POSTGRADUATE DEGREE PROGRAMS 2015

FORMAN CHRISTIAN COLLEGE (A CHARTERED UNIVERSITY)
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Forman Christian College was founded in 1864 by Presbyterian missionaries. By the turn of the 20th century it had become recognized as a leading institution in the Indian subcontinent. Since August 1947 the College has served Pakistan with distinction. The number and quality of distinguished alumni of FC College is rivaled by few universities in the world. Our graduates have leadership positions in government, business, education, various professions, religion and arts. FC College was established as a Chartered University by the Punjab Provincial Assembly in 2004.

In 2005 Forman Christian College introduced the four year BA/BS Honors degree. In 2007 the first postgraduate degrees were offered. Now it offers 14 MPhil and other postgraduate degrees as well as 3 PhD programs. Five Teaching Assistantships will be awarded on the basis of merit in each of our postgraduate programs.

FCC is a private and not-for-profit institution. The standards and traditions that have made the University in history are being upheld and even enhanced today. We strive to provide a truly outstanding educational program taught by well-qualified faculty who care about students and can lead them in research. The University also provides strong co-curricular programs in order to enable students to not only enjoy themselves but be able to learn outside the classroom. Often students find that the values and habits that they learned while participating in such activities were important developmental steps for them for success later in life.

Forman Christian College is situated on 108 beautiful acres on Canal Bank Road in Lahore. Its facilities and labs are up to the latest standard. There is secure, high quality housing available on campus for female postgraduate students.

We eagerly look forward to welcoming new postgraduate students who will enroll in FC College and become leaders and academics of Pakistan in the years to come.

Dr James A Tebbe
Rector
1. Introduction to FCC
Forman Christian College was founded in 1864 by Dr Charles W Forman, a Presbyterian missionary from the USA. The college was initially known as the Lahore Mission College, but in 1894 the name was officially changed to Forman Christian College (FCC) in honor of the founder. In the early years, degrees were awarded through the Calcutta University. College level instruction was interrupted in 1869 due to the illness of key faculty members. College classes resumed in 1886, with degrees being awarded through the University of the Punjab. In 2004 FCC became a chartered university and from 2009 onwards has awarded its own degrees.

The early years of the college were marked by rapid growth in enrollment, and a constant struggle to find enough space to house the growing college. Enrollment grew from 18 students in 1886 to 130 in 1890, 311 in 1900, 426 in 1910 and 600 in 1915. Enrollment had reached 1,500 students by the time the college was nationalized in 1972. Enrollment in the university section alone stands at 3,200 students today.

The campus was located in the Anarkali (Nila Gumbad) area of Lahore for many years. Four major buildings were constructed by the college on that campus by 1916, and Ewing Hall, built in 1916, is still used as a hostel by the college. In 1940 the college moved to its present spacious campus of over 100 acres on the scenic banks of Lahore Canal.

FCC has been served by a large number of distinguished educational leaders and teachers throughout its history. Dr C W Forman, Dr Sir J C R Ewing, Dr C H Rice, Dr E D Lucas, Dr S K Dutta, Dr H C Velte, Dr J H Orbison, Nobel Laureate Dr Arthur Compton, Maulvi Muhammad Bakar, Dr H D Griswold, Prof J M Benade, Shamsul Ulema Maulavi Muhammad Hussain, Dr K C Chatterji, Dr P Carter Speers, Dr S L Sheets, Prof M S Bhatti, Maulana Farzand Ali, Dr R H Ewing, Dr E J Sinclair, Dr Robert F Tebbe and Dr Carl Wheeless are among many who have impacted the lives of students and shaped the future of the college through the years. Under their leadership, the college became widely regarded as one of the very best in the entire subcontinent.

For many decades, FCC has been widely recognized for its meritorious work of nurturing and consolidating the social and intellectual capital of Pakistan. The college motto, “By love serve one another,” has been a guiding principle for Formanites throughout the history of the college. Among the graduates of the college are two Presidents of Pakistan, a Prime Minister of India, the
first Chief Justice of Pakistan, a number of Governors and Chief Ministers of the Punjab and other provinces, an Attorney General of Pakistan, two Foreign Ministers of Pakistan, a President of the Security Council of the United Nations, numerous Ambassadors to other nations, a Chairman of the Atomic Energy Commission, a Chairman of the Senate, several Speakers of the National Assembly, numerous Generals and Admirals and an equally impressive list of leaders in the fields of education, law, medicine, arts and entertainment.

FCC has been a leader for the development of curriculum among the universities of Pakistan. Through the years the college introduced into the curriculum such subjects as the Sciences, Economics, Psychology, Geography, Technical Chemistry and Sociology. FCC is the first college in the subcontinent in whose laboratories research work of Nobel Prize caliber was conducted and Dr Arthur Compton received the Nobel Prize in 1932 for research conducted, in a large part, at FCC. In 1902, the college was the first college in the Punjab to admit women.

FCC also has a distinguished record of performing service for the nation. At the time of Independence, the college converted two hostels into a hospital for refugees seeking medical assistance and thus began United Christian Hospital. During the Kangra Valley earthquake disaster in 1905, Dr J C R Ewing organized and led the relief effort. Similarly, at the time of the Quetta earthquake in 1935, the college did devoted relief work, this time under the leadership of Prof Jagun Nath. Social service by students was made popular by Prof D J Fleming many years ago.

In 1972 the college was nationalized by the government. It was returned to the present owners of the college on 19 March 2003. In March 2004, the government granted university status to FCC. The university embarked upon an exciting new stage in its history in September 2005 when it began a four-year Baccalaureate (Honors) program designed in accordance with world-class standards for accreditation.
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 FCC motto, “By love serve one another”.

