simple regression and correlation, test of hypothesis and significance, student "T", "F" and chi-square distributions, analysis of variance statistical package (SPSS, Minitab, Statistica etc.)

PHRM 108: Introduction of PR & Advertising (3 credits)
Course Contents Same as MCOM 103

1st Semester (3rd Professional PharmD)

PHRM 310: Pharmacy Practice-IIA (Dispensing Pharmacy) (4 credits)
Basic principles of compounding and dispensing. Extemporaneous dispensing of solutions, suspensions, emulsions, creams, ointments, pastes and gels, suppositories, powders, granules and oral unit dosage form. Pharmaceutical incompatibilities: types of manifestations, correction and prevention.

PHRM 311: Pharmaceutical Chemistry-IIIA (Pharmaceutical Analysis) (4 credits)
The quantitative and qualitative analyses of drugs using instrumental and titrimetric techniques. **Spectroscopic Methods:** Atomic Absorption and Emission Spectroscopy, Molecular Fluorescence Spectroscopy, Flame Photometry, I.R. Spectroscopy, Mass Spectroscopy, NMR Spectroscopy, and U.V./Visible Spectroscopy. **Chromatographic Methods:** Column Chromatography, Thin Layer Chromatography, Gas Liquid Chromatography, HPLC, LCMS, GCMS, Capillary Electrophoresis.

PHRM 312: Pharmacology and Therapeutics-IIA (4 credits)
Drugs acting on central nervous system: sedatives & hypnotic, anxiolytics, antidepressants and antimanic drugs, antiepileptic, antiparkinsonian, antipsychotics, opioid analgesics, therapeutic gasses, cerebral stimulants, medullary stimulants, spinal cord stimulants, anesthetics, non-steroidal anti-inflammatory drugs: disease modifying drugs, antirheumatic drugs, non-opioid analgesics and drugs used in the treatment of gout.

PHRM 313: Pharmacognosy-IIA (Advanced) (4 credits)
Separation and isolation of plant constituents: use of spectroscopic and chromatographic techniques for the identification of natural products. Carbohydrates and related compounds: sucrose and sucrose containing drugs, cellulose and cellulose derivatives, gums and mucilage. Alkaloids: areca nut, lobelia, tropane, quinoline, isoquinoline, indole, imidazole, steroidal alkaloids and alkaloidal amines. Glycosides: cardio active glycosides, anthraquinone, saponin glycosides, cyanophore glycosides, isothiocyanate, lactone glycosides and aldehyde glycosides. Plant steroids: bile acids, plant sterols, steroidal sapogenins, steroid hormones, withanolides and ecdysone. Lipids: fixed oils, fats and related compounds and waxes.

PHRM 314: Pathology (4 credits)
Scope of pathology & concept of diseases. Definition and terminology: ischemia, hypoxia, necrosis, infarction, atrophy, hypertrophy, hyperplasia, metaplasia, aplasia and anaplasia. Response of body to injury and infection: acute and chronic inflammation, immunity, allergy, hypersensitivity. Specific Diseases: Ulcer (peptic, duodenal), hypertension, leukemia or blood cancer (malignant carcinoma, sarcoma & lymphomas), diagnosis and treatment of cancer.

2nd Semester (3rd Professional PharmD)

PHRM315: Pharmacy Practice-IIB (Community, Social & Administrative Pharmacy) (03 credits)
Definitions and background, public health and community pharmacy, medical complication of drug taking, patient education and counseling, control of drug abuse and misuse, role of Pharmacists as public health educator in the community for drug monitoring and drug information, health system research, pharmacoeconomics, alternative therapies, pharmacy layout design.

PHRM 316: Pharmaceutical Chemistry-IIIB (Pharmaceutical Analysis) (4 credits)
Electrochemical Techniques, Thermal Analysis and Titrimetric Analysis. Occurrence, properties, preparation and application of official inorganic compounds: aluminum hydroxide, ammonium chloride, sodium carbonate, magnesium carbonate, lithium carbonate, sodium nitrite, calcium gluconate, antimony gluconate, ferrous fumarate, ferrous sulfate and silver nitrate.

PHRM 317: Pharmacology and Therapeutics-IIB (4 credits)
Chemotherapy: antibacterials, antifungals, anti-virals, antiprotozoals, anti-neoplastic drugs; Immunopharmacology: Pharmacology of immuno-suppressants and stimulants agents; Toxicology: pollution, poisoning (sign & symptom and treatment).

PHRM 318: Pharmacognosy-IIB (Advanced) (4 credits)
Volatile oils (essential oils), resins and oleoresins, tannins, natural toxicants: nutraceuticals and cosmeceuticals, tumor inhibitors from plants, introduction to clinical pharmacognosy, clinical use of herbs & herbal medicine.

PHRM 319: Pharmacy Practice-III (Computer and its Applications in Pharmacy) (4 credits)
Fundamentals of computers, research methodologies, system analysis and design, data processing, application of computers in hospital pharmacy, application of computers in community pharmacy, application of drug information retrieval & storage, data analysis.

1st Semester (4th Professional PharmD)

PHRM 350: Pharmacy Practice-IVA (Hospital Pharmacy (3 credits)
Introduction to hospital pharmacy, hospital and its organization, pharmacy, its organization and personnel, pharmacy and therapeutic committee, the hospital formulary, dispensing to inpatients, dispensing to ambulatory patients, distribution of control substances, dispensing during off-hours, and safe use of medication in the hospital.

PHRM 351: Pharmacy Practice-VA (Clinical Pharmacy-I) (4 credits)
General introduction to clinical pharmacy, patient profile and counseling (patient disease profile, taking case history, drug profile of important medications, patient counseling), clinical trials of drug substances, emergency treatment, drug interactions and pharmacovigilance.

PHRM 352: Pharmaceutics-IVA (Industrial Pharmacy) (4 credits)
Mass transfer, heat transfer, drying (theories of drying, drying of solids, classification of dryers, general methods), comminution (size reduction, factors affecting size reduction, size analysis, energy mills), mixing (mechanism & equipment), clarification and filtration (filter media, aids, equipment), evaporation, compression and compaction (flow of powder, tablets machine, tablet defects, hardness, capsules).

PHRM 353: Pharmaceutics-VA (Biopharmaceutics & Pharmacokinetics) (4 credits)
Definitions and terminology, gastro-intestinal absorption, biological half-life and volume of distribution, drug clearance, pharmacokinetics, multiple dosage regimen, concept of compartment models.

PHRM 354: Pharmaceutics-VIA (Pharmaceutical Quality Management-I) (4 credits)
Basic concepts and introduction of pharmaceutical industry in relevance to quality assurance and quality control departments, quality control of solid dosage forms, syrups, elixirs and disperse system, suppositories & sterile products (parenteral) and standardization of pharmaceuticals.

2nd Semester (4th Professional PharmD)

PHRM 355: Pharmacy Practice-IVB (Hospital Pharmacy) (3 credits)
Manufacturing (bulk and sterile), the pharmacy as central sterile supply room, aseptic dispensing, role of pharmacist in small hospitals, distribution and control of hospital medicines, medical & surgical supplies, nuclear pharmacy, investigational use of drugs, health accessories, surgical supplies, inspection of wards with reference to drug storage and administration, management of accident & emergency pharmacy.

PHRM 356: Pharmacy Practice-VB (Clinical Pharmacy-I) (4 credits)
Pharmacotherapy plan (developing, implementing and monitoring drug therapy plans), drug induced diseases, utilization of clinical drug literature, online pharmaceutical care services and globalization, provision of pharmaceutical care in multiple environments, disease management (etiology, pathogenesis, clinical presentation, diagnostic, pharmacotherapy of diseases in cardiovascular unit, pulmonary unit and gastroenterology unit).

PHRM 357: Pharmaceutics-IVB (Industrial Pharmacy) (4 credits)
Formulation, equipment used in preparation and test methods for pharmaceutical suspensions, emulsions, semisolids, sterile products. Packing & packaging: influence of packaging materials, stability, packaging lines, packaging area, packaging equipment. Safety in the pharmaceutical industry.

PHRM 358: Pharmaceutics-VB (Biopharmaceutics & Pharmacokinetics) (4 credits)
Elimination of drugs (hepatic elimination, renal excretion), protein binding, pharmacokinetics variations in disease states, pharmacokinetics of intravenous infusions, biopharmaceutical aspects in developing a dosage form, bioavailability and bioequivalence, in vitro-in vivo correlation.

PHRM 359: Pharmaceutics-VIB (Pharmaceutical Quality Management) (4 credits)
Biological assays, alcohol determination, alkaloidal drug assay, quality assurance of vaccines, miscellaneous determinations and tests, statistical interpretation of quality control charts during manufacturing processes.

1st Semester (5th Professional PharmD)

PHRM 410: Pharmaceutics-VIIA (Pharmaceutical Technology) (4 credits)
Principles of pharmaceutical formulation and dosage form design, advanced granulation technology (design & practice), polymers used in drug delivery systems, novel drug delivery systems (sustained/ controlled release drug delivery system), microencapsulation techniques, developmental aspects of matrix and reservoir systems.

PHRM 411: Pharmacy Practice-VIA (Advanced Clinical Pharmacy-II) (4 credits)
Rational use of drugs, introduction to essential drugs (criteria for selection, usage and advantages, development of EDL), disease management (etiology, pathogenesis, clinical presentation, diagnostic, pharmacotherapy of diseases in central nervous system, infectious diseases and endocrinology units), drug utilization evaluation & drug utilization review, clinical pharmacokinetics.

PHRM 412: Pharmacy Practice-VIIA (Forensic Pharmacy) (3 credits)
Introduction (forensic pharmacy, history of drug legislation and drug control administration), role of forensic pharmacist, pharmaceutical ethics (patents and generics, sale, industry, research), and study of drug laws (Drugs Act, 1976/DRAP Act, 2012, provincial drug rules, advertisement rules, other related rules, legal aspects).

PHRM 453: Pharmacy Practice-VIIIA (Pharmaceutical Management & Marketing) (3 credits)
Management & marketing: principles of management, types and functions of managers, planning, organizing, management control systems, motivation, innovation and creativity, principles of marketing, product management, marketing research. Production management: material management, planning of production, batch record maintenance.

PHRM 454: Pharmaceutical Chemistry-IVA (Medicinal Chemistry) (4 credits)
Introduction to medicinal chemistry, drug targets and drug designing, general properties, chemistry, biological action, structure activity relationship and the therapeutic applications of hormones, proteinaceous hormones, antineoplastic agents, sedatives & hypnotics, anesthetics, general anesthetics, analgesics and antipyretics.

2nd Semester (5th Professional PharmD)

PHRM 455: Pharmaceutics- VIIB (Pharmaceutical Technology) (4 credits)
Novel GIT drug delivery system (oral osmotic pumps, ion-exchange controlled, pH-controlled, bio/mucoadhesive and floating DDS), drug carrier system (liposomes, niosomes), targeted drug delivery system (active & passive drug targeting), pharmaceutical biotechnology (introduction, techniques, genetic engineering and its application, pharmaceutical recombinant therapeutic proteins, monoclonal antibodies, immobilized enzymes).

PHRM 456: Pharmacy Practice-VIB (Advanced Clinical Pharmacy-II) (4 credits)
Pharmaceutical care, its scope, management and applications, clinical therapeutics, disease management (etiology, pathogenesis, clinical presentation, diagnostic, pharmacotherapy of diseases in oncology, nephrology, and hematology units), clinical toxicology, safe intravenous therapy, hazards of I.V. therapy and non-compliance.

PHRM 457: Pharmacy Practice-VIIB (Forensic Pharmacy) (3 credits)
The pharmacy Act 1967, control of narcotics substances Act 1997 (laws relating to narcotic drugs and psychotropic substances), the poisons Act 1919, the factories Act 1934, shops and establishments ordinance 1969 with rules.

PHRM 458: Pharmacy Practice-VIIIB (Pharmaceutical Management & Marketing) (3 credits)
Marketing management, (ethics in pharmaceutical marketing, marketing research, Market Analysis Techniques 3Cs, marketing performance, marketing channels), sales management, business development management, business communication, strategies, and global meetings.

PHRM 459: Pharmaceutical Chemistry-IVB (Medicinal Chemistry) (4 credits) General properties, chemical-biological action, structure activity relationship and therapeutic applications of sulphonamides, antimalarials, diuretics, antitubercular drugs, antiviral drugs, antibiotics.

Note:
Following courses fulfill the General Education requirements of the University:
PHRM 101, PHRM 102, PHRM 103 (URDU101), PHRM 104 (ISLM 101), PHRM 105 (CRST 152), PHRM 106 (PKST101), PHRM 107, PHRM 108 (MCOM103), PHRM 315(SOCL 450), PHRM 111/ CHEM 160, PHRM 211(BIOL 315), PHRM 214 (MATH102), PHRM 219 (STAT101), PHRM 319 (CSCS100), PHRM 453 (ECON 304)

PharmD students are required to enroll courses with Pharmacy course codes (PHRM)

DEPARTMENT OF PHILOSOPHY

Introduction

The Vision and Mission of F.C College (A Chartered University) “to impart, create & disseminate knowledge” is best encapsulated in the oldest of disciplines: Philosophy.

The wisdom of the sages is captured in the branches Metaphysics and Epistemology; the application of this sagacity is developed by the branches of Logic and Ethics. The wide diversity of theories and application is complemented by an in-depth study of specific thinkers from ancient medieval, modern and contemporary periods. The study of Philosophy thus is the most significant guarantor of critical and creative thinking, and an indispensable requirement of today.

The Department of Philosophy at FCC is relatively new – launched in 2010, but the rich tradition of learning and knowledge-seeking is adopted and adapted for contemporary times. It is part of the Faculty of Humanities.

Learning Objectives

1. To provide students with the methods and techniques to think critically and develop analytical skills.
2. To facilitate students in acquiring the knowledge and discursive thinking required to deal with basic human issues

Program Learning Outcomes

1- Dialectical Thinking:
Students will be able to demonstrate an understanding of the history of philosophical thought and assess alternatives in the solution of issues faced in the human experience.

2- Academic Integrity:
Students will demonstrate and abide by research ethics and values in line with the Core Values of FCCU.

3- Theory and Application:
Students will be able to differentiate between levels of abstraction in the solving of real-world problems.

4- Research Methodology:
Students will demonstrate research methodology and skills necessary for higher level philosophical enquiry.

5- Future Prospects:
Students will be able to create, analyze, and distinguish valid argumentation from invalid argumentation to better understand opportunities for their professional and personal development.

Requirements for the Major (13 courses/39 credits)

A minimum of 39 credit hours, taken under advisement from the courses offered:

Core Courses: PHIL 101, PHIL 201, PHIL 202, PHIL 221, PHIL 331, PHIL 499*
Major Electives (of choice) must be completed.

* PHIL 499 is the senior Capstone course (which includes an internship as a prerequisite).

Requirements for the Minor (6 courses/18 credits)

The minor in philosophy builds on the offerings taken from the major, accumulating to 18 credits: 4 core courses in addition to 2 courses of choice.

Core courses: PHIL 101, PHIL 201, PHIL 202, PHIL 221.

Course Descriptions

Core courses

PHIL 101: Introduction to Philosophy (3 credits)
Selection of the problems historically identified as philosophical along with the methods philosophers have used to solve these problems including justice and moral order, evaluation and justification of belief and human value and dignity, identifying the problems that have bothered critical thinkers, followed by selective philosophical solutions and their authors.

PHIL 201: Philosophy: Ancient through Medieval (3 credits)
Rise of critical thought in the pre-Socratic Greek world and its development through the issues related to deriving the morally right and individual significance by understanding the universe's structure and function, classic Platonic and Aristotelian worldviews, evaluation of their Eastern
and Western historical critics through the end of the medieval period.

PHIL 202: Philosophy: Modern to Contemporary (3 credits)
Critical thought as it develops from the 16th century CE to the present, including Eastern as well as Western thinkers, issues that captured attention because of the rise of the sciences, the development of naturalism, humanism and the challenges of 20th century social crises.

PHIL 221: Logic: How to Think Clearly (3 credits)
Examination of logic, including both Stoic contributions as well as the systematic organization of the rules of right thinking developed by Aristotle and expanded by Medieval and later thinkers, concern about the issues raised by J S Mill and others who systematized inductive logic.

Electives Courses

PHIL 231: Philosophy of Religion (3 credits)
Set of issues that has dominated modern and contemporary concerns about religious thought, problem of evil, meaningfulness of God talks, relevance of religion for moral and social justice etc.

PHIL 301/PLSC 301*: Ancient, Medieval, and Early Modern Political Philosophy (3 Credits)
A study of political thought from early Greece through the 17th Century. Analysis and evaluation of the issues and positions will be conducted using some original sources from philosophers including Plato, Aristotle, Hobbes, Machiavelli, Locke and Rousseau.

PHIL 303/PLSC 303*: Contemporary Political Philosophy (3 credits)
Debates concerning the nature of political rights and duties, and the justification of political theories such as Utilitarianism, Marxism, and Democracy. Of special interest will be the classic documents influencing contemporary discussion, such as Jean-Jacques Rousseau's *Discourse on Inequality,* J. S. Mill's *on Liberty*, Che Guevara, *Global Justice: Liberation and Socialism,* Gandhi, *All Men are Brothers*, John Rawls, *A Theory of Justice* (1971*,* Robert Nozick, *Anarchy, Society and Utopia* (1974).

PHIL304/HIST 301*: Philosophy of History (3 credits)
This course studies in-depth the ideas behind the study of history, the different schools of thought in history, and the underlying theories. Special attention will be given to the development of South Asian and Muslim philosophy of history.

PHIL 322: Symbolic Logic (3 credits)
Prerequisite: Phil 221 or permission from the instructor.
Logical formulation of the ideal language that is the basis of modern computer language, physics, and linguistics, natural deduction using quantification, sentential calculus.

PHIL 325: Philosophy of Education (3 credits)
Prerequisite: Any Philosophy course or permission from Instructor
Key issues relating to the conveying and acquisition of knowledge, examining their resolution by those theories which have been used to direct classroom practices, evaluating these approaches in terms of contemporary methods and challenges.

PHIL 331: Theories of Ethics (3 credits)
Prerequisite: Any Philosophy course or permission from Instructor
Ethical issues of objectivity vs. subjectivity in moral judgment, relativity vs. universalizability of moral principles, the logical foundation of moral perspectives, the scope and limits of moral language etc. in light of contemporary theories designed to resolve them.

PHIL 332: Metaphysics (3 credits)
Prerequisite: Any Philosophy course or permission from Instructor
This course analyzes the nature and structure of reality with attention to issues such as physical and immaterial reality, time, the connection of mind and body, and the nature of the human person. Attention may also be given to the building of worldviews into language, the molding of perception by cultural structures, and the tools necessary to reveal how the regularities of human experience and worth are to be explained.

PHIL 341: Epistemology (3 credits)
Prerequisite: Any Philosophy course or permission from Instructor
This course provides a critical analysis of the foundations of knowledge. Classical theories will be examined but the emphasis will be on recent trends in substantiating belief and defining knowledge.

PHIL 342: Philosophy of Science (3 credits)
Prerequisite: Any Philosophy course or permission from Instructor
Rise of the scientific method from the perspective of the logic of scientific explanation, relevance of theory to experimental information, dependence of scientific explanation on a paradigm of how the world functions etc.

PHIL 401: Philosophical Investigations: The Ancient Period (3 credits); PHIL 402: Philosophical Investigations: The Ancient Period (3 credits); PHIL 403: Philosophical Investigations: The Ancient Period (3 credits)
Prerequisite: Any Philosophy course or permission from Instructor
The courses are rotated over a three-year sequence and allow the student to concentrate on careful study in the thought, context and impact of a specific ancient philosopher.

PHIL 411/CRST 452 *: Philosophical Investigations: The Medieval Period (3 credits); PHIL 412: Philosophical Investigations: The Medieval Period (3 credits); PHIL 413: Philosophical Investigations: The Medieval Period (3 credits)
Prerequisite: Any Philosophy course or permission from Instructor

The courses are rotated over a three-year sequence and allow the student to concentrate on careful study in the thought, context and impact of a specific medieval philosopher.

PHIL 421: Philosophical Investigations: The Modern and Contemporary Periods (3 credits); PHIL 422: Philosophical Investigations: The Modern and Contemporary Periods (3 credits); PHIL 423: Philosophical Investigations: The Modern and Contemporary Periods (3 credits)
Prerequisite: Any Philosophy course or permission from Instructor
The courses are rotated over a three-year sequence and allow the student to concentrate on careful study in the thought, context and impact of a specific modern or contemporary philosopher.