Vision
The vision of FCC is to be recognized as one of the very best educational institutions in the entire subcontinent. This is in keeping with the distinguished reputation established during the first century in its life.

Goals
The educational programs and the faculty approach to teaching are designed to graduate:

**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
FCC 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 FCC 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 FCC 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 FCC 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 FCC 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 Career Preparation
Enriched with the enduring qualities of a liberal arts education, FCC 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 Coeducation
All programs of FCC are co-educational. FCC 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
FCC 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 Equality of Opportunity
At Forman Christian College, 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
FCC is a private, not-for-profit education institution. All tuition and other fee income goes directly to the support of the educational program. Indeed, tuition and fees pay only a portion (approximately 69%) 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.
2. Campus
Forman Christian College 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 left bank of the canal.

There are two new purpose-built buildings for university students. Inaugurated in 2007, the Business and Social Sciences Building houses the Social Science disciplines including the Departments of Business Management and Economics. The Armacost Building is a modern state-of-the-art science building for the Departments of Biological Sciences, Chemistry, Physics and Computer Studies/Information Technology. It was inaugurated in February 2010.

In addition to administrative offices, the Ahmed Saeed Administration Building (former N Block) has classrooms for language studies.

Sinclair Hall houses the largest auditorium – seating 740 people – of the university. This is where major events including the annual honor’s convocation, annual play, Christmas pageant, etc. are held.

FCC has a large sports ground in the center of campus that includes facilities for cricket, football and hockey plus a 400-meter oval shaped running track. A modern 25-meter swimming pool and six tennis courts are also located on campus.

Six student hostels are located on campus and an additional hostel, Ewing Hall, is located in the Anarkali (Nila Gumbad) area of Lahore. The hostels located on campus are West and Shirazi Halls for male undergraduate students and Hope Tower for female students. For the time being there are no on campus hostel facilities for postgraduate male students. The USAID-funded Hope Tower provides accommodation for approximately 360 female students. It also houses postgraduate female students.

Student-faculty-staff social interaction takes place in a more relaxed setting at the Canteen. The faculty is available to assist students outside the class, and the Canteen 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.

Learning is not restricted 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 at FCC.
3. Student Life
Co-Curricular

Forman Christian College is committed to providing a 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 Office of Student Activities coordinates and promotes activities of all the student societies; almost every academic department has a student society. Each society plans and conducts programs during the year that enrich the learning experiences of students and provide opportunities for student leadership.

Student societies have their own website: www.fccsocieties.org. To ensure that society news is uploaded in a timely manner, society presidents must send news write ups and photographs to the Communications Office as soon as possible after the event has taken place. The following societies are currently functioning:

Art Junction
Bazm-e-Fikr-o-Nazar
Benade Physics Society
Christian Life Program
Dean Geography Club
and Adventure Society
Earth Watch Club
Ewing English Club
Formanites Computing Society
Formanites Debating Society
Forman Dramatics Club
Formanites Education Society
Formanites Journalism Society
Forman Model United Nations Society
Forman Music Society
Forman Photographic Society
Forman Political Science Society
Armacost Psychological Society
Forman Sociological Association
Forman Statistics Society
Griswold History Society
Islamic Society
International Affairs Society
Leadership Forum
Lucas Economics Society
Mathematics Society
Philosophy Society
Red Crescent Youth Group
Rotaract Club
Senior Biological Society
Speers Chemical Society

Religious Life

As a university, we are concerned with teaching values and building strong positive character traits and discipline in our students. For Muslim students, there are two mosques on campus. Juma prayers are offered at the main mosque. We
also convene Dars-e-Quran classes together with symposiums and discussions to which eminent Muslim scholars are invited to deliver talks and/or to 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 regular chapel programs, we offer regular Bible study groups and opportunities for volunteer service. No classes are scheduled on Friday during Juma or chapel time.

Sports

FCC has a College Sports Board that organizes, promotes and conducts games. The Sports Board features a very active intramural sports program with competition in athletics, basketball, cricket, football, hockey, table tennis, wrestling, lawn tennis and swimming. Participation in intervarsity competitions in many of these sports is part of the sports program.

On-Campus Health Services

The university operates an emergency first response center services through the Mercy Health Center, an on-campus facility equipped for the routine medical needs of the on-campus residents, day scholars, faculty and staff and has an on-going relationship with the nearby United Christian Hospital for cases that require specialized attention.

The university also has a brand new health care facility with Emergency Medical Services (EMS) provided by 1122-trained student volunteers, a full-time US-trained registered nurse, a pharmacy and 24-hour access to care. Seminars on a variety of health-related topics will be conducted throughout the year.

Counseling

The University Counseling Center is a facility to help students deal with problems which they may not want to discuss with family, friends or their teachers. The Center provides individual and confidential counseling and may refer students to other professionals if needed. The Center does not deal with issues related to academic advising, but with personal and emotional issues that students face in their lives.
Discipline

All students are expected to act with dignity and self-respect, to be honest, considerate, well-behaved and courteous. Moreover, students must observe strict disciplinary standards. The decision of the Rector in all disciplinary matters shall be final and legally binding on all students. Proctors maintain discipline, enforce rules of good conduct and take disciplinary action against students wherever required.

- Students are required to observe the rules and regulations governing their studies (both theory and practical) as may be made from time to time.
- Students are expected to attend every lecture and laboratory session and academic activity of the classes in which they are enrolled.
- Acts of dishonesty and cheating, especially during examinations, are strictly prohibited, and subject to punitive action if proven.
- Students are required to abstain from undesirable behavior that poses a threat to any fellow student, faculty or staff member or any other person working as an employee of the university.
- Behavior that disrupts the normal flow of academic work or co-curricular activities is prohibited.
- Destruction, defacement or damage caused to university property shall be severely dealt with.

The following are strictly forbidden on the university campus:
- Possession or use of alcoholic beverages or drugs
- Weapons of any kind
- Cigarette smoking within the university premises

Dress Code

The purpose of the FCC 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 FCC ID card must be visibly displayed at all times on campus.

Sexual Harassment Policy

Sexual harassment is unacceptable behavior at Forman Christian College 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 innuendoes
- Display of sexually explicit pictures
-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 e-mails, text messages, 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 Dean of Students.
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.
4. Merit Scholarships and Teaching Assistantships
Merit scholarships and limited teaching assistantship opportunities are awarded to students entering the postgraduate programs for the year 2015-2016. Teaching assistantships are awarded subject to the availability of positions in each department. Students qualifying for teacher assistantships sign a work study contract with the Financial Aid Office.

The Punjab Educational Endowment Fund (PEEF), in partnership with FCC, offers full fee scholarships and stipends to postgraduate students who fulfill the selection criteria. Applications for these are submitted in the Financial Aid Office Room # 015 Ahmed Saeed Administration Building.
5. Academic Policies
FCC is continuously expanding its Graduate Programs based on the availability of required infrastructure, expertise and demand. Keeping this in view, MPhils and PhDs in various disciplines of Natural and Social Sciences and Humanities have been recently launched. The purpose of Graduate Policy is to make uniform rules and regulation governing these programs.

**MPhil Programs**

The MPhil will generally consist of 2 semesters of course work during the first year, and 2 semesters of thesis in the second year. However some departments may have more than 2 semesters of course work. The maximum registration in the MPhil is for four years.

**Admission**

Postgraduate admissions lie with Departments. Students may be admitted in the first or second semester. Transfer students can be admitted any time provided they meet the eligibility requirements. The criteria established for admission is GPA 2.75 or 60% for admission to MPhil. Students will take either the GAT or an internal test devised by the department.

**Course credit**

The MPhil will have a minimum of one year of course work. The course work is expected to take one year, but students may repeat a course if they wish in order to get a better grade. In the Natural Sciences, Journal Club is for 2 credits whereas in Humanities and Social Science it can be up to 3 credits. Students must have a CGPA of 2.75 before proceeding to the thesis research. A student has the right to retake a course on payment to meet the benchmark of research. If a course is not being offered in a particular semester, the student may take an alternative course with the permission of the Head of Department. A student may take a retake with any grade, B to F. A student with the CGPA of less than 2.75 at the end of the second semester may start research if allowed by the Departmental Committee if the student is registered to retake a course in the following semester to meet the benchmark. However the student will not be allowed to appear for the thesis viva until the CGPA requirement is met.

Billing for tuition will be done per annum paid per semester. Any other arrangement will have to be done with the agreement of Accounts Office. Billing per credit will only be done for courses that are retaken. The charge for tuition is the same whether the year is for coursework or thesis. If a student goes beyond the second year, he/she must register and pay
full tuition for every subsequent semester taken. Same deadlines for payment as undergraduates as stated on the Academic Calendar will apply. The maximum registration in the MPhil is for four years. The Thesis synopsis or proposal will be developed after the coursework is complete. The formal MPhil thesis synopsis must be approved by Board of Study of the Department. This may be either a synopsis or a proposal, depending on the department. Departments are encouraged to be flexible. Once the synopsis or proposal is approved, the title is sacrosanct. If the title changes, it must go back to the Board of Study of the Department for approval. An MPhil thesis may be supervised by an MPhil or PhD, although the PhD is preferred. The time limit on the MPhil thesis is 3 years. No faculty may supervise more than 5 MPhil theses at a time.

**Guidelines for Thesis**

The lower word limit for the thesis can be set by the Board of Studies of the Department. Before the submission of the thesis, the advisor will ensure that the thesis has undergone a Turnitin check and report is attached. If the thesis passes the review, the committee will send it to external examiners. A list of External examiners who are experts in a variety of fields is prepared by the Department and approved by the Board of Studies. When the thesis is submitted, it will be sent to one external examiner from the pre-approved list by the Controller of Examination. If an external examiner declines to review a thesis, another person on the list will be selected. Also, if the external reviewer does not make a decision on the thesis in the time allotted, another examiner from the list will be identified. If the external examiners do not pass the thesis, the student may rewrite it to address deficiencies identified. It must then be resubmitted to the external examiners if required. Once thesis is reviewed by the external examiner, a mutually agreed date will be set for the oral examination during which the candidate presents the finding of the research. A grade would be awarded based on the evaluation of the external examiner and notified through the controller’s office.

**PhD Programs**

**Admission**

Admission to PhD program is made in the research areas which are preferably supported through research projects, and in which faculty research groups are currently engaged. Admission will be granted by the relevant Department. Students must have a GPA of 3.0 or 70% marks in
MPhil or equivalent and they must show evidence of research aptitude. Departments may also impose extra admission requirements in order to admit strong candidates who are likely to complete the program. Admissions in PhD programs continue throughout the year.

**Coursework**
There will be a minimum of 18 credit hours of coursework preferably during first year. Students must maintain a GPA of 2.75 in course work.

There will also be a departmental comprehensive exam at the end of the course work.

**PhD Thesis**
The synopsis or proposal for the PhD thesis must be approved by the Board of Study of the department and by the Board of Advanced Study of the University. After a PhD proposal is approved, the time limit for completion is 4 years in Natural Sciences, and 7 years in the Social Sciences and Humanities. Minimum duration of a PhD program is 3 years. Approval from the Rector must be sought to exceed this limit.