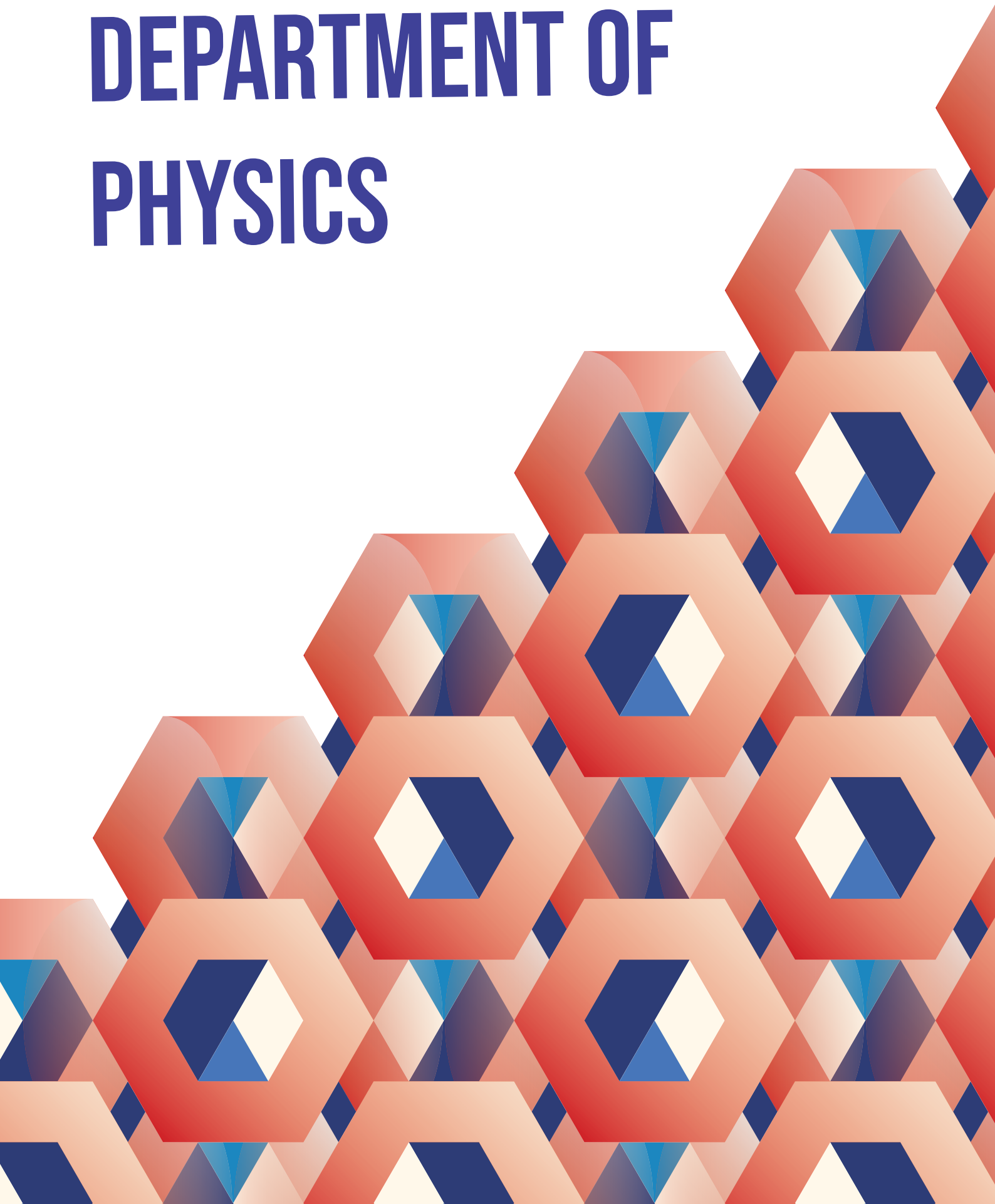
PHIL440/ENGL440*: Literature and Philosophy (3 credits)
Prerequisites: ENGL 201
The main focus of this course is to trace the connections between two disciplines: Literature and Philosophy; students survey how writers make use of philosophical ideas, themes, vocabulary and language; study of how literary texts can focus on important philosophical issues; emphasis on both Philosophy in literature and Philosophy as Literature.

PHIL X95: Themes (1-3 credits)
Sections:
A-E of 1 credit F-J of 2 credits K-Z of 3 credits

PHIL 499: Philosophical Research and Use Seminar. (3 credits)
This is a Senior Capstone Course including an internship
Prerequisites: The core courses as listed in the catalog, that is, PHIL 101, PHIL 201, PHIL 202, and PHIL 221 and 18 credits of electives from the major as listed in the catalog.
Comprehensive study of the contemporary issues in philosophy involving the development of a major research paper with the provision of a community internship.

*** Cross listed Courses:**
Courses with two designators (coding) are marked with a * to identify them as cross listed courses. Students must select the correct designator for their applicable program to be counted towards the degree.

DEPARTMENT OF PHYSICS



Introduction

Physics has been taught at Forman Christian College (A Chartered University) since it was established in 1864. The Physics Department was instituted in 1907 by Prof. D. J. Fleming, who was its first Head. A long line of distinguished professors and prominent scientists have served at this department, including Nobel Laureate Dr. Arthur Compton, Prof. J. M. Benade and Dr. Piara Singh Gill. Dr. Compton conducted most of his research on cosmic rays while a faculty member at FCC, which led to his receiving the Nobel Prize for Physics in 1927. Prof. J. M. Benade was one of the longest serving professors in the department, eventually retiring as its Head in 1970. He was an active researcher and the Asian representative in Dr. Compton's international research team. Dr. Compton's student Dr. Piara Singh Gill was a faculty member at FCC from 1940 to 1947 and active in research. He was associated with the University of Chicago and the Georgia Institute of Technology. All these scientists and professors have made significant contributions to the field of Physics.

The Department of Physics offers a Bachelor of Studies in Physics that concentrates on building its students' capacities as physicists through a variety of courses and learning activities. The department is part of the Faculty of Natural Sciences.

Vision

The department will be highly teaching and research-oriented to train our undergraduate students. It will be engaged in interdisciplinary activities of teaching and research with other departments at FCC, and other universities in Pakistan. It will have taken a lead in international research collaboration, and significant industrial partnership for mutual benefit and career opportunities for our students.

Mission

The mission of the B.S Physics program is to produce competent physicists with excellent knowledge who are capable to apply practical skills in different areas of physics for employment and higher education through providing curriculum based on liberal arts education to ensure greater breadth of knowledge along with in-depth knowledge of physics offering an opportunity to learn and experience various aspects of physics under one roof.

Learning Objectives

1. To impart fundamental knowledge and skills in physics
2. To train the students to conduct and interpret scientific experiments
3. To emphasize on mathematical skills
4. To use the physics knowledge for betterment of the society
5. To produce competent future physicists

Program Learning Outcomes

1- **Core Knowledge:**
Demonstrate knowledge and skills in core physics concepts to analyze and apply a broad range of physical phenomena

2- **Analysis and Communication:**
Interpret, analyze and communicate the experimental data in the field of physics

3- **Proficiency in Mathematics:**
Demonstrate proficiency in the mathematical concepts needed for a proper understanding of physics.

4- **Ethics and Values:**
Demonstrate knowledge of the ethical norms in the field of physics

5- **Problem Solving:**
Apply physical and mathematical methods to a real--world problem in an application area
6- **Future:**
Identify opportunities for higher studies and career advancement in physics

Requirements for the Major

- A minimum of 48 credit hours including the following core courses: PHYS 103, PHYS 104, PHYS 221, PHYS 222, PHYS 301, PHYS 321, PHYS 334, PHYS 461, PHYS 462.
- Of the overall credits required, the remaining credits from Physics courses Level 200 and above must be taken as electives.
- Students are also recommended to take MATH 101, MATH 102, MATH 201, MATH 202 and MATH 203.

Requirements for the Minor

- A minor in Physics is open to students of all disciplines with a minimum CGPA of 2.50.
- A minimum of 24 credit hours including the following core courses: PHYS 103, PHYS 104, PHYS 221, PHYS 222.
- Of the overall credits required, a minimum of 9 credits of Physics courses Level 200 and above must be taken as electives.

Notes
The department offers these courses in accordance with available faculty and student load. Students should consult their faculty Advisor or the department Chairperson as to availability in a particular semester or academic year.

Students desirous of pursuing higher educational Physics degrees in Pakistan should ensure that their combined aggregate credits in Physics, Chemistry and Mathematics, including courses in the General Education Science and Mathematics category, should exceed 70 credits.

The courses PHYS 341 (Mathematical Methods of Physics), PHYS 461 (Quantum Mechanics I), and PHYS 462 (Quantum Mechanics II) are cross-listed with the Mathematics Department. Kindly see the Department of Mathematics pages for details.

Physics courses which appear in the Environmental Sciences section of the catalog likewise count towards the fulfillment of degree requirements in both programs.

* Students not taking PHYS 498 or PHYS 499 due to eligibility or other reasons must take additional Physics courses to complete the required credit hours for majoring/graduating.

Course Descriptions

PHYS 100: Introduction to Physics (4 credits)
Not for Students who have studied Physics at Intermediate or A-Levels or equivalent
Scope of physics, kinematics and bodies in motion, communication, basic electricity, medical physics and elements of astrophysics, laboratory: familiarization with measuring instruments and related experimentation.

PHYS 101: General Physics (4 credits)
Prerequisite: Intermediate with physics or A level Physics. This course will fulfill the

requirement of the general course only. This course is not recommended for those who are planning to opt for a Bachelor of Studies in Physics.
Measurement, Kinematics, Force and Newton's laws, Work, Energy and Power, Waves, Introduction to Nuclear Physics, Electricity and Magnetism, Emerging Trends in Physics, laboratory.

PHYS 102: Basic Electronics II/ CSCS 105 Basic Electronics * (4 credits)
Prerequisite: PHYS 100 or A-Level or Intermediate Physics
Note: The CSCS 105 course is open only to Computer Science majors.
Electricity, magnetism, DC and AC Current, modern Physics, laboratory.

PHYS 103: Mechanics (4 credits)
Prerequisite: PHYS 100 or Intermediate or A-Level Physics or equivalent
Study of physical phenomena in mathematical terms, statics and dynamics of particles and rigid bodies, oscillatory and rotary motion, gravitation and fluid mechanics, laboratory.

PHYS 104: Wave and Vibrations (4 credits)
Prerequisite: PHYS 103 or Intermediate or A-Level Physics or equivalent
Study of physical phenomena in mathematical terms, types of waves, mathematical representations, energy of waves, interference, diffraction and polarization, laboratory.

PHYS 151/ENVR 151 *: Introduction to Sources of Energy and Environment (3 credits)
Not recommended for first semester Freshmen
Conventional energy resources, fossil fuels including petroleum, natural gas, coal and tar sands, the promise and problems of nuclear energy, alternative energy sources, wind, solar, biogas, tidal etc., energy conservation, environmental pollution and its global effects.

PHYS 192/SOCL 192 *: Science and the World Around Us (3 credits)
The course is open to undergraduates in all departments.
This course bridges the divide between science and non-science students by introducing major scientific concepts using simple language and creates an understanding of important contemporary issues that simultaneously involve science, society, and politics. Main topics: the nature and history of science; great achievements of science; science and politics in the modern world; the challenge of climate change; science and war.

PHYS 221/ENVR 221 *: Electricity and Magnetism (4 credits)
Prerequisite: PHYS 103 or PHYS 104
Electrostatics, magneto-statics, electric current, laws of magnetism, Maxwell's equations, electromagnetic energy and electromagnetic wave equations, laboratory.

PHYS 222: Modern Physics (4 credits)
Prerequisite: PHYS 221 or PHYS 103
Study of Einstein's special theory of relativity, black body radiation, the Bohr atom, elementary wave mechanics, atomic and molecular spectra, exclusion principle, periodic table, X-ray spectroscopy, introduction to lasers, laboratory.

Physics 234: Heat and Thermodynamics (3 credits)
Prerequisite: PHYS 103
Heat and Thermodynamics is one of the key undergraduate physics courses. It connects the world of everyday systems, of astronomical objects, and of chemical and biological processes with the world of molecular, atomic, and electronics systems. The course will be introduced through a unified approach to the equilibrium thermal properties of large systems based on the quantum viewpoint and statistical probability. The laws of thermodynamics and the concepts of entropy, temperature, chemical potential, free

energy, and thermodynamic potential will be covered. The heat transfer, phase transition, and classical kinetic theory will be discussed.

PHYS 255/ENVR 255 *: Introduction to Meteorology (3 credits)
Prerequisite: PHYS 102 or PHYS 103 or PHYS 151
Study of the physical processes of condensation, precipitation, radiation and radiative transfer, solar radiation, atmospheric motion measuring properties of the atmosphere, ionosphere and magnetosphere, Earth's magnetic field and charge density movement in the atmosphere.

PHYS 300: Fundamental of Optics (4 credits)
Prerequisite: PHYS 104, and PHYS 221
One Dimensional Waves, Harmonic Waves, Phase and Phase Velocity, Group Velocity, laws of electromagnetic theory, Electromagnetic Waves, Poynting Vector, Rayleigh scattering, Reflection, Refraction, Fermat's Principle, Total Internal Reflection, Lenses, Aperture and field stop, Mirror, Aberration, Astigmatism, Polarizers, Dichroism, Birefringence, Application of the Fresnel equation, Liquid Crystals, Interference, Young's experiment, Michelson's Interferometer, Fabry-Perot Interferometer, Applications of Interferometry, Diffraction, Huygens-Fresnel Principle, Fraunhofer and Fresnel diffraction, The Double Slit, Grating spectroscopy, Holography, laboratory.

PHYS 301: Classical Mechanics (3 credits)
Prerequisite: PHYS 103 or MATH 302
Study of the motion of particles and system of particles, direct application of Newtonian mechanics, Lagranian formulation, Hamiltonian formulation, motion under an inverse force field, two body problems, planetary orbital motion, Legendre transformation, canonical transformations and their properties, Poisson's brackets, theorems and invariance.

PHYS 321: Electrodynamics (4 credits)
Prerequisite: PHYS 221 and MATH 203
Emphasis on the unity of electric and magnetic phenomena, introduction of electrostatics and magneto-statics, solution of boundary-value problems, time-varying fields, gauge transformations, Maxwell's equations and wave equations, electromagnetic wave propagation in lossless, Lossy and metallic media, wave propagation through coaxial transmission lines, rectangular waveguides and radiation from oscillating dipoles, laboratory.

PHYS 331: Electronics I (4 credits)
Prerequisite: PHYS 221 or PHYS 102
Circuit analysis, Characteristics and applications of semiconductor devices and circuits, power supplies, special diodes, Bipolar junction transistors (BJTs) with biasing analysis and frequency response, BJT models, Field effect transistors (FETs), signal analysis of BJTs and FETs, Power amplifiers, Feedback concepts and types, Oscillator circuits and applications, Multivibrators, Laboratory.

PHYS 332: Electronics II (4 credits)
Prerequisite: PHYS 331
Models for active devices, single-ended and differential amplifiers, current sources and active loads, operational amplifiers, feedback, design of analogue circuits for particular functions and specifications, design of decision-making circuits, memory type circuits and digital circuits, laboratory.

Physics 334: Statistical Physics (3 credits)
Prerequisite: PHYS 234
Statistical physics is one of the key advanced undergraduate physics courses. The course will be introduced through a unified approach to the equilibrium thermal properties of large systems based on the quantum viewpoint and statistical probability. The heat transfer, phase transition, and classical kinetic theory will be discussed. Statistical physics is one of the key advanced undergraduate physics courses. It connects the world of everyday systems, of astronomical objects, and of chemical and biological processes with the world of molecular, atomic, and electronics systems. The course will be introduced through a unified approach to the equilibrium thermal properties of large systems based on the quantum viewpoint and statistical probability. The heat transfer, phase transition, and classical kinetic theory will be discussed.

PHYS 341/MATH 316 *: Methods of Mathematical Physics (3 credits)
Prerequisite: PHYS 221 or MATH 203
Vector analysis and special function curvilinear coordinates, Legendre polynomials, Bessel functions, Neumann functions, Cauchy-Riemann equations, Fourier series and Fourier transformations, Tensor analysis.

PHYS 342: Computational Physics (3 credits)
Prerequisite: PHYS 221
Introduction to scientific computing, Basic numeric tools to solve physics problems, Ordinary differential equations, Partial differential equations, Finite difference time domain method (FDTD), Monte Carlo technique

PHYS 351/ENVR 351 *: Environmental Physics (3 credits)
Prerequisite: PHYS 103 or PHYS 151
Introduction to environmental physics, radiation, radiation balance, heat and mass transfer, micrometeorology of crops.

PHYS 352: Plasma Physics (4 credits)
Prerequisite: PHYS 221
Plasma state; Criteria for the plasma state; Debye shielding, Gas discharge; Space physics; Controlled fusion; Modern astrophysics; MHD energy conversion; Ion/Plasma propulsion; Solid-State plasma, single particle motion in electric and magnetic fields (uniform, non- uniform, time-independent and time varying fields); Plasmas as magnetic mirror, continuity equation, Poisson's equation, Waves and wave propagations in plasmas; Phase velocity; Group Velocity; Dispersion relations.

PHYS 353: Introduction to Nonlinear Methods (3 credits)
Prerequisites: PHYS 341
Linear Differential equations; Wave amplitude dependent phase velocity and Non-Linear effect; Multiple Scale Analysis; Introduction to Chaos - One dimensional model; Discovery of the solitary waves; Introduction to Korteweg deVries equation, solitary limit; Relation between amplitude, speed and width; Sagdeev Potential; Conservation Laws; Wave equation and Dispersion Relation; Dispersive Waves, Phase velocity and group velocity; Reductive Perturbation Method; Solitary waves, Dispersion and Nonlinearity; Nonlinear Schrodinger equation; Evolution equation for envelope function.

PHYS 422: Nuclear Physics (3 credits)
Prerequisite: PHYS 222
Structure and properties of the Nucleus, Nuclear forces, nuclear phenomenology, reaction and stability of nuclear models, radiation and decay, Alpha, Beta and Gamma Decay, Nuclear Reactions and Detection of radiation.

PHYS 451/ ENVR 451 *: Sources of Energy (3 credits)
Prerequisite: PHYS 222
Study of the different alternative sources of energy including hydroelectric, wind, solar, photovoltaics, nuclear and thermonuclear (fission and fusion). New energy technologies like fuel cells and the role of hydrogen, the Physics of these sources and their environmental impact.

PHYS 460: Introduction to Medical Physics (3 Credits)
Prerequisite: PHYS 222 or PHYS 422 or Equivalent
The Medical Physics is a course concerned with the application of physics in medicine, especially (but not exclusively) in radiation medicine; i.e., radiation therapy, medical imaging, and nuclear medicine. The Course aims at offering quality education in the applications of Physics and Technology in Medicine to Physicists and potential scientists of similar scientific disciplines, enabling them to participate in promoting health and research. Topics covered will include: imaging metrics, ionizing radiation and radiation safety, radioactivity, radiation therapy, computed tomography, nuclear medicine, ultrasound, and magnetic resonance imaging, etc.

PHYS 461/MATH 410 *: Quantum Mechanics I (3 credits)
Prerequisite: PHYS 301 or MATH 302 and PHYS 341
Historical origination of the quantum theory, foundation of wave mechanics, Schrodinger wave equation and its solution for free particles, the hydrogen atom and the harmonic oscillator.

PHYS 462/MATH 411 *: Quantum Mechanics II (3 credits)
Prerequisite: PHYS 461
Matrix mechanics, vector spaces and linear operators, Time dependent and time independent perturbation theories, WKB approximation, Identical Particles, Scattering, Dirac equation, application of principles of quantum mechanics to solid state and nuclear systems.

PHYS 472: Lasers (3 credits)
Prerequisite: PHYS 321 or PHYS 341
Study of the concepts of laser, spontaneous and stimulated emissions, absorption, pumping process, properties of laser beams, laser resonators, matrix formulation of geometric optics, stable and unstable laser resonators, modes in a laser cavity, loop gain Q-switching, energy levels of molecules.

PHYS 481: Solid State Physics I (3 credits)
Prerequisite: PHYS 341
Study of solids, crystal structure, direct and reciprocal lattices, types of bonding, lattice vibrations, the thermal, electrical properties of solids and the effects of crystals.

PHYS 482: Solid State Physics II (3 credits)
Prerequisite: PHYS 481
Free electrons, Fermi gas, nearly free electrons, energy bands, optical transitions, superconductors and magnetic properties.

PHYS 483: Materials Science (3 credits)
Prerequisite: PHYS 221
Study of the properties of material, internal structure of materials, performance of materials during manufacture, production and processing, performance of materials during service, crystal structures, crystal geometry, solidification, crystalline imperfections, diffusion in solids, thermodynamics and phase diagrams and electrical materials.

PHYS 498: Internship (6 credits)
For Physics majors with a minimum CGPA of 2.50 and 90 completed credit hours
Students will have to work in a known industry/organization or the university/institute for six to eight weeks and will observe the timings as prescribed by the host organization. Director Internships will act as a liaison officer between the department and the industry/organization, university/institute. The student will have a supervisor from the department as well from the host organization. At the end of the completion of the training students will submit a written report to both the supervisors and will be evaluated by the departmental committee.

PHYS 499: Senior Thesis Project (6 credits spread over two semesters)
For Physics majors with a minimum CGPA of 2.50 and 90 completed credit hours
Each student works on an independent project under the supervision of a faculty member, with the expectations that the student will prepare a senior thesis and will present a seminar on his/her work.

PHYS X95: Themes (1-3 credits)
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

*** Cross listed Courses:**
Courses with two designators (coding) are marked with an (*) to identify them as cross-listed courses. Students must select the correct designator for their applicable program.

DEPARTMENT OF POLITICAL SCIENCE

Introduction

The Department of Political Science at FCCU is one of the largest departments in Social Sciences. The courses offered by the department are open to students majoring in Political Science as well as other disciplines. The department's teaching faculty had the distinction of having scholars of national and international prominence like Dr Carl W Wheeless, Prof Mary Wheeless, Dr Kitchen, Dr Ryan Brasher, Dr Anwar M Barkat, Dr Shokat Ali, Dr Hamid Kizilbash, Prof Naseem Zakariya, Dr Parveen Shaukat and Dr Shafqat Hussain Chaudhary.

The quality of instructional work in the department is indeed of a high standard. Research work is encouraged. There is a dedicated faculty available to teach various papers and supervise research. The department arranges extensive lectures, seminars, and study tours to facilitate academic excellence in students. Alumni of this department have contributed positively to national uplift and have excelled in numerous professions.

The department offers a Bachelor of Studies (Hons) degree in Political Science and is part of the Faculty of Social Sciences.

Bachelor of Studies (Hons) Political Science

The 4-year degree in Political Science encourages students to take courses in the fields of International Relations, Politics of Pakistan, and Political Philosophy. Students are encouraged to develop a critical understanding of various phenomena of national and international politics and their abilities to critically evaluate these concepts are nurtured through active classroom discussions.

4 STREAMS in Bachelor of Studies Program (core courses required for all streams bolded)

Levels	Political philosophy	International Relations	Pakistan politics	Comparative Politics
100	**PLSC 101 (Introduction to Political Science)**		**PLSC 102 (Pakistan National Government)**	
200		**PLSC 203 (International Relations)**	**PLSC 204: Pakistan Government - Provincial/ Local**	**PLSC 212 Comparative Politics** PLSC 201 (Government of Western Europe and United states) PLSC 202 (Gov. of Developing Countries)
300	**PLSC**	**304 (Research Methodology)**	Pre-req: STAT 100/101/103;	ECON 203

			PLSC 336 (Public Administration)	PLSC 340(Politics of Afghanistan and Iran) PLSC 341 (Politics of China) PLSC 342 (Politics of India)
400	PLSC 402 (Islam and Modernity) PLSC 413 (Critical Theory and Post-Colonial Situation)	PLSC 400 (Current Political Problems) PLSC 401 (International Political Economy) PLSC 412 (Foreign Policy Analysis)	PLSC 400 (Current Political Problems)	PLSC 400 (Current Political Problems) PLSC 412 (Foreign Policy Analysis)
	PLSC 403 (Seminar and Major Political Science Research Paper)			

Learning Objectives

1. Demonstrate in-depth knowledge of the major concepts of politics.
2. Think critically and analytically with a view to developing the habit of lifelong learning.
3. Learn appropriate skills for careers in foreign and domestic service, politics, law school, teaching, research, and graduate study in Political Science.
4. Function as active citizens in keeping with high ethical standards.
5. Write analytically on an issue and present it effectively to an audience.

Program Learning Outcomes

1- In-Depth Knowledge of Major concepts of Politics:
Demonstrate sound theoretical and practical understanding of the political concepts and epistemological debates at the forefront of the academic discipline of Comparative Politics and International Relations.

2- Real World Application:
Applying the learned knowledge on contemporary issues.

3- Professional Skills:
Develop competence in a range of transferable skills, including critical and analytical communication, and independent study skills.

4- Analysis and Critical Evaluation skills:
Analyze and critically evaluate the work of other social scientists using appropriate data analysis techniques.

5- Written and Critical Analytical Skills:
Apply the techniques learnt in their own research to predict and propose solutions to long-standing issues.

Requirements for the Major Bachelor of Studies Requirements:

Minimum 48 credit hours in Political Science including core courses: PLSC 101, PLSC 102, PLSC 203, PLSC 301, PLSC 302, PLSC 304, PLSC 403 and PLSC 212 plus 24 credits of major elective courses.

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Requirements for the Minor

A minimum of 18 credit hours are required for a minor in Political Science, which is open to

students from any discipline with a minimum CGPA of 2.50.

3 courses from (100-200) level must be taken, which includes PLSC 101.

(Note: Core course required for minor in Political Science is PLSC 101). 3 courses from (300-400) level must be taken for a minor in Political Science. (Note: Any course prerequisites must be taken into consideration).

Course Descriptions

PLSC 101: Introduction to Political Science (3 credits)
Areas covered in political science include the nature of political science, the nature and forms of the state, structure of government, political dynamics, and the development of an appropriate political science vocabulary.

PLSC 102: Pakistan Government-National (3 credits)
A history of the freedom movement and study of the main institutions of the national government and what makes the Pakistan government unique.

PLSC 201: Government of Western Europe and the United States (3 credits)
Prerequisite: PLSC 101
Parliamentary, presidential, unitary, and federal systems of major western nations.

PSC 202: Governments of Developing Countries (3 credits)
Prerequisite: PLSC 101
Unique characteristics of governments in Asia and Africa, historical development and a comparison between these nations and the rest of the world.

PLSC 203: International Relations (3 credits)
Prerequisite: PLSC 101
Theory and practice of International Relations using the distinction between realism and idealism as the basis for study, power relationships, theories of war and conflict, international morality, collective security, and terrorism.

PLSC 204: Pakistan Government-Provincial/Local (3 credits)
Government at the provincial and local level with an examination of the basic institutional arrangements of the provincial government, provincial elections, political party organization, state public policy matters and a detailed exploration of the operation of government at these levels.

PLSC 212: Theories of Comparative Politics (3 credits)
Prerequisite: PLSC 101
Political forces, institutions, and practices of state, describing, explaining, and predicting political events, importance of geographical, racial, ideological, ethnic and socioeconomic explanation of political institutions, processes and behavior, political structure, institutions, ideologies, interest groups and governmental systems, analysis of decision-making processes, political conflict and change and group interaction.

PLSC 301/ PHIL 301 *: Ancient, Medieval and Early Modern Political Theory (3 credits)
Prerequisite: PLSC 101
Political thought from early Greece through the 17th Century using original sources from philosophers including Aristotle, Plato, Hobbes, Machiavelli, Locke, Rousseau and Hegel.

PLSC 302: Modern Political Theory (3 credits)
Prerequisite: PLSC 101
Modern ideologies since the French Revolution, including liberalism, conservatism, capitalism, nationalism, fascism, and anarchism.

PLSC 303: Contemporary Political Theory (3 credits)
Prerequisite: PLSC 101 & 302
Status of rights, utilitarianism, liberalism, communitarian Marxist, libertarian and feminism using John Stuart Mill's Utilitarianism on Liberty, Essay of Bentham, Milton Friedman's Capitalism and Freedom.

PLSC 304: Research Methodology (3 credits)
Prerequisite: STAT 100 or STAT 101 or STAT 103 or ECON 203
Techniques and tools for significant research in the field of political science.

PLSC 305: Islamic Political Thought (3 credits)
Prerequisite: PLSC 101
Development of Islamic political thought from ancient times to the present, Muslim thinkers Al-Farabi, Al-Mawardi, Al-Ghazzali, Ibn Khaldun, Shah Waliullah and Allama Muhammad Iqbal.

PLSC 310/ HIST 312 *: Politics of the Middle East (3 credits)
Prerequisites: PLSC 101
Political development and advance of modernization of the area, the role of Islam, Arab-Israeli conflict, politics of Persian Gulf, politics of OPEC, political parties, military, and politics of change.

PLSC 311: Politics of Developing Areas (3 credits)
Prerequisite: PLSC 101
Examination of the development of political awareness and economic growth, assessing explanations for the failure of development of some countries and the strategies used to escape the poverty of underdevelopment. It will examine the interrelationships between 'first' and 'third' worlds, critique the major developmental theories; understand the underpinnings of development strategies, examine the complex nature of some of the major challenges facing the developing countries.

PLSC 317: Political Dynamics: Parties and Processes (3 credits)
Prerequisites: PLSC 101, PLSC 102
Two party and multi-party systems including a discussion of what parties are, history of political parties, parties and elections, parties in a federal system and parties around the world.

PLSC 321: Pakistan Foreign Policy (3 credits)
Prerequisite: PLSC 101
Status and relationships between Pakistan and the rest of the world with special emphasis upon relations with the Islamic World and the United States.

PLSC 322: International law (3 credits)
Prerequisites: PLSC 101, PLSC 203
Historical evolution of international law, coverage of classifications of states, rights and duties of jurisdiction, theories of nationalism, diplomatic relations, operation and enforcement of treaties, redress of differences by war and other methods and neutrality.

PLSC 323: International Organization (3 credits)
Prerequisites: PLSC 101, PLSC 203
Background of the United Nations Organization with an analysis of the success and failure of the League of Nations, the Security Council, the General Assembly and the organs of the United Nations and Pakistan's position on the issues.

PLSC 330: Constitutional Law in Pakistan (3 credits)
Prerequisites: PLSC 101, PLSC 102
History, formation, and implementation of each of the constitutions of Pakistan and the interpretation of test cases before the Supreme Court of Pakistan.

PLSC 331: Constitutional Law -- United States (3 credits)
Development of American federalism and national power, civil rights and civil liberties, commerce clause and nationalization of the economy, various amendments introduced in the US constitution, role of Supreme Court in American government, the controversy over the interpretation of different approaches to constitutional interpretations.

PLSC 335: Public Opinion (3 credits)
Prerequisite: PLSC 101
General nature of public opinion and its development and application to Pakistan, modern techniques of measurement.

PLSC 336: Public Administration (3 credits)
Prerequisites: PLSC 101, Junior Status
Art of administration, organizational aspects, management agencies, unity under the chief executive, departmental organization, federal-provincial and headquarters field-relationships, line functions, fiscal management, budget strategy and tactics, and government career service.

PLSC 340: Politics of Afghanistan and Iran (3 credits)
Prerequisites: PLSC 101
Our two western neighbors are constantly in the news, particularly regarding state-to-state relations with Pakistan. But how much do we really know about the internal politics of Iran and Afghanistan? In this course, we will look at the historical development of these countries and their emergence onto the world stage in the 20th Century as non-colonized societies whose boundaries were nonetheless drawn by colonial powers. We will look at the impact of the Cold War on these countries to explain their revolutionary moments in 1978 and 1979. We will look at the impact of the Islamic revolution on Iranian political life, as well as the decades of instability in Afghanistan that followed the Soviet invasion of 1979. Lastly, we will look at the effects of 9/11 on Afghan and Iranian politics, with particular emphasis on efforts at state-building in Afghanistan. The course will not simply consist of a discussion of current events. Rather each session will build on general and comparative political science theory to help illuminate events in these countries.

PLSC 341: Politics of China (3 credits)
Prerequisites: PLSC 101
From the ruins of the Cultural Revolution to Deng Xiaoping's economic reforms and market liberalization, China re-emerged as the second largest economy of the world in terms of Gross Domestic Products (GDP), and largest economy of the world in terms of Purchasing Power Parity (PPP). On its domestic front, the communist regime has performed well in curbing the growing poverty rate and lifting millions of Chinese out of extreme poverty. On the international front China emerged as one of the largest aid donor countries to the global south and has become an important actor in global politics. It is asserting its influence and trying to present herself as a model for the developing world. This course intends to explore

the political history of modern China, the role of ideology particularly Marxism, Leninism, and Maoism in shaping the identity of modern China. The conception of state, the notion “one country, two systems” the political and historical background of 'Cultural Revolution', the politics of communist regime with Hong Kong, Taiwan, and Tibet, the ideas of nationalism and the issues of modern identity in China, various reforms in political, social, and economic systems, an introduction to Chinese law, and China's view on “rule of law”.

PLSC 342: Politics of India (3 credits)
Prerequisites: PLSC 101
India is not only a rising global power but is also an exceptional case of a successful democracy in the Third World. In this course, we will analyze the trajectory of Indian politics since 1947. Themes for the course include electoral politics, communalism, and rising authoritarianism in India. We will also discuss resistance movements in India, including the politics of peasants, Dalits, Kashmiris, and women in the country. Finally, we will engage with theoretical work on India and see how the trajectory and practice of Indian democracy differs from hegemonic models in the West. By the end of the course, we hope that students will know some of the salient events in postcolonial India and will be familiar with contemporary debates in the country.
It is expected that students will read the texts assigned for each class. We will examine the texts on Monday and Wednesday. For our Friday classes, we will discuss a contemporary issue and see how it relates to the themes discussed in the texts for the week.

PLSC 400: Current Political Problems (3 credits)
Prerequisites: PLSC 101, Junior Status
Topical issues and themes of justice, equality and liberty, women's rights, race relations, child labor, birth control and other topics as chosen by the Professor and members of the class.

PLSC 401: International Political Economy (3 credits)
Prerequisites: PLSC 101, ECON 100
Phenomena that are both political and economic in nature, substantive issues, methodological and conceptual framework: rational choice theory.

PLSC 402: Islam and Modernity (3 credits)
Prerequisite: PLSC 101
Interrelation of Islam and Modernity by deploying a multi-disciplinary perspective and addressing challenging questions about the nature of Islam's mission in the world, major accounts of modernity's genesis in the West and concomitant decline of religion, historical terrain of modern West's forays into Muslim societies in the era of imperialism and colonialism.

PLSC 403: Seminar and Major Political Science Research Paper (3 credits)
Prerequisite: PLSC 304
Major paper (20 pages minimum) written under the direction of a political science Professor.

PLSC 412: Foreign Policy Analysis (3 credits)
Prerequisite: PLSC 203
Patterns and processes involved in the formulation of a country's foreign policy, deciphering the apparent 'black box' of state, and highlighting the actors, processes and organizations and motives that help to shape a country's foreign policy.

PLSC 413: Critical Theory and Post-Colonial Situation (3 credits)
Prerequisite: PLSC 302 or PLSC 303
Emerging trends in the contemporary theoretical field of post-colonial studies which aims

to conceptualize the interrelation of culture, power and knowledge in post-colonial societies, examination of works of Aijaz Ahmed, Ashis Nandy, Partha Chatterjee, Gayatri Spivak, Homi Bhabha, Gyan Parkash, Arif Dirlik, Kwame Appiab and others to raise fundamental questions about the scope, ambitions, and epistemological transgression of post-colonial theory.

PLSC X95: Themes (1-3 credits)
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

PLSC 498: Political Science Internship (3 credits)
Open to Political Science majors with a grade point average of 3.00 or above
Working with the national, provincial, or municipal government offices, assignments with selected government and civic organizations.

PLSC 499: Thesis (6 credits)
Prerequisite: PLSC 304
Open to Seniors majoring in Political Science who has maintained a CGPA of 3.50 or above
A detailed research project approved by the department Chairperson and directed by a faculty member in the department.

* **Cross listed Courses:**
Courses with two designators (coding) are marked with a * to identify them as cross listed courses. Students must select the correct designator for their applicable program to be counted towards the degree.

DEPARTMENT OF PSYCHOLOGY

Introduction

The undergraduate program in Psychology introduces students to an understanding of the basic core of psychological knowledge, theory, methods of research and opportunities for hands-on practice of psychology. It is an interesting and challenging area of scientific enquiry with the potential to benefit both individuals and society. The Department of Psychology offers a broad range of undergraduate courses in the major areas of Psychology.

Learning Objectives

1. Demonstrate an understanding of major psychological theories and concepts.
2. Effective application of statistics and research methods used by psychologists to make and implement a research proposal.
3. Think critically about psychological concepts, theories, and research.
4. Display cultural sensitivity while employing psychological theories and concept to collectivistic culture of Pakistan.
5. Implementation of ethical principles in Psychology to all areas of psychology.
6. Effectively choose the field of psychology to pursue Master's or Doctorate degree.

Mission BST Psychology Program

The mission of the B.S Psychology program is to equip students with the knowledge of fundamental concepts of Psychology, encourage critical thinking, and promote a sense of professional ethics to prepare them for higher education and employment.

Mission BST Applied Psychology Program

The mission of the B.S Applied Psychology program is to equip students with the knowledge of psychological concepts and their application in diverse fields of the discipline, encourage critical thinking, and promote a sense of professional ethics to prepare them for higher education and career opportunities.

Program Learning Outcomes

1- Understanding of statistics and research:
The students will demonstrate a clear understanding of various statistical and research methods.

2- Conduct a research study:
The students will be able to conceptualize and conduct a research study keeping in view the ethical and scientific standards.

3- Test construction & Analysis:
Students will demonstrate an understanding of main concepts and theories of test construction and item analysis.

4- Administer and interpret tests:
Students will be able to identify psychological tests based on their rationale and relevance to various problems as well as administer, score, and interpret these instruments and be able to work in a professional setting involving psychological testing.

Learning Objectives

1. Develop foundational knowledge: To provide students with a solid grounding in the core principles and theories of psychology, as well as an understanding of the key areas of specialization within the field, such as social, developmental, cognitive, and abnormal psychology.
2. Enhance research skills: To equip students with the skills necessary to design, conduct, and analyze psychological research, including both quantitative and

qualitative methods, and to use this knowledge to inform evidence-based practice.
3. Promote critical thinking: To foster critical thinking skills in students, encouraging them to evaluate psychological theories and concepts in light of current research and cultural and social contexts, and to apply this knowledge to real-world issues.
4. Develop interpersonal skills: To enhance students' communication, interpersonal, and teamwork skills, preparing them for working effectively with individuals and groups from diverse backgrounds in various settings, such as clinical, organizational, and educational settings.
5. Cultivate ethical and professional behavior: To instill in students a commitment to ethical behavior, integrity, and professionalism, as well as to promote an awareness of ethical issues and dilemmas in psychology and to encourage responsible decision-making in professional contexts.

Program Learning Outcomes

1- Knowledge and application:
The students will demonstrate a clear understanding of various statistical and research methods.

2- Conceptualize and conduct research study:
The students will be able to conceptualize and conduct a research study keeping in view the ethical and scientific standards.

3- Ethical and cultural sensitivities:
Students will demonstrate an understanding of the ethical and cultural sensitivities related to different perspectives in fields of applied psychology.

4- **Assessment:**
Students will be able to conduct basic assessment and conceptualize the case.

Bachelor of Studies (Hons) Psychology

Students majoring in Psychology have two options. They can study to earn a Bachelor of Studies in Psychology or Bachelor of Studies in Applied Psychology degree. It is recommended that students choose their courses logically and sequentially i.e. take 300 and 400 level courses during junior and senior year.

Requirements Bachelor of Studies in Psychology Major

A minimum of 45 credits including core courses: PSYC 100, PSYC 150, PSYC 220, PSYC 280, PSYC 298, PSYC 305, PSYC 340, PSYC 360, PSYC 415.

Requirements for Bachelor of Studies in Applied Psychology Major

A minimum of 54 credits. The following core courses must be taken: PSYC 100, PSYC 150, PSYC 220, PSYC 298, PSYC 301, PSYC 305, PSYC 310, PSYC 315, PSYC 340, PSYC 350, PSYC 360, PSYC 385, PSYC 415, PSYC 430, either PSYC 440 or PSYC 465. This degree allows students to pursue topics in Psychology with a greater emphasis on hard science, such as neuroscience and cognition. It also has a greater emphasis on empirical research including lab work.

Note: *Students who are majoring with* Bachelor of Studies in Applied Psychology *and have not taken PSYC 499 must take two other 300 or 400 level courses in Psychology to complete the requirements for their major.*

Requirements for the Minor

A minimum of 18 credits and is open to students (of all disciplines) with a minimum CGPA of 2.00. In addition to the two core courses, i.e. PSYC 100 and PSYC 150, the remaining courses can be selected from the list of courses offered by the department.

Course Descriptions

PSYC 100: Introduction to Psychology (3 credits)
Historical background and subfields of Psychology, research methods, biological basis of behavior and psychological processes such as sensation, attention, perception, learning, memory, motivation, emotions, intelligence, thinking and personality.

PSYC 140 Psychology of Leadership (3 credit)
Prerequisite: PSYC 100 Introduction to Psychology
Students will understand leadership as a psychological concept primarily through the lens of major theories of psychology focusing on group identity, group formation, and the conception of leadership. The course will also focus on approaches to leadership and factors impacting effectiveness in leaders and the community. The emphasis will be on expanding knowledge and honing skills with practical implications for leadership to lead personal and professional aspects of life more effectively.

PSYC 150: Developmental Psychology-I (3 credits)
Prerequisite: PSYC 100
Human development from conception to adolescence focuses on physical, intellectual and personality development, special emphasis on development in adolescence and the quest of identity, research activities integrated into the coursework.

PSYC 160 Emotional Intelligence (3 credits)
Prerequisite: PSYC 100 Introduction to Psychology
This course will focus on the major areas related to human emotions along with research findings on individual differences in emotional dispositions and capabilities. The course will review varied aspects of human emotions such as definitions, basic and complex emotions, emotional processing, social aspects of emotions, dimensional and categorical models of emotions, and emotional perception. It will also enable students to develop an understanding of the current status of the theory and measurement of emotional intelligence.

PSYC 175/EDUC 120 *: Educational Psychology (3 credits)
Principles of psychology as applied to the educational process, characteristic of the individual learner, the teacher, the classroom, methods and other relevant factors in the learning process, various stages of growth and development, brief introduction to psychological measurements and creativity in children. This is a unique course as it seeks to apply research and theory from a variety of areas of study within psychology in order to study individuals, how they learn, and how they develop in educational settings. It encompasses a brief discussion on the history of educational psychology, an overview of basic theoretical orientations and more recent neuroscience research that seeks to explain learning and key issues and debates within the field. Furthermore, the course looks at some basic principles and ideas related to individual differences in learning, motivation, special education and the cultural context within which learning takes place as well as more practical strategies for standardized testing, classroom management, self-regulation and the measurement of learning. Finally, the course also seeks to shed light on the importance of the cultivation of emotional well-being within children in the context of the classroom and beyond. The course will also include a discussion of the basic research methods used in the discipline.

PSYC-180 Psychology of Art and Aesthetics (3 credit hours)
Prerequisite: PSYC 100 Introduction to Psychology
This interdisciplinary course will review traditional and contemporary theoretical conceptualizations of the ways in which art is created and perceived. Art forms will include sculpture, painting, architecture along with other popular arts, such as dance, theater, music,

and film. This course will emphasize the psychology of creative processes, psycho aesthetics, and the perception of art, keeping in view sociocultural aspects related to art design, art-perception, and meaning in art.

PSYC 200: Developmental Psychology-II (3 credits)
Prerequisite: PSYC 150
Human development from adulthood to old age focusing on the physical, intellectual and personality development, life after retirement and problems of old age, death and bereavement.

PSYC 220: Statistics for Psychology (4 credits)
Prerequisite: PSYC 100
Statistical concepts and skills necessary for conducting research and providing an adequate quantitative foundation for understanding psychological literature and SPSS. This course will cover (a) descriptive statistical techniques including frequency distributions, graphing, and measures of central tendency and variability, and (b) inferential statistical techniques including t-tests, analysis of variance, correlation and chi-square. The emphasis is upon the application of statistics rather than the mathematical basis of statistics. The application of these techniques to research and the interpretation of results will be emphasized.

PSYC 225 Ethics in Psychology (3 credit)
Prerequisite: PSYC 100 Introduction to Psychology
This course provides students with a thorough review of the APA Ethics Code and other regulatory standards of psychology such as the Pakistan Mental Health Ordinance. The course will focus on significant aspects of ethics pertinent to psychological assessment, clinical, 10 counseling, research, school, industrial, and other domains of psychology. Possible ethical dilemmas faced by psychologists, case studies, and current issues are addressed.

PSYC 240: Theories of Personality (3 credits)
Prerequisite: PSYC 100
Theories of personality including psychodynamic, trait, cognitive, humanistic, physiological, and learning as well as some new approaches, research activities and analysis will be integrated in the coursework.

PSYC 275 Psychology of Peace and Conflict (3 Credits)
Prerequisite: PSYC 100 Introduction to Psychology Course
The course focuses on how people navigate conflicts and strive for peace. Students will examine various forms of violence, interpersonal disputes, and scale conflicts from the micro to the macro level. Moreover, the course will emphasize the concepts of societal and cultural injustices and their psychological, emotional, and societal impact on individuals and society. Students will also explore how thoughts can either exacerbate or ameliorate conflicts. The course will delve into case studies and theoretical perspectives on conflict and peace. It will equip students with the tools to understand and promote peace in diverse settings, emphasizing post-conflict community-building.

PSYC 280: Social Psychology (3 credits)
Prerequisite: PSYC 100
Nature, scope, historical perspective and research methods, social perception, cognition and identity, interpersonal relationships, attribution, conformity, prosocial behavior, groups, leadership, attitudes, prejudice and aggression. Theories and findings will be related to everyday social issues and concerns.