There must be a Departmental PhD committee which approves the topic and synopsis or proposal. There will also be a Supervisory committee comprising of supervisor and two other faculty member not necessarily from the same department who will advise and monitor the progress of the research. The function of the Supervisory Committee is essentially to keep the process moving.

The Department will draw up a list of external examiners from industrially advanced countries who are experts in a variety of fields. Submission of thesis follows the same rules as for MPhil. After receiving positive evaluation from both external examiners, a local external examiner is appointed from the approved list. A date is mutually set for an oral defense of the thesis.

Candidate will give presentation, which can be attended by any university faculty member. Based on an evaluation by the Viva voce Committee constituted for the purpose that includes HoD, Supervisor and the external examiner, the student passes or otherwise. If a student doesn’t pass, he/she can repeat. The student may have unlimited chances of a repeat oral defense, with each chance charged extra.
General policies

Leave and Readmission
If students drop out on informed leave for one semester, they may return with no extra procedure. After one year of uninformed leave, the student must go through readmission.

Women students may live in the hostel, but will be bound by hostel policies. They may remain in the hostel during vacations and summer holidays provided the department allows them to continue work during these times.

Time limits on labs is determined by the respective departments. If a student wants to stay later, he or she must have special permission from the Head of the Department, and one faculty member must be present. In the Social Sciences or Humanities, the student must leave within one-half hour of the end of the last class unless he or she has permission to stay. A faculty member must be present.

Advisors
Advisors are selected/assigned during coursework on a mutual basis. Advisors will be allotted only one or two students each by the Chairperson of the Department after submission of recommendation. The Departmental Committee must first approve the title and synopsis or proposal, and then it is sent to Board of Studies.

Any research proposal involving human and animal subjects need to be reviewed by the Institutional Review Board. The university will maintain a record of all theses in the university library in both hard and soft copy forms, with a soft copy to be provided to HEC for uploading on their website. Access to a thesis may be restricted if a patent is involved. This includes sponsored research in which the sponsor owns the patent. Plagiarism or falsification of data in any way will be dealt under HEC guidelines and FCC policies.
6. Research and Development
The Office of Research, Innovation and Commercialization (ORIC) was established in July 2011 to encourage meaningful research by faculty and students to forge linkages between industry, civil society and academia. ORIC’s responsibilities are to:

- identify research grant opportunities for faculty to apply for funding
- facilitate faculty to apply for research grants
- provide legal, administrative and financial management support of research grants
- support commercialization, licensing, etc. of the university research products.

ORIC holds lectures and seminars with guest speakers to create awareness about various opportunities and themes for research in both social and natural sciences. This initiative increases the quality of undergraduate and graduate teaching at FCC. Its management comprises Dr Kauser Abdulla Malik (Director ORIC).

**Biological Sciences:**

- The Department of Biological Sciences has signed a number of MoUs to facilitate research:
  
  - In order for Biotechnology faculty to provide advice on career planning leading to job placement of students, FCC signed a Memorandum of Understanding (MoU) with BF Biosciences Ltd to explore novel areas in health biotechnology. Researchers from the Department have teamed up with the technical team at BF Biosciences to establish new research projects. A pilot project is the establishment of a bioassay to determine the biological activity of recombinant erythropoietin (rhEPO), a compound manufactured by BF Biosciences and used to stimulate red blood cell production in anaemic patients.
  
- Another MoU was signed with Chughtai Lahore Labs to initiate the MPhil Molecular Pathology, an industry and academia
training program.

- The Department also signed an MoU with PCSIR to offer MPhil in Food Safety and Quality Management for professionals. This is a cross-disciplinary program between the departments of Biological Sciences, Business and Chemistry at FCC and Food Sciences PCSIR.

**Department of Chemistry:**

- The Department of Chemistry has signed MoUs with institutions like HEJ Research Institute of Chemistry, PCSIR Laboratories, B&F Pharmaceutical Company, and NovaMed Pharmaceutical Ltd.

### Conferences

- CPPG organized a two-day International Conference on ‘Social Change and Security Imperatives: Challenges for Leadership and Democratic Governance in Pakistan’ in December 2013.
- The Department of Biological Sciences held an international conference on Emerging Trends for Life Sciences for Sustainable Development in October 2014. The conference included the themes of Biodiversity Conservation and Management, Biosafety, Biosecurity & Dual Use, Food & Molecular Microbiology, Genomics & Metagenomics, Proteomics & Metabolomics and Plant Microbe Interactions among others.
- The Department of Chemistry and ORIC held a one-day workshop on Chemical Entrepreneurship in April 2015. The aim of the workshop was to enlighten participants on how to run their own businesses and be successful entrepreneurs.

### Research Seminars

- CPPG seminars bring together academics, policy makers, students and civil society members for two-hour discourses on issues relevant to the Centre’s thematic interests. These include Peace, Public Services (Pakistan and Abroad), Water
Issues in South Asia, Globalization & Deep Cosmopolitanism, Global and Islamic History, Religion, Democracy, Human Rights and many others. Eminent scholars from Pakistan and abroad have conducted such seminars at CPPG to date. These are attended by scholars from FCC and outside, students and researchers from civil society. Their question and answers sessions are popular amongst all and make room for interesting dialogue on public policy areas and issues.

• The Center for Public Policy and Governance with the support of the Embassy of France in Pakistan and in collaboration with Alliance Francaise, launched the ‘Open Doors in Pakistan’ Seminar Series from March to April 2015. This collaboration will continue in the next year as well. The seminars organized were titled:
  o ‘Being a Journalist in a Disorderly World’ by Mr Jean-Pierre Perrinis
  o ‘Who are the New Giants and How are they shaping the World: Challenges for Pakistan?’ by Dr Jean-Joseph Boillot
  o ‘Religious Interactions between Iranian and the Indian Worlds’ by Mr Stephane A Dudoignon

• In September 2015 the CPPG will host a workshop on Peace Studies in partnership with the United States Institute of Peace (USIP).