PSYC 290: Consumer Psychology (3 credits)
Prerequisite: PSYC 100
Methods of studying consumer behavior, basic psychological concepts concerning consumer behavior such as perception, cognition, learning, attitude, cognitive dissonance, risk-taking, motivation and personality of the buyer. Emphasis on the interrelations of economics and socio-cultural factors on decision-making including recent research findings, consumer psychology in Pakistan

PSYC 295 Media Psychology (3 credits)
Prerequisite: PSYC 100 Introduction to Psychology
Media Psychology is a dynamic field that delves into the intricate relationship between individuals and the media they consume. This course provides a comprehensive exploration of the psychological processes that underpin our interactions with various forms of media, such as television, film, social media, and advertising. Through a blend of theory, research, and practical applications, students will gain an understanding of how media shapes our thoughts, emotions, and behaviors.

PSYC 300: Positive Psychology (3 credits)
Prerequisite: PSYC 100
Positive aspects of human behavior, practical wisdom through a series of exercises in sensitivity and growth, Neuro-Linguistic Programming (NLP), optimism, self-confidence, listening and communication skills, time management, handling criticism, happiness, self-esteem, emotional quotient (EQ), morality, empathy, friendship, love, achievement, creativity, music and humor.

PSYC 301: Industrial and Organizational Psychology (3 Credits)
Prerequisite: PSYC 100
Applications of psychological theory and research to the workplace and the means by which industrial/organizational psychology contributes to improved organizational effectiveness and employee satisfaction, recruitment of applicants, hiring, training, evaluation of employees' performance, employee motivation, leadership, and human factors.

PSYC 305: Research Methods in Psychology (3 credits)
Prerequisite: PSYC 220
Research methodology, history of scientific approach, basic elements, methods, design and structure of research with emphasis on data collection, analysis, interpretation and ethics of social science research, research project. Students will write a research proposal.

PSYC 310 School Psychology (3 credit hours)
Prerequisite: PSYC 100
This course will assist students to understand the practice of psychology with learners of all ages, their families and the schooling process. It aims to help students establish a better understanding of psychological assessment, intervention, prevention and health promotion services with a special focus on developmental growth processes of children and adolescents within the context of schools. It will also explain the ecological impact of the context of schools, families and other social systems on developmental growth processes.

PSYC 315: Cognitive Psychology including Lab (4 credits)
Prerequisite: PSYC 220
Information processing, attention, memory, concept formation, reasoning, problem solving and decision-making. In the lab students will replicate classical cognitive psychology experiments, conduct an empirical research project and present their findings.

PSYC 320: Cross-Cultural Psychology (3 Credit hours)
Prerequisite: PSYC 240 Theories of Personality and PSYC 280 Social Psychology
Cross cultural Psychology focuses on how human actions and experiences within diverse cultural contexts influence human thought and behavior. It will critically examine comparative studies focusing on similarities and differences between human development and cultures. This course delves into the diversity and the impact of culture by examining sociocultural variation in human behavior, cognition, emotions, motivation, and perception, emphasizing how cross-cultural knowledge may be applied to and impact various settings like health and well-being, gender, society, counseling, organization, and education.

PSYC 330 Environmental Psychology (3 Credit hours)
Prerequisite: PSYC 100
This course will introduce students with a relatively new subfield of psychology. This course aims to explain how individuals and groups interact with our physical settings, how we experience and change the environment, and how our behavior and experiences get changed by the environment. The course will also help students understand how human behavior affects our world through climate changes, ecological changes etc. It will also discuss how humans respond towards natural, artificial and technological hazards and the ways to prevent and avoid these hazards.

PSYC 340: Abnormal Psychology (3 credits)
Prerequisite: PSYC 100
Nature and concepts of abnormality, historical perspective with special emphasis on Pakistan, psychoanalytic, medical, behavioristic, humanistic, and cognitive behavioral models of abnormal behavior; psychological disorders; anti-psychiatry movement; overview of major psychotherapeutic techniques; prevention of mental sickness.

PSYC 350: Biopsychology (3 credits)
Prerequisite: PSYC 100
Behavior and mental processes from the biological perspective with particular emphasis on the role of neurochemical and endocrine factors in the function of the central nervous system, chemical and neural basis of sensory processes, motivation, emotion, learning, memory, language, sleep, reproduction, gender and psychopathology.

PSYC 360: Psychological Testing and Measurement (4 credits)
Prerequisite: PSYC 100
Functions, origins and basic concepts of psychological testing, test construction, ability/intelligence and personality testing, application of psychological tests in educational, occupational and clinical contexts and ethical issues.

PSYC 375: Psychology of Gender (3 credits)
Prerequisite: PSYC 150
Gender stereotypes, the role of biological, cognitive, social, and cultural factors in creating and maintaining gender differences, social roles, attitudes and achievement in males and females, views of women in early psychology and survey of current gender-based scientific research and theory.

PSYC 385: Forensic Psychology (3 credits)
Prerequisite: PSYC 340 or permission from Instructor
Psychological theories and research that address legal issues and the role psychologists play in the criminal justice system. Overview of services provided by psychologists such as expert witnessing, criminal profiling, trial consulting, legal decision making. Assessment and therapeutic services provided to individuals in forensic settings with suspected deviant

behaviors. Gender, race, and ethnic differences in criminal violence, causes and effects of violence in media, psychology of sexual assault, victimology, development of habitual criminal behavior and crime prevention are included. The course includes a study tour to Punjab prisons and students prepare a report based on their observations, information obtained during the tour, and classroom learning.

PSYC 415: Research Methods in Psychology-II (3 credits)
Prerequisites: PSYC305
An overview of the topics covered in PSYC305 focusing on examining the applications, strengths, weaknesses of different approaches as well as considerations and challenges involved in social research. This course will introduce qualitative research methods focusing on observations, interviews, focus groups, case studies, grounded theory, discourse analysis, action research, and mixed method approach. All students will conduct a research project and write a paper based on the APA format.

PSYC 425: Sports Psychology (3 credits)
Prerequisite: PSYC 100 Introduction to Psychology
Introduction to the theories and practical application of Sports Psychology, with emphasis upon the core domains such as personality, the role of the nervous system in arousal, stress and anxiety and related issues, performance enhancements, motivation, resilience, concentration, personal growth, teamwork, and conflict management. Students will also get familiar with strategies frequently used by sports psychologists.

PSYC 430: Health Psychology (3 credits)
Prerequisite: PSYC 100
Psychosocial factors relevant to general health maintenance, recovery from disease or injury, stress management techniques, personality characteristics associated with disease, effects of diet and exercise, theories of pain and pain management, illness prevention, handling chronic illness and psychosocial rehabilitation, developing and maintaining a healthy lifestyle.

PSYC 440: Counseling Psychology (3 credits)
Prerequisite: PSYC 340 or permission from the instructor
Introduction to theories, assessment and approaches to counseling, psychoanalytic, client-centered, behavioral, cognitive behavioral, transactional analysis and rational emotive approaches, educational and occupational counseling, counseling for emotional and sexual problems, family, marriage and community mental health counseling, ethics in counseling.

PSYC 450: History and Systems of Psychology (3 credit)
Prerequisite: PSYC 100
Historical origin of modern psychology with a focus on Greek contribution, Muslim contribution, European philosophy, and physiology, development of various schools of thought in Psychology including structuralism, functionalism, associationism, behaviorism, gestalt psychology, psychoanalysis, cognitive psychology, humanistic psychology, evolutionary psychology, and some current trends.

PSYC 465: Clinical Psychology (4 credits)
Prerequisites: PSYC 340, PSYC 360
Historical background of clinical psychology, clinical assessment, diagnosis and classification of psychological disorders, and psychological intervention, legal and ethical issues in clinical psychology, case reports (under supervision) with individuals having psychological problems.

PSYC 470: Community Psychology (3 credits)
Prerequisite: PSYC100 Introduction to Psychology
This course encompasses the core concepts and historical development of the discipline of Community Psychology. Students will develop an understanding of the relationship of the individual with the community and how community affects an individual's social existence. Core themes include community mental health and well-being, respect for diversity, empowerment of the underprivileged and the marginalized segments of the society, promotion of social justice and peace, and positive community relations.

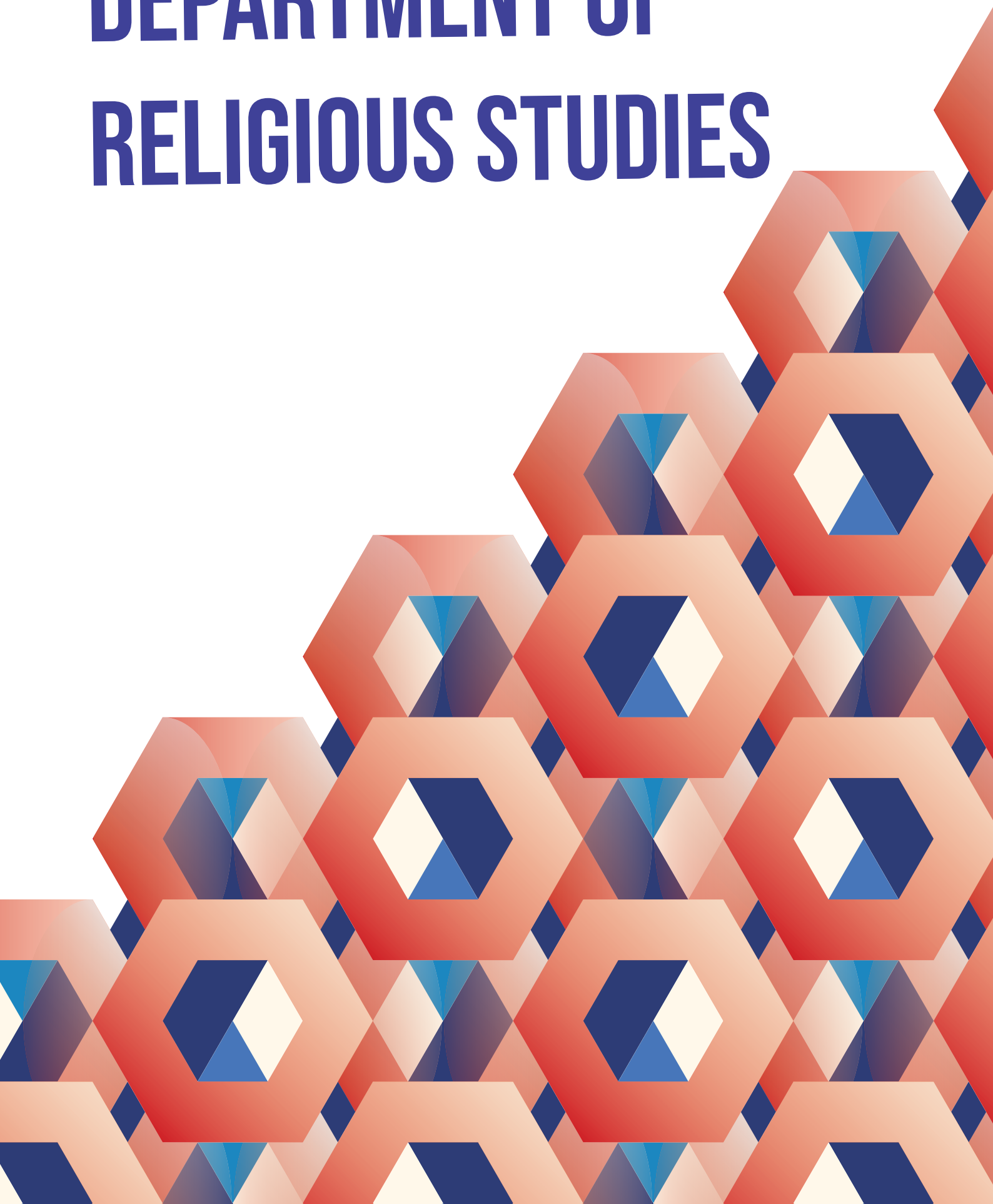
PSYC 490 Research Project (3 credit)
Prerequisite: PSYC 415 (Research Methods in Psychology II).
Note, Students can either take this course or PSYC 499
Note for PSYC 499: The students can take either PSYC 490 or PSYC 499 and if they take PSYC 490, they will have to take another higher level (300/400) course of psychology (3 credits) to make it equivalent to 6 credit hours.
A group research project on varied topics of psychology, focusing on producing ethically and empirically sound research under the supervision of the faculty of Psychology. This course will focus on the process of collecting and producing a literature review, selecting an appropriate methodology, collecting and analyzing data, and writing a research report.

PSYC X95: Themes (1-3 credits)
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

PSYC 498: Internship (3 credits)
Prerequisites: Open to psychology majors and minors who have taken PSYC 340, and minimum CGPA of 2.75
The course is intended to serve as a bridge between university and career. Internships through the Psychology department are intended to help students to achieve valuable training and work experiences, and to provide a meaningful link between formal coursework and applied professional work. The culmination and tangible product of this internship will be a portfolio containing evidence of what students have done and learned during this course.

PSYC 499: Senior Thesis (6 credits)
Prerequisites: PSYC 305 and PSYC 415
For Psychology majors with a minimum CGPA of 3.50 and 90 credits completed. An independent research study on a topic chosen by the student. The research study will be supervised by a faculty member of the Department of Psychology.

DEPARTMENT OF RELIGIOUS STUDIES



Introduction

The Department of Islamic Studies was renamed in 2005 as the Department of Religious Studies to be a model of interfaith harmony and representative of the vision of the founder of Pakistan which he once stated thus, “We are starting in the days when there is no discrimination, no distinction between one community and another, no discrimination between one caste or creed and another. We are starting with this fundamental principle that we are all citizens and equal citizens of one State.”

The Department of Religious Studies contributes to fulfilling the mission, vision and values of FCC by creating an atmosphere that is conducive to character building, liberal arts education, higher-order thinking skills, and inter-faith relations. Here students have the opportunity to study in a religiously diverse environment where they work together with people of different religious faiths, ethnicities and cultures. The department adopts an interdisciplinary approach to the academic study of religion to provide students with a broader understanding of the role of religion in human life. Although most courses offered by the department are on Islam and Christianity, we do not endorse a particular creed or sectarian position.

The Department of Religious Studies offers four streams: Bachelor of Studies in Islamic Studies, Bachelor of Studies in Christian Studies and Certificate in Biblical Language (18 credits). The lower division courses for each concentration are designed to provide students with a fundamental understanding of their respective majors, while the upper division courses provide them with depth and breadth of knowledge.

The Department of Religious Studies is part of the Faculty of Humanities.

Career

Majoring in Religious Studies prepares students for a variety of careers such as teaching, religious leadership, counseling, motivational speaking, media, politics, research and writing.

Bachelor of Studies in Islamic Studies

Learning Objectives

1. Teach students fundamental concepts and intellectual basis of various branches of Islamic Studies
2. Train students how to recite, translate, and interpret texts of the Holy Quran, Hadith and other fundamental sources of Islam.
3. Guide learners how to solve everyday problems in the light of Islamic teachings.
4. Inculcate in students the social intelligence and global mindset for interpersonal effectiveness.
5. Develop students for effective and authentic research skills.
6. Edify students for personal development, moral transformation, and spiritual elevation.

Program Learning Outcomes

1- **Knowledge & Skills**
Explain fundamental concepts and intellectual basis of various branches of Islamic Studies and understand basic Arabic Language and terminologies.

2- **Skills & Application:**
Recite, translate, and interpret texts of the Holy Quran, Hadith and other sources of Islam

3- **Analysis - Critical Thinking:**
   Diagnose and solve everyday problems in the light of Islamic teachings, principles and values.
4- **Human dimension - Problem solving:**
   Demonstrate respect for diversity and apply the Golden Rule as the fundamental principle of the actions.
5- **Integration - Creativity:**
   Describe/Explore professional and further education opportunities in the field of Islamic studies and formulate a personal plan for the inner process of spiritual development and personal growth.

Requirements for the Major in Islamic Studies

A minimum of 39 credits is required to complete the degree as per the following scheme of studies:

Core Courses: ISLM 104, ISLM 201, ISLM 202, ISLM 301, ISLM 302, ISLM 401, ISLM 499

18 credit hours from the following courses: ISLM 101, ISLM 103, ISLM 303, ISLM 304, ISLM 305, ISLM 306, ISLM 402, ISLM 403, ISLM 406, ISLM 407

Requirements for the Minor in Islamic Studies

Minor in Islamic Studies is open to students of all disciplines with a minimum of CGPA 2.00.

Core Courses: ISLM 104, ISLM 202, ISLM 401

9 credit hours from the following courses: ISLM 101, ISLM 103, ISLM 201, ISLM 301, ISLM 302, ISLM 303, ISLM 304, ISLM 305, ISLM 306, ISLM 402, ISLM 403, ISLM 407

Bachelor of Studies in Christian Studies

Learning Objectives

1. To help students see the Bible's storyline as the key to understanding the Bible itself
2. To teach the Bible's teachings from the Bible itself
3. To build hermeneutical skills in students so that they can be confident to interpret the Bible
4. To teach students how to take what they have learned in the Bible and apply it to contemporary life
5. To help students develop critical thinking skills so that they can understand and analyze other worldviews and explain their own
6. To instill in our students a desire to learn the Bible and give them a passion in helping in their community to share that same love.
7. To make sure that from the start students know the opportunities and limitations inherent in graduating with a degree in Christian studies

Program Learning Outcomes

1- **Content of the discipline:**
   Demonstrate knowledge of the central storyline of the Bible, understanding how the original authors of various biblical books presented and explained that story, and understanding as well how these original authors applied that storyline to their own historical context.

2- **Theory of the discipline:**
Identify what are the Bible's key teachings, displaying skill in explaining them
3- **Methodology and skills:**
Using proper hermeneutical practices, show biblical competence in reading and interpreting various passages of the Bible.
4- **Higher Order Critical thinking:**
Exhibit critical thinking skills which enable the student to develop a mature Christian worldview, capable of interacting with competing worldviews.
5- **Application of knowledge to the real world:**
Demonstrate skill in applying the teachings of the Bible to the student's context and community, as well as to the greater Pakistani and global communities.
6- **Values:**
In accordance with FCCU's core values, exhibit spiritual maturity through: Evidencing holistic growth in Christian character and spiritual formation, demonstrating their commitment to promoting reconciled relationships and restored communities, and showing godly character and actions which reflect true Christian citizenship to the nation of Pakistan.
7- **Future:**
Articulate how their degree can lead to opportunities for professional involvement, employment, or further education.

Requirements for the Bachelor of Studies in Christian Studies

A minimum of 39 credits is required to complete the degree, including:

Core Courses: CRST 151, CRST 155, CRST 281, CRST 291, CRST 381, CRST 391, CRST 453/ISLM 401, CRST 498 (Christian Servant Leadership Capstone—2.75 minimum CGPA to take this course).

3 credit hours from any Applied Theology: CRST 211, CRST 212, CRST 311, CRST 312, CRST 411, CRST 412

*(*Note: Each Applied Theology course is of 1 credit*)

12 credit hours from any ISLM or CRST courses (*excluding CRST 152- Christian Ethics*).

Requirements for the Minor in Christian Studies

Minor in Christian Studies is open to students of all disciplines with a minimum of CGPA 2.00. A minimum of 18 credits is required for the minor, including:

Core Courses (*10 credit hours):* CRST 151, CRST 155, CRST 211, CRST 291
(Note: CRST 211 is 1 credit hour course)

6 credit hours from any following course: CRST 281, CRST 381, CRST 391, CRST 451

2 credit hours from Applied Theology: CRST 212, CRST 311, CRST 312, CRST 411, CRST 412

*(*Note: Each Applied Theology course is of 1 credit*)

Choose either Greek or Hebrew

For the Greek Language

12 credits Basic Greek Language Courses: CRST 271, CRST 272, CRST 371, CRST 372
3 credits Greek Reading Courses: CRST 441, CRST 442
3 credits Greek Exegesis Courses: CRST 475, CRST 476

For the Hebrew Language

12 credits Basic Hebrew Language Courses: CRST 231, CRST 232, CRST 331, CRST 332 3 Credits Hebrew Reading Course: CRST 421
3 Credits Hebrew Exegesis Course: CRST 431

Minor in Biblical Language (Either New Testament Greek or Biblical Hebrew)

Any regularly enrolled Forman Christian College (A Chartered University) student wishing to gain proficiency in a biblical language (either *Koine* Greek, the language of the Christian New Testament or biblical Hebrew, the language of the Christian Old Testament) may earn a minor in Biblical Language through the Department of Religious Studies. This affords opportunities for students to study the Hebrew or Greek languages without the burden of pursuing a major in Christian Studies. This might be helpful for students who plan to pursue post-graduate degrees in history, religious studies or philosophy. It would especially be helpful for students who intend after graduation to enter a graduate program in theology, perhaps in a Christian seminary. The Certificate consists of 6 courses (18 credits) in either the Hebrew or Greek language.

Learning Objectives

1. Demonstrate competence in translating Biblical texts, which enables students to interpret these texts with growing sensitivity to semantics, syntax, context, genre and manuscript evidence.
2. Demonstrate competent critical thinking skills by the application of principles of good biblical exegesis.

Minor in Biblical Language (New Testament Greek)

Core Courses: CRST 271 (New Testament Greek 1), CRST 272 (New Testament Greek 2), CRST 371 (New Testament Greek 3), CRST 372 (New Testament Greek 4)

Electives: 1 Greek Reading Course (Any Greek course with the word “Reading” in its course title), 1 Greek Exegesis Course (Any Greek course with the word “Exegesis” in its course title)

Minor in Biblical Language (Biblical Hebrew)

Core Courses: CRST 231 (Biblical Hebrew 1), CRST 232 (Biblical Hebrew 2), CRST 331 (Biblical Hebrew 3), CRST 332 (Biblical Hebrew 4)

Electives: 1 Hebrew Reading Course (Any Hebrew course with the word “Reading” in its course title), 1 Hebrew Exegesis Course (Any Hebrew course with the word “Exegesis” in its course title)

Certificate in Biblical Language (18 credits)

Anyone who is not enrolled in the Baccalaureate program and wishes to gain proficiency in a Biblical Language (either *Koine* Greek, the language of the Christian New Testament or Biblical Hebrew, the language of the Christian Old Testament) may earn a Certificate in Biblical Language through the Department of Religious Studies. This affords opportunities

for students and others to study the Hebrew or Greek languages without the burden of pursuing a major in Christian Studies. This might be especially helpful for post-graduate students who feel their postgraduate research would be enriched through the acquisition of Hebrew or Greek or professors of religious studies who wish to expand their knowledge of the Bible. The Certificate consists of 6 courses (18 credits) in either the Hebrew or Greek language.

Learning Objectives

1. Demonstrate competence in translating Biblical texts, which enables students to interpret these texts with growing sensitivity to semantics, syntax, context, genre and manuscript evidence.
2. Demonstrate competent critical thinking skills by the application of principles of good Biblical exegesis.

Requirements for the Biblical Language Certificate (Choose either Greek or Hebrew)

For the Greek Language

12 credits Basic Greek Language Courses: CRST 271, CRST 272, CRST 371, CRST 372
3 credits Greek Reading Courses: CRST 441, CRST 442
3 credits Greek Exegesis Courses: CRST 475, CRST 476

For the Hebrew Language

12 credits Basic Hebrew Language Courses: CRST 231, CRST 232, CRST 331, CRST 332
3 Credits Hebrew Reading Courses: CRST 421, CRST 422
3 Credits Hebrew Exegesis Course: CRST 431

Course Descriptions

ISLM 101: Islamic Education (3 credits)
This course offers students a thorough introduction to the core teachings of Islam, including its beliefs, practices, historical development, and societal impact. It is designed to equip students with a solid academic and cultural understanding of Islam, enhancing their ability to engage with Islam's diverse dimensions. By the end of the course, students will be better prepared to approach complex conversations about Islam's past, present, and future roles with empathy, respect, and well-informed perspectives.

ISLM 103: Islamic Ideology (3 credits)
Prerequisite: ISLM 101 or CRST 152
The course is designed to meet the requirements of those who want to enhance their fundamental understanding of Islam as a code of life. Contents include definition of ideology, functions of ideology, Islamic ideology, chief characteristics of Islamic ideology, social teachings of Islamic ideology, economic principles of Islam, political teachings of Islam, and legal thoughts of Islamic ideology

ISLM 104: Arabic Communication Skills (3 credits)
Arabic grammar and composition, basic structure of Arabic language; everyday conversation, vocabulary enhancement, translation and composition

ISLM 201: Tajweed-Ul-Quran (3 credits)
Prerequisite: ISLM 101
Reading and recitation of the Holy Quran, speech sounds of Arabic, Qiraat, Arabic phonology, articulation and accent, and pronunciation.

ISLM 202: The Quran – Contents, Style and Interpretation (3 credits)

Prerequisite: ISLM 101 or CRST 152
The Holy Quran with its meaning and commentary, compilation of the Holy Quran, content types, general style, selected readings from the Holy Quran, Ulum-al-Quran (collection, exegesis and Ijaz al-Quran/ inimitability of the Quran) qualities of Mufassir and different types of interpretations.

ISLM 301: Hadith – Status, Origin and Development (3 credits)
Prerequisite: ISLM 101 or CRST 152
Ulum-al-Hadith, authenticity of the sayings of the Prophet (PBUH), importance of Sunnah, codification and compilation of early Hadith literature, review of Hadith collections and reading of selected chapters from Hadith books.

ISLM 302: Islamic Jurisprudence (3 credits)
Prerequisite: ISLM 101 or CRST 152
Definition of law sources of Islamic Sharia, Qur'an, Sunnah, Ijma, Qiyas, Ijtihaad, types of Islamic law, Islamic injunctions and family law, Islamic law and jurisprudence with its historical development.

ISLM 303: Contemporary Muslim World (3 credits)
Prerequisite: ISLM 101 or CRST 152
Geographical, social and cultural features of the modern Muslim world, concept of Ummah, its resources, population, political and economic systems, organizations, challenges to the Muslim world and their solutions.

ISLM 304: Seerat-Un-Nabi (3 credits)
Prerequisite: ISLM 101 or CRST 152
Development of biographical studies of the Prophet Muhammad (PBUH), their influence on Islamic thought throughout Islamic history, the Prophet (PBUH) as an example to be followed, the difference between the Prophet's (PBUH) tradition (Hadith) and his biography (Seerah), the Prophet's (PBUH) life before his mission, the early period of Makkah where he faced opposition, migration to Madinah, establishment of the Islamic state in Madinah, treaties and relations with non-Muslims, Ghazwaat and conquest of Makkah and the last sermon and its impact on modern human life.

ISLM 305/ CRST 354/ SOCL 305*: Interfaith Dialogue and Relations (3 credits)
Prerequisite: ISLM 101 or CRST 152
Understanding dialogue and its process, Dialogue in everyday life, the Need for interfaith dialogues in the modern context, the Role of interfaith dialogue and relations for peace and social harmony, General and specific goals of interfaith dialogue, Challenges to interfaith relations, Effective strategies to develop interfaith relations, Historical interactions between major religious traditions, Theories and principles of effective dialogue, Social & professional significance of interfaith relations.

ISLM 306/CRST 355*: Religion and Science (3 credits)
Prerequisite: ISLM 101 or CRST 152
Relationship between modern empirical science and religion, the nature of science and the epistemologies of science and of religious belief, conflict or concord between religion and science on common domains, religion and science in search of reality.

ISLM 401/CRST 453*: Comparative Study of Religions (3 credits)
Prerequisites: ISLM 101 or CRST 152
Major religions of the world, cultural contexts, scriptures, fundamental beliefs, practices and sacred art are examined, various global forms of religions, South and East Asian rich traditions of Hinduism, Buddhism, Taoism and Confucianism, monotheistic religions with

roots in the Middle East: Judaism, Christianity and Islam, comparative study of religions.

ISLM 402: Islam and the West (3 credits)
Prerequisite: ISLM 101 or CRST 152
Islam and the West, some general considerations; Islam and the West on peace, terrorism, democracy, and human rights; Western understanding of Islam (orientalism); Muslim perception of the Western civilization; Study and analysis of the thesis of "Clash of Civilization"

ISLM 403: Modern Islamic Thoughts (3 credits)
Prerequisite: ISLM 101 or CRST 152
Modern Islamic thoughts with the emphasis on Islamic political, economic, social and educational thoughts, political, strategic, economic and social factors underlying modern Islam, comparison of thoughts of Jamal al-din Afghani, Shah Wali Ullah, Allama Iqbal and Syed Maududi.

ISLM 406/CRST 455*: Research Methodology (3 credits)
Prerequisite: Only for Religious Studies majors
What is research? Need for research, Types and classification of research, research methodologies and frameworks, management of research, selecting research topic, research proposal development, approaches to data collection, data analysis, research in religious studies, research ethics, writing and publishing research report.

ISLM 407/CRST 454*: Teaching of Religious Studies (3 credits)
Prerequisite: ISLM 101 or CRST 152
Teaching techniques include the fundamental skills and characteristics of religious teachers, teaching strategies, classroom management, lesson planning, course designing, feedback and assessment, and materials development.

ISLM X95/CRST X95: Themes (1-3 credits)
Sections:
A-E to be of 1 credit
F-J to be of 2 credits
K-Z to be of 3 credits

ISLM 499/CRST 499*: Research Project (3 credits)
Prerequisite: ISLM406 or CRST455
Students will conduct a research project under the prearranged supervision of a faculty member of the department on a topic approved in CRST 441. Students will have a viva-voce examination before a committee for the successful qualification of research.

CRST 151: Introduction to Christian Thought (3 credits)
Foundational Christian beliefs such as the nature of God, the person and work of Christ, the purpose of the church, the meaning of Christian life and growth, and the nature of God's Word as revealed in the Old and New Testaments.

CRST 152: Christian Ethics (3 credits)
Biblical and theological foundations of Christian ethics with special emphasis on developing the skills necessary to formulate ethical questions and find their solutions in the Bible.

CRST 155: Interpreting the Bible (3 credits)
Interpreting the Old and New Testaments in light of a particular passage's historical and cultural context as well as placing that passage in its context within the Bible itself. This

course focuses on acquiring practical skills in identifying different types of biblical literature, skills in interpreting those types of literature and skills in employing appropriate research methods. The end goal is to enable students to grasp what impact the original writer wanted any piece of biblical writing to have on his original readers.

CRST 211: Applied Theology 1: Introduction (1 credit)
Prerequisite: CRST 152 or CRST 151
An introduction to principles governing application of biblical theology to the individual and community in a holistic approach, concerned with emotions, intellect, relationships and mental, physical and spiritual health.

CRST 212: Applied Theology 2: Prayer (1 credits)
Prerequisite: CRST 211
An introduction to principles governing application of biblical theology to prayer on an individual and corporate level.

CRST 231: Biblical Hebrew 1 (3 credits)
Introduces the student to the grammar, vocabulary and syntax of Biblical Hebrew (i.e., the original language in which the Old Testament of the Bible was written). This course seeks to help students to read, translate and interpret the ancient Hebrew Old Testament.

CRST 232: Biblical Hebrew 2 (3 credits)
Prerequisite: CRST 231
Continues the study of the grammar, vocabulary and syntax of Biblical Hebrew (i.e., the original language in which the Old Testament of the Bible was written). This course seeks to help students to read, translate and interpret the ancient Hebrew Old Testament.

CRST 252: Christian History (3 credits)
Prerequisites: CRST 151
Rise of Christianity from the period immediately following the ministry of Jesus Christ to the contemporary worldwide Christian movement, studying Christians who have made significant impact upon the Church. In addition, the course investigates different Christian movements with special emphasis on Christianity in South Asia from the missionary work of the Apostle Thomas to the present day.

CRST 271: New Testament Greek 1 (3 credits)
First half of a year's course on beginning Greek. Introduces the student to the grammar and syntax of Koine Greek (i.e., the original language in which the New Testament of the Bible was written). This course seeks to help students to read, translate and interpret the ancient Greek New Testament.

CRST 272: New Testament Greek 2 (3 credits)
Prerequisite: CRST 271
Second half of a year's course on beginning Greek. Introduces the student to the grammar and syntax of Koine Greek (i.e., the original language in which the New Testament of the Bible was written). This course seeks to help students to read, translate and interpret the ancient Greek New Testament.

CRST 281: Old Testament I- Law and Poetry (3 credits)
Prerequisite: CRST 155
An introduction to the Old Testament, examining historical, cultural, political, and religious backgrounds of the Old Testament world as well as surveying the various kinds of literature found in the Old Testament. This course will also survey the five books of the Torah (Genesis—Deuteronomy) and the five books of poetry (Job—Ecclesiastes). Special attention will be given to interpreting these books according to sound hermeneutical

principles.

CRST 291: New Testament I-The Gospels (3 credits)
Prerequisite: CRST 155
A survey of the New Testament Gospels, introducing the historical, cultural, political and religious background of the New Testament in general and the four gospels in particular and examining the life, teachings and impact of Jesus Christ. Special attention will be given to interpreting these gospels according to sound hermeneutical principles.

CRST 311: Applied Theology 3: Scripture (1 credit)
Prerequisite: CRST 211
An introduction to principles governing application of biblical theology to Christian scriptures, focusing on holistic personal and corporate engagement with scripture.

CRST 312: Applied Theology 4: Servanthood (1 credit)
Prerequisite: CRST 211
An introduction to principles governing application of the biblical theology of servanthood as taught by Jesus Christ and the apostles, focusing on both personal and corporate expressions of service.

CRST 331: Biblical Hebrew 3 (3 credits)
Prerequisite: CRST 232
A deepening emphasis on syntax, translation and interpretation, continuing the study of the grammar, vocabulary and syntax of Biblical Hebrew (i.e., the original language in which the Old Testament of the Bible was written). This course seeks to help students to read, translate and interpret the ancient Hebrew Old Testament.

CRST 332: Biblical Hebrew 4 (3 credits)
Prerequisite: CRST 331
Applying principles of grammar, semantics and syntax to the translation and interpretation of Biblical Hebrew (i.e., the original language in which the Old Testament of the Bible was written). This course seeks to help students to read, translate and interpret the ancient Hebrew Old Testament.

CRST 352: Christian Theology (3 credits)
Prerequisites: CRST 151, CRST 152
Approaches to presenting a reasonable and rational basis for the Christian faith including investigation of historical evidence, evaluation of philosophical arguments, examination of biblical reliability, and explanation of key biblical teachings.

CRST 353: Jesus Christ: Life, Teachings, and Impact (3 credits)
Prerequisite: CRST 351
Life, ministry and teachings of Jesus Christ within their prophetic, cultural and historical setting as revealed in the four gospels of the Bible with a special emphasis on Bible study methods for communicating his teachings to others.

CRST 354/ISLM 305/SOCL 305 *: Interfaith Dialogue and Relations (3 credits)
Prerequisite: ISLM 101 or CRST 152
Understanding dialogue and its process, Dialogue in everyday life, the need for interfaith dialogues in the modern context, the Role of interfaith dialogue and relations for peace and social harmony, General and specific goals of interfaith dialogue, Challenges to interfaith relations, Effective strategies to develop interfaith relations, Historical interactions between major religious traditions, Theories and principles of effective dialogue, Social & professional significance of interfaith relations.

CRST 355/ISLM 306*: Religion and Science (3 credits)
Prerequisite: ISLM 101 or CRST 152
Relationship between modern empirical science and religion, the nature of science and the epistemologies of science and of religious belief, conflict or concord between religion and science on common domains, religion and science in search of reality.

CRST 371: New Testament Greek 3 (3 Credits)
Prerequisite: CRST 272
Last third of a unified program of studies for learning the ancient Greek language. Introduces the student to the grammar and syntax of Koine Greek (New Testament Greek), with a view towards the translation and exegesis of the New Testament.

CRST 372: New Testament Greek 4 (3 Credits)
Prerequisite: CRST 371
Advanced grammar and syntax to aid in the translation and interpretation of Koine Greek (i.e., the original language in which the New Testament of the Bible was written.

CRST 381: Old Testament II- History and Prophecy (3 credits)
Prerequisite: CRST 155
A survey of the Old Testament books of history (Joshua—Esther), focusing on the unified story described in those books, examined within the historical, cultural, political and religious backgrounds of the Old Testament world. This course will survey the Old Testament prophets (Isaiah—Malachi) in the context of their historical settings, with a special emphasis on messianic prophecy. Special attention will be given to interpreting these books according to sound hermeneutical principles.

CRST 391: New Testament II- The New Testament Letters and Acts (3 credits)
Prerequisite: CRST 155
A survey of the Acts of the Apostles and the New Testament letters (Romans- Revelation), examining these books within their first century context, looking at cultural, historical, political and religious issues impacting the first century church. Special attention will be given to interpreting these books according to sound hermeneutical principles.

CRST 411: Applied Theology 5: Teaching (1 credit)
Prerequisite: CRST 211
An introduction to the principles governing application of the biblical theology of teaching Christian beliefs and Scripture, focusing on transformational approaches to communicating the Christian faith.

CRST 412: Applied Theology 6: The Christian in Society (1 credit)
Prerequisite: CRST 211
An introduction to the principles governing application of the biblical theology of how a Christian must respond to living within the larger community of those who do not share the Christian faith.

CRST 421: Biblical Hebrew Reading 1: Hebrew Narrative Literature (3 credits)
Prerequisite CRST 331
Reading through Hebrew Old Testament narrative passages with a concentration on grammar and narrative flow as well as sermon and church lesson applications.

CRST 422: Biblical Hebrew Reading 2: Hebrew Narrative/Legal Literature. (3 credits)
Prerequisite: CRST 331
Reading through narrative and legal passages with a special emphasis on the Book of Deuteronomy. Students will gain skills in applying this theology to contemporary Pakistan.

CRST 425: Hebrew Reading
Prerequisite: CRST 331
Reading through Hebrew Old Testament passages with a concentration on grammar and narrative flow as well as sermon and church lesson applications.

CRST 431: Hebrew Exegesis 1(3 credits)
Prerequisite: CRST 332
An introduction to the principles and methods of exegesis in OT narrative texts. Students will be expected to prepare for class presentations and to interact critically with the materials, with the goal of applying these principles learned to church lessons and sermon preparation.

CRST 435: Hebrew Exegesis (3 credits)
Prerequisite: CRST 332
An exegetical study of a selected Old Testament book or books, using with discernment various exegetical methods, critical tools, and Bible software as part of an exegetical method. May be taken multiple times for different Old Testament books.

CRST 439 (a-e) Select English Old Testament Book Study (3 credits)
Prerequisite: CRST 155 or permission of the instructor.
Study of select Old Testament books or books in the English Bible.

CRST 441: New Testament Greek Reading 1: The Gospel of Mark (3 credits)
Prerequisite: CRST 371
Reading extensively from the Greek New Testament Gospel of Mark with grammatical analysis of the text and discussion of textual criticism issues (analysis of variant readings to determine the original wording of the text).

CRST 442: New Testament Greek Reading: Galatians (3 credits)
Prerequisite: CRST 371
Reading extensively from the Greek New Testament, Paul's letter to the Galatians with grammatical analysis of the text and discussion of textual criticism issues (analysis of variant readings to determine the original wording of the text). Includes projects for communicating key theological points in sermons or church lessons.

CRST 445: Greek Reading: Select New Testament Book(s) (3 credits)
Prerequisite: CRST 331
Reading through Greek New Testament passages with a concentration on grammar and narrative flow as well as sermon and church lesson applications.

CRST 451: Paul's Life, Theology and Impact (3 credits)
Prerequisite: CRST 351 or CRST 391
A study of the life of Paul, including the political, cultural and religious context of Paul's first century Mediterranean world. In addition, this course will discuss Paul's theology, setting it in the context of the earliest Christian teachings, those of both Jesus Christ and his apostles. Students will survey Paul's 13 letters in light of their origin, purpose, and audience as well as focusing on two of Paul's representative letters.

CRST 452/PHIL 411*: Great Theologians (3 credits)
Prerequisite: CRST 151
The student will concentrate on careful study in the thought, context, and impact of a specific Medieval theologian, such as Augustine, Aquinas, Anselm etc.

ISLM 406/CRST 455*: Research Methodology (3 credits)
Prerequisite: Only for Religious Studies majors
What is research? Need for research, Types and classification of research, research methodologies and frameworks, management of research, selecting research topic, research proposal development, approaches to data collection, data analysis, research in religious studies, research ethics, writing and publishing research reports.

CRST 471 (a-e) Select English New Testament Book Study (3 credits)
Prerequisite: CRST 155 or permission of the instructor.
Study of select New Testament books or books in the English Bible.

CRST 475: Greek Exegesis 1: The Sermon on the Mount.
Prerequisite: CRST 372
A verse-by-verse exposition. Emphasis includes the continued development of exegetical methodology, the investigation of interpretative options and the discovery of practical application. Translation and a practical, exegetical sermon manuscript are required. Includes projects for communicating key theological points in sermons or church lessons.

CRST 476: Greek Exegesis: Philippians.
Prerequisite: CRST 372
A close reading of Philippians in the Greek text. As part of the in-class discussion students are required to translate, decline and conjugate. Students will produce sermons or church lessons as a part of this course.

CRST 478: New Testament Greek Exegesis (3 credits)
Prerequisite: CRST 371
An Exegetical study of a selected New Testament book or books, using with discernment various exegetical methods, critical tools, and Bible software as part of an exegetical method. May be taken multiple times for different New Testament books.

CRST 485: Themes in Christian Theology (3 credits)
Prerequisite: CRST 151
An in-depth student of a particular key theme in Christian theology, examining biblical teachings and the historical development of this theme.

CRST 498 Christian Servant Leadership Capstone (3 credits)
Open to the juniors/seniors with 90 completed credit hours with at least 9 upper division credit hours from CRST or ISLM courses.
A combination of weekly classroom learning with an internship in a Christian NGO or local church under careful supervision, along with a writing project.

Note: Students with a CGPA of 2.75 or above will be eligible for the Internship.

SCHOOL OF MANAGEMENT

Introduction

School of Management at Forman Christian College (A Chartered University) was established in 2005 and has already gained a reputation for the quality and diversity of its programs. SOM's mission is to provide students with modern holistic business education with a strong experiential component blended in with the latest learning technologies. The programs have been designed by a team that has rich experience of developing and leading high quality management programs in the country at undergraduate, graduate, and at Executive levels. The Department of Business is part of the School of Management.

BS (Hons) Business

The program has been designed to ensure that students understand best practice in business and function effectively in the practical world. The course contents intend to provide the right balance between academics and real-world applications. The 4-year degree has a strong emphasis on developing skill and confidence and currently offers specializations in

- Accounting and Finance
- Operations Management
- Marketing & Sales Management
- Human Resource Management

Business students are expected to maintain a minimum CGPA of 2.0 during the program. However, business students are expected to maintain a higher CGPA in their major. Students take core (required) courses throughout the four years of the program and begin to take courses in their areas of specialization from the third year. Students take 72 credit hours in their business major (66 in taught courses and six in the mandatory Internship). The choice of specialization is made in the second year.

Learning Objectives

- Describe key concepts and theory of best practice in management, finance, and marketing.
- Demonstrate technical rigor for analysis and decision making in business.
- Apply leadership skills for effective future business management.
- Analyze the demands of the local environment and apply business skills and tools to the real world.
- Employ interpersonal and communications skills required by effective managers.
- Consistently use values and ethics in a business environment.
- Describe entrepreneurial career opportunities that serve the needs of Pakistan and the international community.

Course Descriptions

Note: All students must ensure they only register for courses corresponding to their academic year, i.e. 100 level for Freshmen, 200 level for Sophomore, 300 level for Junior and 400 level for Senior year students.

Core Courses

BUSN 101: Principles of Accounting (3 credits)
Understanding accounting records, entering transactions, applying accounting concepts, principles and practices and reading financial statements.

BUSN 121: Microeconomics (3 credits)
Fundamentals of economics include price theory and applications, industry and market

structure, equilibrium analysis and welfare economics.

BUSN 160: Management Communications (3 credits)
Introduction to verbal and written communication theory and practice, with focus on individual oral and written skills in letter and memo writing, use of emails, presentations and preparing reports.

BUSN 170: Principles of Management (3 credits)
Basic management concept tools, techniques for improving organizational efficiency and effectiveness, management process consisting of planning, organizing, staffing, directing, coordinating, reporting and budgeting (POSDCORB).

BUSN 201: Intermediate Accounting 1 (3 credits)
Prerequisite: BUSN 101
Concepts, standards and principles underlying various accounting practices and techniques, reporting requirements, group accounts and corporate financing.