• The CPPG is also conducting research on a USAID ‘Citizen’s Voice’ funded project on ‘Improving Governance: Reforming Provincial Public Services in Punjab’.
7. Department of Biological Sciences
The Biological Sciences Department at Forman Christian College was founded in 1870. Distinguished professors – including Dr Saithi, Dr Purio, Dr H K Bhatti and Dr K K Bell- have made significant contributions to the Department and the field of Biological Sciences. In recent years the Department has taken great strides forward.

At the undergraduate level, 4-year degree programs in Biology, Biotechnology and Environmental Sciences are being offered. In 2009 MPhil Biotechnology program was launched. Following the success of the 4-year BS (Hons) Biotechnology program and the 2-year MPhil in Biotechnology, an important step forward was taken by launching MPhil programs in Food Safety and Quality Management and Molecular Pathology and Genomics as well as PhD in Biotechnology. This has been possible due to the highly qualified faculty, recognized by the HEC. The Department has several ongoing research programs and the faculty has been able to win competitive research grants worth more than Rs 120 million for conducting goal-oriented research. Based on the availability of project funds, many MPhil students are offered Research Assistantships during the second year of MPhil.

**MPhil Biotechnology**

**Admission Criteria**
- A recognized university degree in the field of Biological Sciences (including Botany, Zoology, Agriculture or Chemical Sciences) equivalent to a minimum of 16 years of education. The degree may be a BSc Honors (4 years), MSc, MBBS or DVM
- Minimum CGPA of 2.50 or a 1st division in the last awarded degree
- A minimum GAT score of 50%. Applicants planning to take the GAT after the announcement of the admission date can apply for provisional admission provided they show proof of registration for GAT
- Passing the FCC Aptitude Test in Biotechnology (FATB)

Information about fees is available on www.fccollege.edu.pk/admissions/fee-structure

Merit scholarships and limited Teaching Assistantships are available.

FCC is on the Punjab Educational Endowment Fund (PEEF) Scholarship panel for postgraduate programs.
Degree Requirements
A total of 42 credit hours comprising:
1. 30 credit hours consist of mandatory coursework in the first 2 semesters. Students must maintain a minimum of 2.75 CGPA in coursework.
2. The last 2 semesters are dedicated to research of 12 credit hours on a theme chosen by or in consultation with the research supervisor.

Course Descriptions

BIOT 501: Biomathematics (3 credits)
Prerequisite: Math 101 (Pre-Calculus and Trigonometry)

BIOT 502: Advanced Microbial Biotechnology (4 credits)
Development, maintenance and improvement of pure and mixed cultures. Role of microbes in controlling environment. Use of genetic engineering techniques for cloning and expression for metabolite overproduction. Biotechnology in food, chemical and enzyme industry. Modern vaccines, antibodies, antimicrobial resistance and antimicrobial agents.

BIOT 503: Recombinant DNA Technology (4 credits)
History and structure of DNA. Packaging of DNA, gene expression in prokaryotes and eukaryotes. Introduction to recombinant DNA technology. Use of restriction endonucleases and other DNA modification enzymes. Different vector systems, construction and screening of genomic and DNA libraries. DNA sequence determination and analysis. Site directed and deletion mutagenesis.

BIOT 504: Techniques in Biotechnology (4 credits)
DNA and protein isolation, purification and analysis techniques. Electrophoretic, chromatographic and hybridization technologies. Microarray, real time PCR, mass spectrometry, NMR, protein crystallization, molecular imaging, bioinformatics, transmission electron
microscopy, latest innovations in bacterial strain identification and transformation methods in bacterial, animal and plant systems.

**BIOT 511: Journal Club (1 credit)**
The course comprises at least one presentation by each student on critical analysis of a recently published research article in international journals. Besides, each student is required to attend all presentations and actively participate in the weekly journal club.

**BIOT 601: Bioinformatics (3 credits)**
Nucleotide analysis, alignments, phylogenetic trees, search for open reading frames, translation, database search (NCBI, UniPort), dot plots, RNA analysis, structure prediction, graphical representation of structures, prediction of protein secondary structure, signal peptides and trans-membrane helixes, 3D molecule analysis, Pfam domain search, antigenicity and hydrophobicity, proteolytic cleavage, motif search and pattern discovery and finally, primer designing and evaluation.

**BIOT 605: Business Entrepreneurship (1 credit)**
Introduction, global biotechnology industry, business development, how to pick a winning technology, the art of the deal and legal perspective, biosafety, biobusiness, raising a company, marketing a product/service, financing new ventures, career development overview.

**BIOT 608: Advances in Agriculture Biotechnology (4 credits)**

**BIOT 609: Advances in Health Biotechnology (3 credits)**
BIOT 611: Genomics (3 credits)
The genomics section covers the functional and expression genomics with an insight into reverse genetics. The proteomics include the massive scale technologies for protein identification, assay development and a key application in health. Transcriptomics, metagenomics and epigenomic technologies and their application. The nutraceuticals cover the utilization of biological compounds in biomedicine.

BIOT 699: Research (12 credits)
A research project is allotted to those students who have a minimum of 2.75 CGPA in coursework. They are supposed to get registered for two semesters to complete their research project.

MPhil in Food Safety and Quality Management

Access to safe, wholesome and nutritious food is a fundamental human right. Nevertheless, food systems in developing countries continue to be stressed due to lack of capacity to deal with pre- and post-harvest losses. This combined with increase in population, migration, urbanization, lack of resources and problems of environmental and food hygiene adversely affect quality and safety of food supplies in most parts of Pakistan.