BUSN 206: Management Accounting and Control (3 credits)
Prerequisite: BUSN 101
Using accounting information, especially costs, to make management decisions, cost accounting information and the role of budgeting to facilitate rational decision-making, introduction of structures and systems for control.

BUSN 225: Economic Applications for Business (3 credits)
Prerequisite: BUSN 121
Fiscal, monetary and regulatory policy frameworks including deregulation and liberalization from a perspective of application of theory to real world practices.

BUSN 230: Entrepreneurship (3 credits)
Prerequisite: BUSN 170
Entrepreneurial skills for successful formation and growth of companies including topics like team formation, concept generation, design thinking, marketing mix, etc.

BUSN 250: Individual & Group Dynamics (3 credits)
Prerequisite: BUSN 170
Impact of individuals, groups and structures on behavior within a formal organizational context and applying knowledge to improve the effectiveness of the organization. Concepts include leadership skills, team structures, managing interpersonal relationships and conflicts.

BUSN 280: Marketing & Selling Skills (3 credits)
Prerequisite: BUSN 170
Basic tools and skills to develop an effective marketing orientation for developing and marketing products and services, identifying problems and solutions, as well as application of concepts, development of selling skills.

BUSN 321: Financial Management I (3 credits)
For Junior year students only
Prerequisite: BUSN 201
Tools, techniques and concepts of finance, such as financial analysis, financing options, capital budgeting, risk analysis and the role of financial markets and intermediaries.

BUSN 360: Operations & Project Management I (3 credits)
For Junior year students only
Prerequisite: BUSN 170
Evaluation and implementation of projects within organizations, management of operational structures and systems to achieve organizational goals and objectives.

BUSN 370: Management Information Systems (3 credits)
For Junior year students only
Prerequisite: BUSN 170
Business and accounting applications of MIS, techniques for evaluating and implementing various management information systems in an organization.

BUSN 398: Summer Internship (6 credits)
All business students must undertake the internship in the summer after the Junior year.

BUSN 460: Business Law (3 credits)
For Senior year Business students only
Laws pertaining to the functioning of business with strong emphasis on theory and practice in Pakistan, tax law and labor law.

BUSN 490: Analysis of Institutions (3 credits)
For Senior year Business students only
Analysis of institutions in the public, private and not-for-profit sectors which have shaped the economic and corporate environment of Pakistan, economic history, public policy and interaction of different institutions that has shaped Pakistan as a country.

BUSN X95: Themes (1-3 credits)
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

BUSN 498: Business Strategy (3 credits)
For Senior year Business students only
This is the capstone course in the program: theories and concepts of strategy, real world problems and application of theory to practice through projects.

Specializations

The Business department offers 4 specializations whose requirements are listed below.

1. Specialization in Operations Management:

Program Objectives

- Describe key concepts and theory of best practice in management, finance, marketing and human resources.
- Develop business leaders who can contribute to the business needs, requirements, and opportunities in Pakistan and internationally.
- Recognize, understand, and utilize business decision-making tools, techniques, and processes in an emerging business environment.
- Develop and encourage superior leadership and interpersonal communication skills for effective business management.
- Encourage creativity, critical thinking and ethical behavior in business decisions using multidisciplinary knowledge.

Program Learning Outcomes

1- **Operations Knowledge:**
Students will apply knowledge and principles of Operations & Project Management to their envisioned scenarios for Operations Excellence and Quality Performance pertaining to real field-oriented businesses

2- **Critical Evaluation:**
Students will critically evaluate, process and simulate the Operations and Project Management Artifacts and Plans to generate reliable and professionally aligned reports

3- **Tools & Techniques:**
Students will apply basic principles and methods including tools and techniques to Operations and Projects related field-oriented business scenarios for Productivity, Business Analysis & Quality Management

4- **Analysis:**
Students will apply various quantitative data analysis techniques to evaluate Operations related numerical and analyze and compare situations to construct and select viable solutions to solve field related problems

5- **Application and Ethics:**
Students will evaluate the significance and application of ethical and corporate governance practices in Operations and Project Management domains following global standards

6- **Professional Involvement:**
Students will research and evaluate opportunities for professional involvement, employment, and further education including credentials & certifications within Operations, Project, Quality and Business Analysis domains following the related Global Professional Bodies.

BUSN 361: Operational Excellence (3 credits)
Prerequisite: BUSN 360
Application of concepts and skills in a production-related environment resulting in better workflow.

BUSN 364: Production, Planning & Control (3 credits)
Must be taken at the same time as BUSN 360 for students specializing in Operations Management.
Critical operational processes: manufacturing, scheduling and factory loading, and their role in meeting production targets, supervision and monitoring.

BUSN 368: Productivity Management (3 credits)
Prerequisite: BUSN 360

Improvement in efficiency of manufacturing processes, optimal utilization of plant and equipment with the objective of improving profitability.

BUSN 461: New Product Development (3 credits)
Prerequisite: BUSN 361
New productions, satisfying customer needs, importance of technological and management challenges.

BUSN 464: Total Quality Management (3 credits)
Prerequisite: BUSN 361
Philosophy of TQM, its key principles and concepts focusing on continuous improvements for customer satisfaction.

BUSN 469: Project Management Processes (3 credits)
Prerequisite: BUSN 361
Tools required to coordinate different activities that result in timely completion of projects.

2. Specialization in Marketing and Sales:

Program Objectives

- Describe key concepts and theory of best practice in management, finance, marketing and human resources.
- Develop business leaders who can contribute to the business needs, requirements, and opportunities in Pakistan and internationally.
- Recognize, understand, and utilize business decision-making tools, techniques, and processes in an emerging business environment.
- Develop and encourage superior leadership and interpersonal communication skills for effective business management.
- Encourage creativity, critical thinking and ethical behavior in business decisions using multidisciplinary knowledge.

Program Learning Outcomes

1- **Application of Marketing Principles:**
Students will apply knowledge of marketing principles to market and promote real businesses.

2- **Critical Thinking:**
Students will critically evaluate existing practices and strategies used in their business/workplace to improve the effectiveness / practical implications of marketing plans.

3- **Effective Communication**:
Students will demonstrate effective communication, analytical and critical thinking skills to interpret market insights and design effective marketing strategies.

4- **Analytical Skills:**
Students will apply various quantitative and qualitative data analysis techniques to evaluate consumer markets and marketing performance and analyze situations to construct and select viable solutions to solve problems.

5- **Marketing Research & Implementation:**
Students will create, market, and sell real products employing all their conceptual learning into launching a short-term viable business.

6- **Ethics:**
Students will evaluate the significance and application of ethical and sustainable practices in marketing and product design.

7- **Practical Application:**
Students will be able to judiciously conduct and brand themselves, in their own marketing careers or as they pursue higher education.

BUSN 382: Marketing Communications (3 credits)
Prerequisite: BUSN 280
Marketing channels, such as advertising and promotion management, and means to promote and project products and brands.

BUSN 383: Sales Management (3 credits)
Prerequisite: BUSN 280
This course introduces students to the concepts and practice of managing sales including strategies, managing sales teams, and the role of sales in the marketing effort.

BUSN 385: Consumer Behavior (3 credits)
Prerequisite: BUSN 280
Current trends in real world marketing, its challenges and analysis, development of effective marketing programs and strategies, understanding consumers & markets for effective marketing and brand development.

BUSN 480: Marketing Research (3 credits)
Prerequisite: BUSN 383
Qualitative and quantitative research methods used in marketing, application of technical and conceptual tools to real world situations through projects and studies.

BUSN 484: Brand Management (3 credits)
Prerequisite: BUSN 383, BUSN 385
Creating and sustaining brands, tools and concepts of marketing and their application to analyze the evolution of brands.

BUSN 485: E-Business (3 credits)
Prerequisite: BUSN 370
Application of technology in the business world, electronic media and new channels for developing businesses, promotion of products and services.

3. Specialization in Accounting & Finance:

Program Objectives

- Describe key concepts and theory of best practice in management, finance, marketing and human resources.
- Develop business leaders who can contribute to the business needs, requirements, and opportunities in Pakistan and internationally.
- Recognize, understand, and utilize business decision-making tools, techniques, and processes in an emerging business environment.
- Develop and encourage superior leadership and interpersonal communication skills for effective business management.
- Encourage creativity, critical thinking and ethical behavior in business decisions using multidisciplinary knowledge.

Program Learning Outcomes

1- **Knowledge:**
Students will apply knowledge of accounting principles to the real businesses.
2- **Evaluate:**
Students will critically evaluate and process the accounting and finance data to generate reliable financial reports.
3- **Critical Thinking:**
Students will demonstrate effective communication, analytical and critical thinking skills to interpret accounting and financial data.
4- **Analytical Skills:**
Students will apply various quantitative data analysis techniques to evaluate financial performance of firms and analyze situations to construct and select viable solutions to solve problems.
5- **Application of Ethical Practices:**
Students will evaluate the significance and application of ethical and corporate governance practices in financial reporting.
6- **Professional Opportunities and Lifelong Learners:**
Students will be able to seek opportunities for professional involvement, employment, or further education in the field of accounting and finance.

BUSN 301: Financial Reporting (3 credits)
Prerequisite: BUSN 201
Generation of accounting information needed by different stakeholders, leasing, stakeholder's equity, earnings per share and financial instruments such as government issues.

BUSN 305: Corporate Governance (3 credits)
Prerequisite: BUSN 201
Governance in corporations, spanning issues related to regulation, fiduciary responsibilities, agency problems and the structures and systems used to improve governance in organizations.

BUSN 322: Financial Management II (3 credits)
Prerequisite: BUSN 321
Corporate finance, dividend policy, capital structure, international financial instruments, debt and equity valuation and the role of hybrid securities.

BUSN 401: Principles of Auditing (3 credits)
Prerequisite: BUSN 301
Fundamentals of auditing, issues of ethics, role of audit firms in conducting audits.

BUSN 404: Taxation (3 credits)
Prerequisite: BUSN 301
Analysis of laws pertaining to taxation, tax structure, corporate taxation and related issues.

BUSN 410: Accounting Information Systems (3 credits)
Prerequisite: BUSN 301
Complementarity and application of information technology to accounting, development of systems and software for the profession.

4. Specialization in Human Resource Management:

Program Objectives

- Describe key concepts and theory of best practice in management, finance, marketing and human resources.
- Develop business leaders who can contribute to the business needs, requirements, and opportunities in Pakistan and internationally.
- Recognize, understand, and utilize business decision-making tools, techniques, and processes in an emerging business environment.
- Develop and encourage superior leadership and interpersonal communication skills for effective business management.
- Encourage creativity, critical thinking and ethical behavior in business decisions using multidisciplinary knowledge.

Program Learning Outcomes

1- **Theory & Practice:**
Understand the basic HRM functions and the theories, concepts, models, and methods that inform HRM practice.
2- **People Management:**
Recognize the critical role that effective people management plays in building and maintaining a competitive advantage in contemporary organizations.
3- **Competitive Issues:**
Analyze the competitive issues that firms face with regards to human resources.

BUSN 350: Human Resource Management
Prerequisite: BUSN 170
This course introduces students to the subject of HRM. It looks at the role of managing human activity (work and people) in an organizational context towards desired outcomes. It covers both theory and practice.

BUSN 353: Human Resource Practice
Prerequisite: BUSN 350
This course provides students with an opportunity to see human resource design in practice in unique situations both in Pakistan and abroad. Case studies will be used extensively.

BUSN 354: Performance Management
Prerequisite: BUSN 350
This course looks at how organizations evaluate the performance of staff and employees. It introduces students to topics like staff appraisals; APRs, the link between performance and rewards, and the systems necessary to ensure adequate performance through a systematic outlining of tasks.

BUSN 450: Labor Law
Prerequisite: BUSN 350
This course introduces students to certain key aspects of labor law with special reference to Pakistan. Topics include law of contract, employment rules and procedures, incentive schemes, pension and provident fund rules, laws on minimum wages, etc.

BUSN 451: Strategic HRM
Prerequisite: BUSN 350
Strategic HRM focuses on the definition of organizational intentions and plans on how business goals should be achieved through people, where people are treated as human capital.

BUSN 453: Change Management
Prerequisite: BUSN 350
This course focuses on change management and is one of the most challenging aspects facing organizations at present. Change management can be forced upon stagnant companies or can be driven from within. This course also links change management to issues of leadership, team building, motivation, and results.

DEPARTMENT OF SOCIOLOGY

Introduction

Sociology is the systematic study of human society. It looks at social behavior, culture, social institutions, grouping within a society, and the relationships between different groups in society. Sociology helps us to identify social issues within our society and gives us conceptual tools to understand those issues so that we can have a society that is better for all of its members. Students who study Sociology will learn to look at their own society and other societies in new ways, to question assumptions, to understand the society from the research of others, to record observations from a neutral position and to analyze them objectively, and to interpret their findings, all within an ethical framework. Sociology helps orient students in terms of their future life, so that they learn skills helpful in many areas of business, government, and non-governmental organizations, as well as their personal lives. The Department of Sociology's goal is to have students understand themselves and society at a family, group, local, regional, national, and global level.

The Sociology department is part of the Faculty of the Social Sciences.

Degrees Offered

The Department of Sociology at Forman Christian College (A Chartered University) offers two degrees, a Bachelor of Studies in Sociology degree and a Bachelor of Studies in Sociology and Cultural Studies degree. Both emphasize the development of sociological skills, observing, analyzing and interpreting the events of human behavior of individuals and groups at the family, group, societal, national and global levels. In addition to these two degrees, the Department of Sociology also offers two minors: a Minor in Sociology and a Minor in Criminology.

Mission of BS Sociology Program

The Mission of the Department of Sociology, BS Sociology degree program is to prepare students in various professional occupations in Sociology and/ or the pursuit of advanced degrees in Sociology by educating them in the fundamental concepts, theories, research, service, and ethics of Sociology.

Program Objectives BS Sociology

1. To teach students concepts and theories in sociology, anthropology, gender studies, development, and cultural studies
2. To develop students' understanding of research methods, analysis techniques and communication skills used in Sociology and other Social Sciences
3. To teach students about the importance of values such as community service, integrity, respect and dignity of humans, and discipline in addition to professional ethics in sociology and other social sciences
4. To facilitate students in developing and recognizing various professional skills and opportunities in Sociology and other social sciences

Program Learning Outcomes

1- Students will demonstrate understanding of core sociological and/or anthropological concepts and theories by critically conceptualizing, theorizing, and objectively evaluating social patterns and problems
2- Apply sociological knowledge and thinking to real-world situations.
3- Students will demonstrate understanding of how to formulate a research project, and to identify social problems and issues, using sociological theories
4- Student will plan and execute a quantitative and/or qualitative research methods project in sociology, including all elements of a social research to draw evidence-based results,

and present theoretically informed recommendations to address current social problems.
5- Students will demonstrate effective communication to convey sociological research including literature, data, and results to a broader audience
6- Students will demonstrate, practice and display general, professional, and research ethics and values
7- Students will describe and list various educational and professional opportunities available to sociologists and social scientists, and also be able to identify a career path for themselves

Mission of BS Sociology & Cultural Studies Program

The Mission of the Department of Sociology, BS Sociology and Cultural Studies degree program, is to prepare students in various professional occupations in Sociology and Anthropology and facilitate the pursuit of advanced degrees in Sociology, Cultural Studies and Anthropology by educating them in the fundamental concepts, theories, research, service, and ethics of Sociology, Anthropology and other Social Sciences.

Program Objectives BS Sociology & Cultural Studies

1. To teach students concepts and theories in sociology, anthropology, gender studies, development, and cultural studies
2. To develop students' understanding of research methods, analysis techniques and communication skills used in Sociology and other Social Sciences
3. To teach students about the importance of values such as community service, integrity, respect and dignity of humans, and discipline in addition to professional ethics in sociology and other social sciences
4. To facilitate students in developing and recognizing various professional skills and opportunities in Sociology and other social sciences

Program Learning Outcomes

1- Students will demonstrate understanding of core sociological and/or anthropological concepts and theories by critically conceptualizing, theorizing, and objectively evaluating social patterns and problems
2- Apply sociological knowledge and thinking to real-world situations.
3- Students will demonstrate understanding of how to formulate a research project, and to identify social problems and issues, using sociological theories
4- Student will plan and execute a quantitative and/or qualitative research methods project in sociology, including all elements of a social research to draw evidence-based results, and present theoretically informed recommendations to address current social problems.
5- Students will demonstrate effective communication to convey sociological research including literature, data, and results to a broader audience
6- Students will demonstrate, practice and display general, professional, and research ethics and values
7- Students will describe and list various educational and professional opportunities available to sociologists and social scientists, and also be able to identify a career path for themselves

Requirements for the Bachelor of Studies in Sociology Major

Minimum of 39 credit hours (13 courses) which must include the following: SOCL 100, SOCL 201, SOCL 301, SOCL 350, SOCL 494, SOCL 498 and SOCL 499. At least 4 Sociology courses must be at the 300/400 level.

Requirements for the Bachelor of Studies in Sociology and Cultural Studies Major

Minimum of 48 credit hours (16 courses) which must include the following: SOCL 100, SOCL 201, SOCL 223, SOCL 301, SOCL 325, SOCL 350, SOCL 494, SOCL 498 and SOCL 499. At least 6 Sociology courses must be at the 300/400 level.

Requirements for the Minor in Sociology

Minimum of 18 credit hours (6 courses) which must include the following: SOCL 100, SOCL 301. At least 2 courses must be at the 300/400 level.

Requirements for the Minor in Criminology

Minimum of 18 credit hours (6 courses) which must include the following: CRIM 110 and CRIM 220. At least 2 courses must be at the 300/400 level.

Requirements for the Minor in Demography and Population Studies

Minimum of 18 credit hours (6 courses) which must include the following: SOCL 110 and STAT 103. The elective courses are: ECON 210, GEOG 233, GEOG323, SOCL 335, GEOG424, and SOCL435. At least 2 courses must be at the 300/400 level.

Important Note:
Students majoring in Sociology can opt for Criminology and/or Demography and Population Studies as a minor.

Course Descriptions

SOCL 100: Introduction to Sociology (3 credits)
Presents fundamental concepts of sociology. Helps students to observe and understand the actions, beliefs, and interactions of people in their own and other societies and to think critically about themselves in relation to social structures in their own and other societies at the individual, group and societal levels. Analyzes current social issues in Pakistan and other countries in terms of sociological concepts. Assignments focus on analyzing and interpreting social issues in societies around the world in sociological terms with practical assignments that reinforce classroom learning.

SOCL 101: Introduction to Social Work (3 credits)
Introduces the values, ethics, history and methods of professional social work practice with particular emphasis on the profession in Pakistan. The course helps students understand the impact of social and economic problems on individuals, families, and communities. The course introduces basic social work principles and techniques to help people help themselves and improve the quality of their lives when experiencing problems due to societal and economic factors such as poverty, homelessness, social discrimination, substance abuse, or involving family issues like parent-child conflict, marital conflict, or caring for aged relatives.

SOCL 103: Introduction to Social Policy (3 credits)
Social policy is the response of government and society to challenges rooted in culture, economics, work, and health. The objective of social policy is to promote holistic wellbeing across society, especially in consideration of marginalized groups such as the impoverished, elderly, women, children, refugees and racial and religious minorities. This course will aim to identify the social factors that shape the process through which social policies are made.

Theories of social policy and evidence of policy implementation which promote wellbeing will be discussed, along with their limitations and strengths. The difficulties in simulating social policy across countries due to differences in social and environmental backgrounds and the importance of developing region-specific policies will also be deliberated. Some of the specific topics that will be covered during the course include ethics and risk; employment and poverty reduction; access to education and healthcare; housing and equality; and globalization and welfare.

SOCL 110: Introduction to Demography (3 credits)
Demography is the study of human populations and the processes through which populations change. The course will familiarize students with conceptual frameworks and important issues within the discipline of demography and population studies. The relationship between social context and individuals' demographic patterns will be established through existing population-based research. The course will also explore the key concepts and measures used to study population dynamics. The course will also identify and apply major theoretical perspectives in demography and assess the conceptual differences among them.

SOCL 115: Anthrozoology (3 credits)
This course will aim to provide students with fundamental knowledge about sociological theoretical frameworks which are used to examine how law is shaped by society and how laws affect society and human rights. Students will also learn about how the law influences and is influenced by social change and social realities- including gender, class, ethnicity, politics, and the economy. Specific issues such as social control and the enforcement of law, Pakistani laws, globalization of law and human rights in context of international law will also be explored.

SOCL 150: Sociology of Globalization (3 credits)
Presents theories of globalization and the history of globalization, various ways in which societies and cultures have been transformed by this phenomenon, analysis of globalization's impact on Pakistani society.

SOCL 170: Environmental Sociology (3 credits)
There exists a dialectic relationship between society and our natural environment. The course will be an attempt to introduce the field of environmental sociology enabling students to see the environment in the light of sociological perspectives. A central aim of this course is to illuminate the students about the relationship that they have with their environment highlighting how ecological issues are social problems.

SOCL 180 Education, Equality and Educational Policy (3 Credits)
The study of the sociology of education is a service sociology, providing practical knowledge for advancing solutions for social inequality and educational policy. This course will study sociological theories which explain the role of education in society and the causes of differential achievement. One of the aims will be to challenge social assumptions of school success and failure, in recognition of socio-demographic differences. The relationship between educational institutes and wider social structures will be explored, such as the family, classroom, teachers, culture, and the economy. The educational system and educational policies of Pakistan will also be covered.

SOCL 192/PHYS 192 *: Science & Society (3 credits)
Presents theories of globalization and the history of globalization, various ways in which societies and cultures have been transformed by this phenomenon, analysis of globalization's impact on Pakistani society.

SOCL 201/ CRIM 201 *: Sociological Research (3 credits)
Prerequisites: SOCL 100 or another introductory course in the Social Sciences.
This is the basic research course in Sociology. Students learn the comparative advantages and limitations of different research orientations, the ethics of research, and strategies and techniques including experiments, field observations, interviewing, unobtrusive research and surveys. There will also be a brief introduction to qualitative research. In addition to lectures and discussions, students will learn basic research methods and techniques by doing a social research project of their own. This will help to develop skills in observation, interviewing, hypothesis building, theory building, questionnaire construction, some basic statistical tests, computer data manipulation, data interpretation, and research report writing.