In view of the above, the Government of Punjab has recently enacted Food Laws to take into account food safety concerns of consumers. The rapidly expanding food industry is also aware of these laws. FCC’s resources and expertise in the fields of Biotechnology, Chemistry and Business make it an ideal institution to initiate an MPhil in Food Safety and Quality Management (FSQM) to cater to the needs of the food industry and other sectors.

As an evening program the MPhil FSQM allows in-service professionals to benefit from this cross-disciplinary degree. FCC’s MoU with PCSIR Laboratories, Lahore, means that PCSIR expertise can also be used by students to help with research and internships.

Admission Criteria
- A 4-year BS/BSc (Hons) degree or equivalent in any of the Life Sciences including Biosciences, Biotechnology, Biochemistry, Food Sciences, Agriculture, Nutrition Sciences, DVM, etc.
- Minimum CGPA of 2.50 or a 1st division in the last awarded degree.
• Passing the FCC Aptitude Test in Biotechnology (FATB).
• Information about fees is available on www.fcccollege.edu.pk/admissions/fee-structure

Degree Requirements
A total of 42 credit hours comprising:
1. 30 credit hours of coursework in semesters I and II.
2. 12 credit hours of Research work in the last two semesters.

Course Descriptions

Semester I
FSQM 501: Food Safety and Quality Management (3 credits)
Understanding the importance, impact, issues, management skills and role of food safety and quality on local and world trade.

FSQM 502: Food Microbiology and Toxicology (3 credits)
Different microbial threats related to food safety; epidemiology of different food-borne illnesses; understanding international microbial limits for safe foods; toxicological aspect of foods and their impact.

FSQM 503: Food Laws, Regulations and Auditing (3 credits)
Existing food laws and regulations; their role in ensuring safety and wholesomeness of food for consumer and export purposes; understanding importance of auditing with special reference to food safety.

FSQM 504: Public Health and Nutrition (3 credits)
Role of public health in overall healthcare system; understanding importance of nutrition in relation to a healthy population in order to promote a healthier population; focus on prevention rather than treatment of diseases.

FSQM 505: Safe Food Supply Chain Management (3 credits)
Concept, principles, scope, applications and future of food supply chain management.

Semester II
FSQM 601: Food Labeling, Authenticity and Traceability (3 credits)
Key issues and requirements of food labeling; understanding systems, laws, standards and guidelines to ensure food traceability and authenticity.

FSQM 602: Food Technology and Packaging (3 credits)
Technical and processing aspect of food technology; importance of food
packaging; resultant safety concerns and their remedial strategies.

**FSQM 603: Consumer Behavior and Preferences (3 credits)**
This course deals with consumer behavior with reference to food choices, consumer psychology and microeconomics of consumer behavior.

**FSQM 604: Food Sampling and Analysis Techniques (3 credits)**
In this course students understand key issues relating to food sampling and importance of sampling to ensure food safety. All related analytical technique employed to ensure food safety are discussed and demonstrated.

**FSQM 605: Global issues in food Security and Safety (3 credits)**
This course makes students understand the global food security and safety situation, challenges and possible solutions.

**FSQM 699: Research Thesis (12 credits)**
The thesis project provides students detailed exposure to a practical problem in food safety and quality management. Students can join an ongoing project or work on an independent problem in close cooperation with a faculty member (Research Supervisor). In all research projects an active participation of food industry is ensured.

### MPhil in Molecular Pathology and Genomics

Molecular pathology is a rapidly expanding discipline that connects pathology and molecular biology. The future of medicine and clinical diagnostics is molecular based. Therefore theoretical and practical applications of molecular diagnostics must be the kind of knowledge that is available to aspirants. This program provides training in the application and interpretation of advanced molecular technologies and their use in pathology and clinical diagnostics. This specialist training enables physicians, scientists and technologists to validate, use and develop molecular assays for improved management of patients.

As an evening program, the MPhil FSQM allows in-service professionals to benefit from this cross-disciplinary degree. Our partner organization, Chughtai Lahore Labs, is one of the largest private clinical diagnostic laboratories in Pakistan and provides clinical and practical expertise.

**Admission Criteria**
- A 4-year BS/BSc (Hons) degree or equivalent in any of the life
sciences including: Biosciences, Biotechnology, Biochemistry, Nutrition Sciences, Medical Lab Technology

- MBBS students who have completed six years of medical school and are currently engaged in a pathology residency program may also apply
- Minimum CGPA of 2.50 or a 1st division in the last awarded degree
- Passing the FCC Aptitude Test in Biotechnology (FATB)

Degree Requirements
A total of 42 credit hours over 2 years distributed as:
1. 14 credit hours (4 courses) in 1st semester; 16 credit hours in second semester
2. Followed by 2 semesters of research of 12 credits.

Course Descriptions

Semester I
MPGN 501: Basic Molecular Biology (4 credits)
This course emphasizes the study of molecules that make up an organism and the forces operating among these molecules. Students cover the structure and biochemistry of nucleic acids, DNA and RNA structure, the physical chemistry of nucleic acids, DNA and RNA hybridization, DNA replication and repair, gene organization and expression, gene structure, transcription, RNA processing, translation, post-translational modification, regulation of gene expression including epigenetics.

MPGN 502: Research Methodologies (3 credits)
This module focuses on the development of essential research skills and methodology required to understand, interpret and develop new molecular assays. It includes studies in research methods and scientific communication, together with the practical application of experimental design and evaluation, evidence based medicine, alongside opportunity to discuss why academic integrity is a keystone in science methodology. It also enables preparation of the research dissertation for the final project.