SOCL 202: Qualitative Methodology (3 credits)
Prerequisites: SOCL 100 and SOCL 201
The course will present various qualitative methods of social research. It will use readings that describe methods, writings (articles and chapters from books) based on qualitative research. Students will carry out exercises that practice these methods such as Participant Observation, open-ended interviewing; photography, and possibly a focus (focal) group situation.

SOCL 203: Social Statistics (3 credits)
Prerequisites: SOCL 100
This course will provide an introduction of statistical concepts and methods to students majoring in the social sciences, enabling them to investigate social issues and discover empirical evidence through statistics. The course provides students with the expertise and tools to conduct research quantitatively, from the stage of planning of data analysis to data presentation. Different statistical tools and techniques will be covered including parametric and non-parametric tests. Classes will mainly be held in computer labs in order to do practical exercises using the statistical software SPSS. Students will become familiar with generating descriptive statistics, tests of association and significance, and regression tests.

SOCL 220/CRIM 220 *: Introduction to Criminology (3 credits)
Prerequisite: SOCL 100
Introduces the Sociological basis to understand deviancy and criminal behavior, causes and consequences of crime, responses to crime and historical transition of ideas about crime. It also presents tools for the scientific investigation of criminal behavior.

SOCL 223: Social and Cultural Anthropology (3 credits)
Studies cultures and social groups throughout the world with an emphasis on looking at a culture from the perspective of someone in that culture. It introduces tools for more effective intercultural communications and a mirror in which to see our own cultural group more clearly. The course covers the basics of cultural concepts and ethnographic description.

SOCL 270: Sociology of Inequality (3 credits)
Prerequisite: SOCL 100
Investigates the concept of social inequality, concentrating on class, gender, religion and ethnicity as relations of domination along with a structural analysis of these social relationships, their links with each other, and their effects on societies and individuals.

SOCL 290: Political Sociology (3 credits)
Prerequisite: SOCL 100
This course explores the relation between politics and society to understand how they shape and are in turn shaped by each other. It is based on the assumption that the political field does not exist independently of social institutions. The course is organized in five

thematic areas. First, we will study the modern state, paying particular attention to the process of its formation. Then we consider various theories of power. The third theme is the relation of identity and politics which we will investigate by looking at nationalism, gender and ethnicity as well as religion. We then shift our focus to social movements and their relevance for politics. The last part of the course is on the global dimensions of politics. We will cover a wide range of theories and empirical cases to make sense of these social dimensions of politics.

SOCL 291: Economic Sociology (3 credits)
Prerequisite: SOCL 100
Explores the sociology of market and economic activity and the ways that economic activities are modified or impeded by social relations and social institutions. Explores the influence of social institutions and processes on economies and economic decisions.

SOCL 301: Theoretical Perspectives in Sociology (3 credits)
Prerequisite: SOCL 100
Examines the structure and scope of sociological theorizing, how to "use information and develop reason in order to achieve lucid summations of what is going on in the world and of what may be happening within ourselves" (Wright Mills 1959:5); it presents the theory, method and object of investigation of some masters of Sociological thought. It also explains Sociological theory as the basis for Sociological research.

SOCL 305/ISLM 305/CRST 354 *: Religion and Inequality (3 credits)
This is a seminar course which focuses on dialogue about religion with a focus on learning what people believe and what people of different religious traditions have in common to work toward a peaceful society. It also speaks to inequalities between religious communities and seeks ways to provide religious freedom and civil rights to all religious communities.

SOCL319: South Asian Languages and Culture (3 credits)
South Asia is a region characteristic of language diversity. This course seeks to understand the relationship between language and cultures of South Asia. Major intellectual works and currents of classical times which created traditions of literature, philosophy, and religion that continue to inspire modern South Asia will be explored. The course will also critically analyze issues related to language identity and the state role in language policies.

SOCL 325: Sociology of Gender (3 credits)
Prerequisite: SOCL 100
Analyzes cultural values, social institutions and theories in the construction of gender. The course analyzes gender inequality in contemporary societies and explores the social experience of gender across different cultures and societies. It discusses legal statutes and the social placement of gender as an outcome of socioeconomic and cultural environment.

SOCL 335: Demography and Public Health (3 credits)
Demography and public health have been closely related for over three centuries, as the health and healthcare needs of a population cannot be measured or met without knowledge of its size and characteristics. Demography is concerned with this and with understanding population dynamics - how populations change in response to the interplay between fertility, mortality, and migration. This understanding is a prerequisite for making forecasts about future population size and structure which should underpin healthcare planning. The purpose of this course will be to extend the students' knowledge of how demographic factors impact basic health issues, of social and economic changes affecting and resulting from health events, and the utility of demographic methodological

applications for understanding and managing health related events and outcomes. The effects of demographic events such as aging, childbearing, changing family structures, racial/ethnic differentials, migration, urbanization, poverty, and mortality etc. on public health issues such as health expenditures, health outcomes, prevention and reduction of diseases and disorders, and improving health care will be explored. The course through the use of rigorous research readings will also attempt to introduce students to the role of applied demography in informing and supporting public health issues.

SOCL 350: Sociology of Development (3 credits).
Prerequisite: SOCL 100
Looks in-depth at development, including theories of development, the impact of development assistance programs, and insights from a wide variety of development models and experiences.

SOCL 355: Sociology of Media (3 credits)
Prerequisite: SOCL 100
Investigates the social institution of the media and its impact on society, the analysis of the social structure of media organizations, major theories of media effects and their application to Pakistani and other societies. It examines the representation of different social groups by media and teaches methods appropriate for media research.

SOCL 363 Linguistic Anthropology (3 credits)
Prerequisites: SOCL 100 and SOCL 223.
Linguistic Anthropologists see 'language' as a cultural resource and 'speaking' as a cultural practice. Language is, therefore, both a mode of thinking and a means of practice. According to Alessandro Duranti, language is active. It is a form of action that presupposes and at the same time brings about ways of being in the world, including what is not said.

This course looks at some common ways that language is socially situated and culturally mediated. We will begin with a review of some tools used by linguists, create a baseline of what is meant by 'cultural mediation', and then explore a selection of writings and case studies produced by Linguistic Anthropologists. Our focus is speech communities distinguished by focal activity, as in the case of Sign Language and Hip Hop, and by social practices linked to race, social class, and gender.

SOCL 370: Visual Anthropology: South Asia (3 Credits)
Prerequisites: SOCL 100 and SOCL 223
The well-known anthropologist Claude Levi-Strauss, who in 1935-39 took more than 3,000 photographs during his teaching years at Sao Paulo University (Brazil), is credited with marginalizing photography in anthropology. As David Sapir explains, he devalued visual images for their imaginary dimension and their subjectivity (Sapir 1994, p. 875). Levi-Strauss privileged writing, which is no less an image construed as thought in scripted form, over other visual representations to support his theory of structural relationship. The argument is complex, but our class will consider one particular issue for still photography.

- Is there a different process of reading/comprehending visuals than there is in reading/comprehending written text?
- Viewed in another way: Does photography entail different interpretive skills than written materials?
- In exploring this prompt, consider how “Culture” mediates visualization

SOCL 390: Cities and Urban Lives (3 credits)
Prerequisite: SOCL 100
This course approaches cities and urban lives from three different perspectives. First, it looks at the city as an infrastructure, both material and non-material, that shapes social

organization and behavior. Classic Sociological questions of the relation of the city to modernity and space and social control will be addressed here. Secondly, the course traces ongoing urban transformations with a special focus on cities of the Global South. Issues taken up here include migration, marginalization, and globalization.

The final section of the course focuses on public practices in the city by looking at the overlapping realms of religion, market, culture, and community life. An understanding of these three distinct approaches will enable students to understand the city from a range of viewpoints. In focusing on a diverse range of urban forms, trends, and practices, this course also goes beyond the limitations imposed by focusing on cities only through the lens of development and progress.

SOCL 410: Sociology of Art & Culture (3 credits)
Prerequisites: SOCL 100
Investigates cultural issues sociologically using a range of theoretical approaches to the Sociology of culture, exploration of Sociological viewpoints on the nature of artistic creation and other forms of cultural activity. It analyzes what the terms 'high culture' and 'popular culture' may mean, and the stakes that are involved in their use in different social contexts.

SOCL 423: Ethnography of Pakistan (3 credits)
Prerequisites: SOCL 100, SOCL 223
Ethnography of Pakistan deals with the many cultures and societies of Pakistan. It is a reading intensive course, with readings selected to cover different geographic regions of Pakistan, different topics, and methodologies. All have been written after Partition (1947) but only a few of the writings concern that event. Indeed, Partition may not mean the same thing to everyone within the nation-state. A few readings touch on current issues of political unrest, but considered together, they provide a rich and diverse account of life in Pakistan.

SOCL 425: Sociology of Work (3 credits)
Prerequisites: SOCL 100
Explores how social groups exercise control over the work environment and make sense of their work experience; relates work to central issues of personal identity and social standing, distribution of social power and organization of work. It examines concepts of efficiency, performance, productivity and quality of work from a Sociological lens.

SOCL 430: Sociology of Consumption (3 credits)
Prerequisites: SOCL 100
Examines consumption and consumer behavior, trends in consumption by emphasizing socio-cultural aspects of consumption, goods, meaning of signs, political economy of consumption, welfare and well-being and social stratification of consumption. It considers development of consumer behavior by focusing on production, marketing, distribution, sale and appropriation of goods and products having various social identities.

SOCL 435: The Sociology of Aging and Policy Choices (3 credits)
Examines biological, psychological and sociological theories and the changes that occur with aging in Pakistan and other cultures and discusses culture's influence on aging policies and practices in Pakistan and elsewhere; it presents an introduction to social policy generally, and then works with students to analyze the situation of older people in Pakistan and Pakistan's policies that relate to aging and/or affect older people. Students gain the ability to identify possible solutions at an individual and policy level and experience field research with older persons.

SOCL 445: Sociology of South Asia (3 credits)
Prerequisites: SOCL 100
An exploration of the cultures and societies in South Asia is essential to develop a broad understanding of the social problems in Pakistan. This required a worldview that focuses on the commonalities in cultural heritage, colonial legacy, interaction with global and transnational forces and their influence on the social, political, social and economic structures and processes in contemporary South Asian societies. The worldview must also appreciate and look to learn from differences, with the overall aim of proposing culture-specific solutions to region-specific problems. The aim of this course is to facilitate students to understand their society from the south Asian perspectives. In other words, students will learn to make sense of the local social trends and social problems from a comparative regional perspective.

SOCL 450: Health and Health Systems (3 credits)
Prerequisites: SOCL 100
The course will help students to: (i) understand health, illness, biomedicine and care management, and (ii) assess health systems in developed and developing countries in a comparative manner. The aim is to deconstruct medical knowledge as we know it and elaborate on how socio-economic factors such as gender, race and income impact health and inequalities in access to health. Main topics that will be covered include the sociological approaches to health and illness, social factors and illness, the meaning and experience of illness and health care systems and the connection between social structures and health outcomes.

SOCL 455: Sociology of Religion (3 credits)
Prerequisites: SOCL 100
Explores the development of religion in human history; presents the functions of religions for the individual, the religious group and for the society as a whole; organizational structures of religious groups; role of religion in social cohesion and social conflict; fundamentalism in all religions; the social organization of rituals and religious practices and the phenomenology of religious experiences.

SOCL 465: Sociology of Sport and Leisure (3 credits)
Prerequisites: SOCL 100
Presents cultural and economic relations in sport and leisure including outdoor recreation, spectator sport, informal play, tourism and other entertainment activities from contemporary and historical perspectives with emphasis on the dynamics of power and identity.

SOCL 494: Senior Sociology Seminar on Writing a Research Proposal (3 credits)
Prerequisites: SOCL 100, SOCL 201, SOCL 301
Students review critical elements of Sociological theory and select an independent research topic along with a theoretical framework for exploring their issue or question. They conduct a literature review, and then develop a plan for a proposed research project that includes its methodology, plan for analyzing the data, ethical issues to consider, permissions as needed, and a budget. Work will be done under the supervision of a faculty member(s) in Sociology in a seminar setting with other students developing their own research projects.

SOCL X95: Themes (Special Seminar in Sociology) (1-3 credits)
Prerequisites: SOCL 100, SOCL 201, SOCL 301
Provides an opportunity to explore some current issues of Sociology in some depth and integrates learning from other courses in relation to the special topic.

Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

SOCL 498: Internship (3 credits)
Prerequisites: Sociology majors and minors who have taken SOCL 100, SOCL 201 and SOCL 301 and have a minimum CGPA of 2.75.
An internship in an organization which utilizes the skills learned in the study of Sociology. Students must develop learning goals for their internship and write a report describing their experience and what they have learned in sociological terms.

SOCL 499: Final Year Independent Research Project (3 credits)
Prerequisites: SOCL 494
Based on the research plan completed in the first semester of this course, the student will carry out his/her research project collecting data, analyzing the data, writing it up, and making a formal presentation of the results to faculty and other students. Work will be done under the supervision of a faculty member(s) in Sociology in a seminar setting with other students who are conducting their own research projects.

CRIM 110: Criminal Law & Justice (3 credits)
This is a survey course designed to introduce the students to the criminal law and the justice system of Pakistan. Beginning with the incidence and nature of crime in Pakistan and the theories regarding the causes of crime, throughout the duration of this semester the three institutions that constitute the criminal justice system namely police, courts and corrections, shall be examined. The course shall include a description of the historical foundations, functions, constitution, powers (especially issues regarding discretion), and procedures and processes followed within each institution. The course will also explore the foundations, implementation and problems (substantive, procedural or administrative), related to criminal law and the criminal procedure code. Issues like discretion, constitutional issues etc. that arise when these institutes come in contact with other state/non state actors or the society at large in the routine execution of their functions and duties shall also be discussed. Upon successful completion of this course, it would be expected that the students will be familiar with the rudiments of Pakistan's criminal law and criminal justice system.

CRIM 118: Private Security (3 credits)
The course will introduce students to the private security industry in Pakistan and other countries. A detailed overview of principal duties and responsibilities necessary to work effectively in the private security organizations will be given. The course will also address issues such as policies of private security organizations, legal and ethical issues involved, and standards for security evaluation.

CRIM 201: Criminological Research (3 credits)
The objective of this course is to familiarize the students with basic research design, research methodology and data analysis in the field of criminal justice. The content of this course has been organized to render a sequential description of the various processes involved in social science research. Beginning with the formulation of research questions and their relationship to criminological theory, over the course of the semester the students will develop a working knowledge of the various research methodologies used in criminal justice research and their respective strengths and weaknesses, along with the various ethical concerns annexed to them. The final portion of this course has been designed to equip students with basic level data analysis skills by using SPSS (Statistical Package for the Social Sciences).

CRIM 220/SOCL 220 *: Criminological Theory (3 credits)
The course will introduce students to influential theories in the field of criminology. In addition to advanced study of criminology theories, various theories of crime causation such as physiological, psychological, economic, and social perspectives will be critically appraised. Tracing the historical roots of the theories of criminology that emanated from different fields in social sciences, the course will also explore integrative theories and theoretical models that emerged as Criminology developed into an applied, multidisciplinary and problem- focused discipline. Other theories related to control and prevention of crime will also be discussed. Critical and postcolonial criminology perspectives in criminology will also be discussed. Students taking this course will be able to understand criminology theory couched within the historical development of the discipline and will be able to critically analyze major criminological theoretical perspectives.

CRIM 225: Juvenile Delinquency (3 credits)
The course shall provide the students with conceptual understanding of Juvenile Delinquency, and its causes. The course will provide theoretical insights in comprehending the phenomenon of juvenile delinquency. We will examine how society defines juvenile delinquency, theories that identify factors that push or pull minors towards delinquency, and how societies formally and informally deal with this moral and administrative paradox (including efforts aimed at prevention and rehabilitation). The course will specifically focus on prevention and control over Juvenile Delinquency through the Juvenile Justice System.

CRIM 230: Mass Media and Crime (3 credits)
The course will critically explore the emergent and ever evolving relationship between crime and mass media. Students will understand the theoretical foundations of this relationship and review research that identifies local and cross-cultural trends. The course will traverse through theoretical perspectives that explain how the crime and the criminal justice system are represented in the media and the forces that influence their representation. The course will also explore how the representation of crime and the criminal justice system influence public opinion and the social construction of crime, criminality and criminal justice, and in turn the criminal justice and administrative systems. The role of the media in constructing a global understanding of crime, criminality and punishment will also be critically analyzed. Specific focus will be made on the countries in the Global South and especially Pakistan.

CRIM 310: Penology and Prison Administration (3 credits)
This course has been developed to enable the student to understand and critically evaluate the Pakistani penal system after developing an insight into the science of penology and the comparative penal systems. The course will introduce students to the various theories and perspectives that explain punishment and its role in societies. The main focus of the course will be on the prisons, both as a social institution and as a society of captives. Students will also be introduced to models of prison management, administration and reform, and will analyze case studies from different countries that highlight specific issues. The course will survey the legal and institutional framework of prisons in Pakistan and introduce students to the scant scholarly literature that analyzes the present conditions of, and issues related to prisons in Pakistan.

CRIM 360: Organized Crime and Transnational Criminal Networks (3 credits)
This course explores the triad of criminal organizations, transnational crime and global terrorism. We will examine and make theoretical sense of transnational crime in its various forms and organized criminal organization and explore its symbiotic relationship with terrorism. The social, political, and economic impact of organized crime, especially in weak democracies, will also be analyzed. We will specifically focus on the organized crime prevalent in Pakistan and the South East Asia region to understand how transnational

criminal organizations strengthen terrorist organizations by sharing their cross jurisdictional smuggling routes and money laundering networks. The course will also look at local and international law enforcement agencies countering the threat of transnational criminal organizations.

CRIM 460: Comparative Criminal Justice Systems (3 credits)
In this course the students will develop a theory based comparative understanding of criminal justice organizations and processes. The main purpose of this course is to apply this knowledge in the context of Pakistan to better understand the Pakistani criminal justice system. The comparative approach is used to help students develop a) a theoretical foundation for understanding how the criminal justice systems operate and b) a knowledge base that would allow them to critically analyze and compare the different criminal justice systems.

CRIM 463: Radicalization and De-radicalization (3 credits)
The course will introduce students to the topic of radicalization and its importance in contemporary social science research. The students will analyze exploratory research on various radical groups throughout the world and the theories of radicalization generated from such research.

*** Cross listed Courses:**

Courses with two designators (coding) are marked with a * to identify them as cross listed courses. Students must select the correct designator for their applicable program.

DEPARTMENT OF STATISTICS

Introduction

Since its inception in 1974 the Department of Statistics has been providing quality statistics education, and now with a renewed vision to provide the best statistics and Data Science education with high quality statistical services across all disciplines, and ensuring international recognition; It aims to devise and develop statistical and analytical techniques, and to disseminate statistical knowledge through teaching, advising, and outreach programs, by making our students responsible citizens and responsible users of statistics in order to serve the needs of the broader community. Our programs not only offer mathematical foundation of Statistics and Data Analytics but also thorough application of data analysis tools to the real-life problems, this prepares students to take part in data revolution.

At BS level the Department of Statistics offers various programs:

1. BS Statistics
2. Minor in Statistics
3. Minor in Data Analytics
4. Joint Minor in Mathematics and Statistics

Program Learning Outcome:

After graduating from our programs students will be able to:

1. Classify data and identify appropriate statistical methods to summarize the facts.
2. Demonstrate understanding fundamental statistical theories and apply these concepts to draw valid conclusions from data.
3. Analyze and interpret real world data problems in multidisciplinary fields by effectively using statistical software.
4. Formulate statistical problem and Communicate solution clearly and professionally in written and oral form.
5. Describe future career and education opportunities in the field of statistics.
6. Describe future career and education opportunities in the field of statistics.

Requirements for the Major

48 credit hours including STAT 101, STAT 102, STAT 201, STAT 202, STAT 301, STAT 302, STAT 304, STAT 305, STAT 403, STAT 498 as core courses and 21 credits of the following courses: STAT 103, STAT 206, STAT 207, STAT 208, STAT 212, STAT 303, STAT 307, STAT 308, STAT 309, STAT 310, STAT 311, STAT 313, STAT 314, STAT 315, STAT 317, STAT 400, STAT 405, STAT 406, STAT 407, STAT 408, STAT 414, STAT 499.

A student cannot elect for both the Minor in Data Analytics and Minor in Statistics.

Requirements for the Minor in Statistics

A minor in Statistics is open to students of all disciplines with a minimum CGPA of 2.0

Courses required: Any 6 of the following courses: STAT 101, STAT 102, STAT 103, STAT 201, STAT 202, STAT 208, STAT 301, STAT 302, STAT 303, STAT 304, STAT 305, STAT 307, STAT 308, STAT 309, STAT 310, STAT 311, STAT 315, STAT 400, STAT 403, STAT 407, STAT 408.

Requirements for the Minor in Data Analytics

A minor in Data Analytics is open to students of all disciplines

Courses required: A student will need to study six courses out of which four core courses: STAT 206, STAT 207, STAT 317 and STAT 414; and the remaining two courses can be taken from the list of following elective courses. STAT 102, STAT 201, STAT 202, STAT 303, STAT 309, STAT 310, STAT 315 STAT 405, STAT 406, MATH 102, COMP 102.

Requirements for Joint minor in Mathematics and Statistics

For a Joint Minor in Mathematics and Statistics a student needs to study 6 courses; this includes 2 Statistics core courses, 2 Mathematics core courses, and 2 elective courses by choosing one elective course each from the list of elective courses listed by the departments.

Statistics Core Courses

1. STAT102/MATH105: Probability and Probability Distribution
2. STAT201: Statistical Inference-I

The 3rd course can be taken from the list of the following elective courses: STAT202, STAT208, STAT301, STAT303, STAT304/MATH314, STAT311/MATH315, STAT313/MATH304, STAT401/MATH408, STAT408

Mathematics Core Courses

1. MATH102: Calculus-I or MATH111
2. MATH103: Introductory Linear Algebra or CSCS202

The 3rd course can be taken from the list of the following elective courses: MATH201, MATH202, MATH203, MATH209, MATH212, MATH303/COMP113, MATH 304/STAT313, MATH 310/CSCS320, MATH312, MATH314/STAT304, MATH 315/STAT311, MATH 408/STAT401.

Course Descriptions

STAT 100: Basic Statistics (3 credits)
Basic definitions, types of variables, scales of measurement, sample and population, collection and presentation of data, measures of central tendency, measures of dispersion for ungrouped data, index numbers, correlation and scatter plot.

STAT 101/MATH 107 *: Statistical Methods (3 credits)
Nature and scope of Statistics, scales of measurements, measure of central tendency and dispersion for grouped data, moments, skewness and kurtosis, fundamental rules of counting, basic probability, moments in probability context.

STAT 102/MATH 105 *: Probability and Probability Distributions (3 credits)
Basic set theory, different approaches and laws of probability, conditional probability and independence, Bayes' rule, random variables, mathematical expectations, mean & variance of random variables, joint (bivariate) probability distributions and properties, applications of some well-known discrete and continuous distributions.

STAT 103: Quantitative Methods in Social Sciences (3 credits)
Organizing and summarizing data using IBM-SPSS, correlation and regression analysis, reliability testing of items, application of parametric tests in single and several populations such as t, and ANOVA, chi square test of association, introduction to non-parametric tests and their application.

STAT 201: Statistical Inference I (3 credits)
Prerequisite: STAT 101 or STAT102
Introduction to basic terminologies of statistical inference, population and sample; Introduction to sampling distributions for single mean, difference between two means, proportion and difference between two proportions, properties of sampling distributions; point and interval estimation for means and proportions; testing of hypotheses about means, and proportions.

STAT 202: Statistical Inference II (3 credits)
Prerequisite: STAT 201
Statistical inference regarding population variance. Test for goodness of fit, test for independence of attributes, test for homogeneity of variances, test for equality of proportions, analysis of variance: classification, importance and application, one-way and two-way ANOVA and multiple comparisons test, non-parametric tests: sign test, Wilcoxon-Signed Rank test, Wilcoxon Ranked-Sum test, Mann-Whitney U test, Mood's median test, Kolmogorov-Smirnov test, Runs test, Kruskal-Wallis H test.

STAT 206: Introduction to Data Analytics with R (3 credits)
This course covers the following topics that includes Introduction to programming with R, Operators, random number generators, importing and exporting data files from various database software, creating objects, matrices, lists, data frames, function in R, Loops, apply family of functions, base Graphs in R, working with strings, parallel computing with R, using the R commander Graphical User Interface, creating dashboards with R Shiny and also developing web apps with R, creating and maintaining R Packages.

STAT 207: Business Analytics (3 credits)
This course includes performing exploratory data analysis and studying trends between variables by scatter plots, correlation and by fitting simple linear trends with their application on statistics software. Microsoft Power Business Intelligence services (Power BI) will be taught for data warehousing, data preparation, data visualization and creating dashboards. Performing reliability analysis of system life, application of different forecasting and smoothing methods in time related data. Further topics include work measurements: time studies and work sampling, introduction to statistical process control: concept and terms of quality, rolled throughput yield, process capability analysis, process sigma level and basic Define, Measure, Analyze, Improve and Control (DMAIC), control charts.

STAT 208: Survey Methodologies (3 credits)
Population and sample, concepts of target population, survey estimation and inference, sample size determination, sampling, sampling and non-sampling errors, sample design and survey types, survey interviewing, cognitive process in answering survey questionnaire, construction of survey instruments, benchmarking questionnaires, choosing appropriate research designs, non-response, non-response errors, survey weights, analysis of data from complex surveys, accessing, preparing and working with secondary data from social surveys, comparative and longitudinal surveys, pilot survey, preliminary and technical reports.

STAT 212/BIOL 212/ENVR 212: Research Methods and Statistics (3 Credits)
This is a specialized course designed only for Students in the faculty of Natural Sciences. Students doing a major in statistics will not be allowed to enroll in this course.
Research and its types, overview of research study designs, planning and implementation, ethics in research, selection of research topic, hypothesis formation, effective literature review and citation using software tools, Descriptive and Inferential Statistical methods, data collection and analysis tools, hypothesis testing, ANOVA, design of experiments and

its significance. Training on software (e.g. SPSS, Mendeley, Qualtrics).

STAT 301: Sampling Techniques I (3 credits)
Prerequisite: STAT 201
Techniques of statistical sampling in finite populations with applications in analysis of sample survey data, simple random sampling, systematic sampling, stratified sampling, and cluster sampling, ratio and regression methods of estimation in simple random sampling, implementation of designs for the analysis of survey data, with application of techniques using R programming language and other software packages.

STAT 302: Experimental Design I (3 credits)
Prerequisite: STAT 202
Principles of design of experiments. Model and analysis of completely randomized design randomized complete block design, Latin square design, relative efficiency(s), Graeco Latin and cross-over design, underlying assumptions of ANOVA in fixed effect models, multiple comparison tests, parameter estimations, estimation of missing observations.

STAT 303: Regression Modeling for Discovery I (3 credits)
Prerequisite: STAT 201
Theoretical and practical understanding of simple and multiple linear regression models, it covers the ideas of correlation analysis, estimation of regression parameters, residual analysis; inference about regression parameters, transformations, diagnostics for verification of assumptions and their remedies, variable selection and model building strategies, using R programming language and other available statistics software.

STAT 304/MATH 314 *: Distribution Theory (3 credits)
Prerequisite: STAT 102/MATH 105
Expectations of functions of random variables, probability function, probability generating function and moment generating function. Theory and application of important discrete and continuous distributions and their properties.

STAT 305: Statistical Quality Control (3 credits)
Prerequisite: STAT 101
Control charts for attributes and variables. Acceptance sampling plan, quality improvement procedures, Taguchi method of online or offline approach to quality improvement; signal-noise ratios using orthogonal arrays.

STAT 307: Sampling Techniques II (3 credits)
Prerequisite: STAT 301
Sampling with probability proportional to size, estimation of mean, total, proportion and variance using two-stage and two-phase sampling and real-life applications. Ratio and regression estimate in stratified sampling, non-probability sampling and sampling selection procedures with varying probability. Application of sampling techniques in R language, critical analysis on national sample survey of Pakistan.

STAT 308: Experimental Design II (3 credits)
Prerequisite: STAT 302
Experiments with more than 2 factors; ANOVA, fixed random and mixed models, factorial designs and experiments, confounding and factorial replication, multiple comparison tests, split plot and nested designs.

STAT 309: Regression Modeling for Discovery II (3 credits)
Prerequisite: STAT 303

Basic understanding and well-rounded introduction of the generalized linear models, assumptions, diagnostics and remedial measures, inference about parameters, special emphasis is given to the theoretical and applied understanding of regression models with binary outcome, simultaneous equation models and model building strategies, using R programming language.

STAT 310: Time Series Analysis (3 credits)
Prerequisite: STAT 303
Types of time series data, trends, seasonal and cyclical analysis of data, irregular series, short term forecasting, ARMA and ARIMA models, diagnostic checking, forecasts, Box-Jenkins approach, spectral analysis.

STAT 311 /MATH 315 *: Mathematical Statistics (3 credits)
Prerequisite: STAT 102/MATH 105
Transformations and distributions of functions of random variables, linear transformations, transformations of univariate and bivariate random variables, polar transformations, derivation of chi-square, t, F distributions and their properties, non-central chi, t, F distributions and their properties, order statistics; distributions of rth order statistics, its mean and variance, distributions of minimum and maximum order statistics, joint distribution of order statistics, sampling distribution of range, mid-range and median.

STAT 313 /MATH 304 *: Operations Research (3 credits)
Prerequisite: STAT 102/MATH 103
Introduction to operations research, graphical solution, simplex method, two phase method, M-method, sensitivity analysis, primal dual relationship, dual simplex method, transportation model, assignment models, transshipment models, network models, queuing theory.

STAT 314: Reliability Analysis (3 credits)
Prerequisite: STAT 304
Review of probability functions, basic reliability definitions, failure time distribution, exponential time-to-failure models, hazard rates, life testing, and reliability estimation of parameters. System reliability.

STAT 315: Statistical Packages and Data Analysis (3 credits)
Prerequisite: STAT 202
Introduction to data analysis using software packages, applications of parametric and non-parametric tests, model fitting, probability distribution fitting, basic multivariate analysis of survey data.

STAT 317: Data Visualization with R (3 credits)
Prerequisite: STAT 206
This course covers the fundamental concept of data visualization with R:data presentation and introduction to ggplot2 for data visualization. Graphical methods to present univariate and bivariate data, visual elements like charts, graphs, and interactive maps for categorical and quantitative variables. This includes visualizations for statistical models like heat maps for relationship, linear regression, logistic regression, survival plots; Information Visualization Types: multi-dimensional, grouping, mapping, and time dependent graphs. Further topics include Design Principal of data Visualization: customizing graphs by attractive color schemes, annotations, interactive graphs and best practices in visualization.

STAT 400: Acceptance Sampling (3 credits)

Prerequisite: STAT 305
Introduction to acceptance sampling plans, classification of sampling plans, probability and operating characteristic curves, probability functions, single, double, multiple sampling and sequential sampling by attribute.

STAT 403: Point Estimation (3 credits)
Prerequisite: STAT 304
Properties of estimators: unbiasedness, consistency, sufficiency, efficiency, completeness. Methods of estimation: moments, ML, LS, minimum chi-squares, Bayes method of estimations.

STAT 405: Predictive Analytics (3 credits)
Prerequisite: STAT 303
Introduction to predictive analytics, key concepts, techniques, and methods. This course will cover methods and tools for data pre-processing for forecasting tasks, techniques for selecting well-suited models for analysis. The major topics include predicative modeling process, the statistical concepts for predictive modeling, regression, time series and machine learning predictive models. Predictive analytics can be applied in industries ranging from financial services to healthcare.

STAT 406: Applied Multivariate Analysis (3 credits)
Prerequisite: STAT 202
Multivariate data, review of multiple regression analysis, PC analysis and factor analysis, canonical correlation, hotelling T procedures, MANOVA, discriminant analysis.

STAT 407: Estimation and Hypothesis Testing (3 credits)
Prerequisite: STAT 304
Interval estimation, Neyman-Pearson Lemma, power functions, uniformly most powerful test. Deriving tests of hypotheses for parameters in normal, exponential, gamma and uniform distributions.

STAT 408: Biostatistics (3 credits)
Prerequisite: STAT 102
Introduction, probability distributions of biological variables, probit and logit transformations, ANOVA in biostatistics, developing G test, R x C test of independence.

STAT 414: Statistical Learning (3 credits)
Prerequisite: STAT 206
This course includes application knowledge of linear, polynomial regression, logistic regression and linear discriminant analysis. A model validation technique, cross validation and resampling method bootstrap, model selection and regularization methods (Ridge and Lasso). This course also covers nonlinear models, splines and generalized additive models, tree-based methods, random forests and boosting, support vector machines, principal components and clustering methods.

STAT X95: Themes (1-3 credits)
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

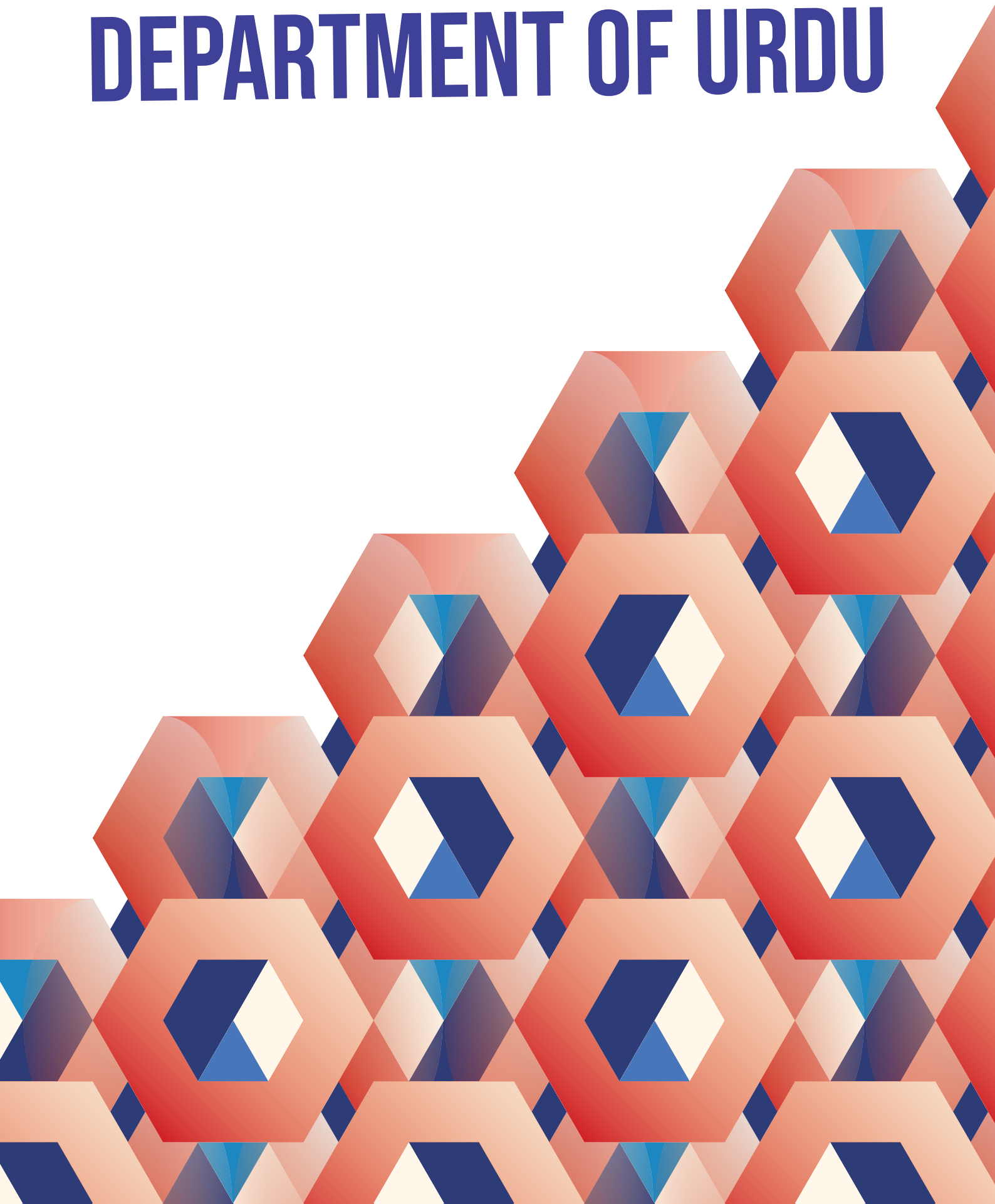
STAT 498: Internship (6 credits)

Internship to Junior/Senior students with CGPA 2.50 or above
Students will have to work in a well-known organization/industry for six to eight weeks in the summer semester and will observe the timings as prescribed by the host organization. The internship office will act as a liaison between the department and the organization. The students will have a supervisor from the department as well as from the host organization. At the completion of the training, students will submit a written report to the department supervisor and will be evaluated by the departmental committee.

STAT 499: Research project (6 credits)
Students with CGPA 2.5 or above will be eligible for research; students with CGPA less than 2.5 will have to take any other course from the list of electives.

*** Cross listed Courses:**
Courses with two designators (coding) are marked with a (*) to identify them as cross listed courses. Students must select the correct designator for their applicable program to be counted towards the degree.

DEPARTMENT OF URDU



Introduction

The Department of Urdu is one of the oldest at Forman Christian College (A Chartered University) and has had renowned faculty such as Maulana Farzand Ali, Dr Agha Suhail and Prof Iqbal Ahmed Khan. Both teachers and students take an active interest in the fields of research, creative writing and literary criticism. The department has also produced some fine writers. The Department of Urdu offers a Bachelor of Studies (Hons) degree and is part of the Faculty of Humanities.

Bachelor of Studies in Urdu

Learning Objectives

1. To create informed learners in the field of Urdu literature
2. To encourage students to cherish the rich cultural heritage of the Urdu language in Pakistan and the subcontinent
3. To enable students to critically analyze the available Urdu literature
4. To enable students to create and critique different artifacts in the Urdu literature
5. To expand the area of research and innovation the field of Urdu literature
6. To make students fluent and proficient in Urdu language

Program Learning Outcomes

1- **Understanding of Urdu language and literature:**
Students will demonstrate an understanding of Urdu literature from Pakistan and the subcontinent

2- **Civilized citizen:**
Students' learning of Urdu literature will help them become better and informed citizens

3- **Knowledge of Urdu language and literature:**
Students will use their knowledge of Urdu literature to develop their aesthetic and literary abilities

4- **Research and critical thinking:**
Students will exhibit their knowledge of research practices, values, and ethics.

Requirements for the Major

Minimum of 48 credit hours including: URDU 201, URDU 204, URDU 208, URDU 302, URDU 401, URDU 405 and URDU 499 (research project).

27 credits of major electives from any of the following URDU 103, URDU 201, URDU 202, URDU 205, URDU 206, URDU 207, URDU 301, URDU 304, URDU 305, URDU 306, URDU 402, and URDU 403

Requirements for the Minor

A minor in Urdu is open to students of all disciplines with a minimum CGPA of 2.00. Core courses required: URDU 208, URDU 303 and URDU 401

3 courses from the following: URDU 103, URDU 201, URDU 202, URDU 205, URDU 206, URDU 207, URDU 301, URDU 304, URDU 305, URDU 306, URDU 401, URDU 402 and URDU 403.

Course Descriptions

URDU 101: Communicative Urdu (3 credits)
Communication and its different means, brief introduction to Urdu language, some fundamentals of Urdu grammar, functional Urdu, creative writing and journalistic Urdu.

URDU 103: A Selection of Urdu Verse (3 credits)
Ghazal (Ghalib, Mir and Iqbal), Nazam (Nazeer Akbar Abadi, Akbar Allah Abadi, Majeed Amjad and Syed Zamir Jafri).

URDU 104: A Selection of Urdu Prose (3 credits)
Letters (Ghalib), essays (Sir Syed Ahmad Khan, Wazir Agha and Mushtaq Ahmad Yousfi), short story (Premchand), character sketch (M Abdul Haque), extract of travelog (Begum Akhtar Riaz-ud-Din).

URDU 201: A Brief History of Urdu language and Literature (3 credits)
Introduction to Urdu language and theories regarding its origin, phases and trends in Urdu literature up till the 20th Century, Urdu in Delhi and Lucknow, evolution of Urdu prose.

URDU 202: Classical Urdu Poetry (3 credits)
Introduction to classicism, study of classical ghazals (Mir Taki Mir, Khawaja Mir Dard, Haider Ali Atish, Momin, Asadullah Khan Ghalib), masnawi (Mir Hassan) and marsya (Mir Anees).

URDU 203: Introduction to Satire & Humor in Urdu Literature (3 credits)
Difference between satire and humor, a brief history and importance of satire and humor, prose (Patras Bukhari, Ibn-e-Insha, Mushtaq Ahmad Yousfi, Col Muhammad Khan), poetry (Akbar Illahabadi, Syed Muhammad Jaffri, Syed Zamir Jafri, Anwar Masood).

URDU 204: Urdu Grammar and Literary Terms (3 credits)
Ilm-ul-Bayan, Ilm-ul-Badih, Adabi Istalahat.

URDU 205: Pakistani Poetry (3 credits)
Pakistani poetry (Munir Niazi, Shahzad Ahmad and Ahmad Faraz), nazam (Munir Niazi, Anwar Masood, Parveen Shakir and Amjad Islam Amjad).

URDU 206: Pakistani Prose (3 credits)
Pakistani fiction and prose: novel by Abdullah Hussain and short stories by Ahmad Nadeem Qasmi, Mumtaz Mufti and Bano Qudsia.

URDU 207: Literary Journalism (3 credits)
Difference between journalistic and literary use of language, evolution of literary journalism in Urdu, leading literary journals (Tehzeeb-ul-Ikhlaq, Awadh Puch, Saqi, Adbi Dunya, Naqoosh and Fanoon).

URDU 208: Script Writing in Urdu (3 credits)
Documentary writing: program scripts, journalistic scripts, business scripts, drama and film scripts.

URDU 301: Modern Urdu Poetry (3 credits)
Modernity and Modernism, ghazal (Hasrat Mohani, Faiz Ahmad Faiz, Nasir Kazmi), nazam (Majeed Amjad, Faiz Ahmad Faiz), lyrics (Hafeez Jalandhry), an analysis of Urdu poetry in the 20th century in a nutshell.

URDU 302: Criticism (3 credits)
Basic principles and definition of criticism, oriental criticism, western criticism, practical criticism.

URDU 303: An Introduction to Selected Genres (3 credits)
Poetic and prose genres of Urdu literature: ghazal, nazam, rubai, qata, haiku, dastaan, novel, drama and character sketch.

URDU 304: Biographical Literature in Urdu (3 credits)
Evolution of biographical literature in Urdu, biography of Khawaja Altaf Hussain Haali.

URDU 305: Autobiographical Literature in Urdu (3 credits)
Evolution of autobiographical literature in Urdu, autobiographers: Abdul Majeed Salik, Rashid Ahmed Siddiqui, Ihsan Danish and Qudrat Ullah Shahab.

URDU 306: Travelogs in Urdu (3 credits)
Evolution of travelogs in Urdu, selected extracts from Mahmood Nizaami, Begum Akhtar Riaz-ud-Din, Ibn-e-Insha and Mustansar Hussain Tarrar.

URDU 401: Study of Iqbal (3 credits)
Life sketch of Iqbal, Iqbal as a poet and selected Urdu ghazals and nazams.

URDU 402: A Study of Urdu Drama (3 credits)
Art and evolution of Urdu drama, selected extracts from Anarkali, Mirza Ghalib Bandar Road Per and Man Chalay Ka Soda.

URDU 403: Modern Literary Movements in Urdu (3 credits)
Literary movements, modernity and modernism, important movements of the 20th century, romanticism, progressive movement, symbolism, modernism.

URDU 405: Principles of Literary Research (3 credits)
Importance of literary research, evolution of Urdu research up till Aab-e-Hayat by M. Hussain Azad, principles and resources of research, terminology and preparation of research paper.

URDU X95: Themes (1-3 credits)
Sections:
A-E of 1 credit
F-J of 2 credits
K-Z of 3 credits

URDU 498: Internship (zero credit)
Prerequisite Urdu 208
The students would be required to take up an internship with any local media house for script writing and news editing. It would be a standard internship that will typically be in the summer and after the 4th semester. It will be at least 9 weeks in duration.

URDU 499: Practical Research (3 credits)
A research paper of 50-100 pages on any topic regarding Urdu language and literature.