MPGN 503: Basic Pathology (4 credits)
The course covers the study of basic pathologic processes that underlie all diseases, such as cellular pathology, inflammation and repair, fluid and hemodynamic derangements, and neoplasias. In addition basic information is provided regarding diseases affecting specific organs and their systems
such as cardiovascular, blood, hematopoietic and lymphoreticular, respiratory, gastrointestinal, hepatobiliary, genitourinary, pancreas, male reproductive, breast and female reproductive, endocrine, musculoskeletal, neural and specialized neural, and skin.

**MPGN 504: Professional Standards – Biosafety, Bioethics and Quality Assurance (3 credits)**
This course encompasses rules of conduct, standards of practice, and support for professionals / associations. It covers competencies necessary to be a professional in the field of health care, and the lab in particular. It covers the following topics, among others: professional practice, project management, regulations, laboratory and clinical research, professional ethics, standards and good laboratory practices (GLP), sample management and data handling, information management systems, and quality assurance systems and processes.

**Semester II**
**MPGN 601: Molecular Diagnostics – Technologies & Instrumentation (4 credits)**
This course is a comprehensive introduction to the basic principles of the rapidly growing field of molecular diagnostics and therapeutics. It addresses many direct and amplified nucleic acid test methods. Specimen handling, and the clinical applications, advantages, and disadvantages of molecular diagnostics. Most importantly, the principles behind molecular diagnostics are presented in detail, giving a strong foundation for future exploration and study in molecular diagnostics.

**MPGN 602: Molecular Pathology and Oncology (4 credits)**
This course gives an introduction to advances in knowledge of the biology of leukemias and lymphomas; genetic alterations contributing to development of these neoplasms; hematopathology; understanding molecular genetics of solid tumors; inherited alterations in tumor suppressor genes and genes encoding proteins responsible for DNA repair and their association with neoplasms such as breast and colon adenocarcinomas. The study of clonal origin of neoplasms; phenomenon of clonal evolution; multistep pathogenesis of neoplasia involving; inherited predisposition; activation of oncogenes; inactivation of tumor suppressor genes; alterations of genes regulating apoptosis; mutations of DNA repair genes is also part of the course.

**MPGN 603: Genetic Basis of Human Diseases (4 credits)**
Human genome and genomic organization; chromatin and chromosome structure; human genetic variation, polymorphisms;
molecular basis of inherited disease; deletion, duplication, and insertion mutations; Missense, nonsense, null, and frameshift mutations; mutations affecting RNA splicing and stability; mutations altering transcription; patterns of inheritance; autosomal dominant and recessive disorders; De novo mutations; consanguinity; sex-linked disorders; X inactivation; multifactorial inheritance; mitochondrial inheritance; nonclassical patterns of single gene inheritance; Mosaicism; imprinting; uniparental disomy; trinucleotide repeat disorders; expression of phenotypes; penetrance and variable expressivity; anticipation; genetic, allelic, and locus heterogeneity; quantitative genetics; population genetics; Hardy-Weinberg equilibrium; laws of probability; Bayesian analysis; linkage analysis.

**MPGN 604: Introduction to Bioinformatics (4 credits)**
During this module students learn about and analyse gene expression microarrays-GEM datasets and several other types of cancer genomic data (SNP microarray, RNA-seq).

**MPGN 699: Research (12 credits)**
Students can join an ongoing project or work on an independent problem in close cooperation with a faculty member (Research Supervisor).

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**PhD Biotechnology**
After the success of the 4-year BS (Hons) Biotechnology program, followed by the MPhil in Biotechnology, the Department of Biological Sciences has taken an important step forward by launching a PhD Biotechnology program. This has been possible due to the highly qualified faculty who are also recognized by the HEC as PhD research supervisors. The Department has been able to win competitive research grants worth more than Rs 50 million for conducting goal-oriented research.

**Admission Criteria**
- MPhil/MS (with research) from a recognized university in any area related to life sciences with a CGPA equivalent to 70% aggregate as prescribed by HEC criteria or First Division (in the Annual System) in the MPhil/MS.
- Passing a subject test conducted by the National Testing Service (NTS) or ETS (USA) in the area of specialization chosen at the PhD level or GRE (Biotechnology) organized by NIBGE, Faisalabad.
- In the case of GAT subject test (http://www.nts.org.pk/GAT/GATSubject.asp) a minimum of 60% marks are required.
• In the case of GRE subject test, 60th percentile score is required.

**Degree Requirements**

**Total credit hours**
A student is required to successfully complete a minimum of 30 credit hours for the degree. The details are as follows:

**Course Work**
Course work of 18 credit hours preferably in the first year is required to be completed and followed by a comprehensive examination for granting candidacy as a PhD researcher. A minimum of 70% score is required to pass the comprehensive exam.

**Research**
After the successful completion of course work students are required to register for 12 credits of research work.

**Foreign Expert Evaluation**
The PhD Dissertation must be approved by at least two PhD experts from technologically/academically advanced foreign countries in addition to the local Committee comprised of internal and external examiners.

**Plagiarism Test**
The Plagiarism Test must be conducted on the Dissertation before its submission to the two foreign experts, as described below.

**Open defense**
An open defense of Dissertation is an essential part of PhD Program after positive evaluation.

**Research Paper**
Acceptance/publication of at least one research paper in an HEC approved “X” category journal is a requirement for the award of PhD degree (“Y” in case of Social Sciences only). Or at least one publication in an ISI indexed impact factor carrying journal.

**Copy of PhD Dissertation to HEC**
A copy of PhD Dissertation (both hard and soft) must be submitted to the HEC for record in the PhD Country Directory.

**Conduct of PhD Program**
According to the HEC, initially there should be at least 3 relevant full time PhD Faculty members in a department to launch the PhD program. The Biological Sciences department currently has 19 PhDs out of which 12 are HEC-approved PhD supervisors.
The maximum number of PhD students under the supervision of a full time faculty member is three.

**Program of Studies**
- Students must register for courses during the first year
- The Comprehensive exam will be conducted after completion of course work. A maximum of three attempts can be made to pass the exam

Admission to PhD program will only be made in the research areas which are supported through research projects. In case of non availability of research funding/grant, student may be registered with the approval of the Rector.

Please refer to the Academic Policies for more information.

**Course Descriptions**

**BIOT 701: Gene Structure and Regulation (3 credits)**
Prokaryotic and eukaryotic gene structures, Genome organization, Gene families, Gene regulation in prokaryotes and eukaryotes. Transposons, mutagens, mutations and DNA repair, molecular basis of mutations, transposable elements, and mechanisms of DNA repair. Basic concepts about epigenetic inheritance patterns. How various genetic and molecular tools are used to perform mutant screening to study biological function. Epigenetic, gene regulation mediated by chromatin modifications, non-coding RNAs and their involvement in various cellular processes.

**BIOT 702: Advances in Cell Biology and Signaling (3 credits)**
Cellular organization and specialization, Membrane transport, Biomembranes and subcellular organization of eukaryotes, Regulation of the eukaryotic cell cycle/apoptosis, Protein sorting, protein secretion, Muscle contraction, Cell surface and communication extra cellular matrix, Cell-to-cell signaling, Hormones & receptors, Primary and Secondary messengers, Ion, steroid, G-protein, enzyme-linked, Nuclear and cytoplasmic interactions, growth factors Cancer.

**BIOT 703: Forensic DNA Typing (3 credits)**
Introduction and history of forensic science, Principles of forensic sciences, Crime scene investigation, Fire and explosive examination, Death investigation, Collection, storage and analysis of biological evidence and strains, Trace biological evidence, Forensic DNA analysis, DNA isolation and amplification, Paternity identification, DNA profiling, Data collection and interpretation.
BIOT 704: Advances in Virology (3 credits)
Viral classification and structure, Bacteriophages, animal and plant viruses, Viral genome replication, regulation and virus assembly. Virus host interactions and epidemiology, Host defense mechanisms, vaccines and antiviral drugs, Diagnosis and Pathology, Resistant to infection Treatment and Prevention, Prion diseases, Retroviruses and AIDS, Orthomyxoviruses and influenza, Control of viral disease by immunization, The herpes viruses.

BIOT 705: Advances in Immunology (3 credits)

BIOT 706: Practical Approaches to Recombinant DNA Technology (3 credits)
This course consists of problem solving exercises. Each student will be given individualized problem to work in a specified time period, at the end of which a solution in the form of a written document is submitted. The evaluation is based upon this document as well as on oral presentation. Students will be required to develop cloning strategy of an individualized gene with the help of a given vector.

BIOT 707: Journal Club (2 credits)
The course will comprise of at least one presentation by each student on critical analysis of recently published research article in international journals. The research article will be assigned to each student in the beginning of the semester. Besides that every student will be required to attend all presentations and actively participate in the weekly journal club.

BIOT 799: Research (12 credits)
After the successful completion of course work students are required to register for research work. A CGPA of 2.75 is required to be eligible for research. Students will join the ongoing projects or work on an independent problem (depending on availability of facilities and funds) under the supervision of faculty members (Research Supervisors).

Linkages
The Department has developed linkages with the following biotechnology institutions which allow FCC students to get internships and develop research collaborations:

- Center of Excellence in Molecular Biology, Punjab University
### Ongoing Research Projects

The faculty and postgraduate students are currently involved in the following research projects:

<table>
<thead>
<tr>
<th>Sr #</th>
<th>Titles of Ongoing Research Projects</th>
<th>Principle Investigator</th>
<th>Funded By</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development of wheat with low phytate for increasing bioavailability of iron and zinc (Biofortification Project)</td>
<td>Dr. Kauser A Malik</td>
<td>PARB</td>
<td>2010-2015</td>
</tr>
<tr>
<td>2</td>
<td>Development of lignocellulosic biomass for efficient conversion to fermentable sugars and ethanol through genetic engineering (HEC-Biofuel)</td>
<td>Dr. Kauser A Malik</td>
<td>Higher Education Commission</td>
<td>2010-2015</td>
</tr>
<tr>
<td>3</td>
<td>Enhancing fertilizer use efficiency in wheat by using transgenic approach (ALP-FUE)</td>
<td>Dr. Kauser A Malik</td>
<td>PARC / ALP</td>
<td>2014-2017</td>
</tr>
<tr>
<td>4</td>
<td>Microbial diversity ad metagenomic analysis of rhizosphere of plants growing in extremely halophytic and xerophytic environments (Metagenomic)</td>
<td>Dr. Kauser A Malik</td>
<td>Higher Education Commission</td>
<td>2012-2015</td>
</tr>
<tr>
<td>5</td>
<td>Molecular Characterization and Screening of bacteria isolated from plant rhizosphere for plant growth promoting properties (Biotech)</td>
<td>Dr. Kauser A Malik</td>
<td>Pakistan Academy of Sciences</td>
<td>2012-2014</td>
</tr>
<tr>
<td>6</td>
<td>Development of homozygous lines of transgenic wheat and screening for phosphorus use efficiency (PSF-PUE)</td>
<td>Dr. Asma Maqbool</td>
<td>Pakistan Science Foundation</td>
<td>2014-2016</td>
</tr>
<tr>
<td>No.</td>
<td>Project Description</td>
<td>Investigator(s)</td>
<td>Funding Body</td>
<td>Start Date - End Date</td>
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<tr>
<td>7</td>
<td>Risk assessment of transgenic wheat with enhanced phosphorous use efficiency (PUE) and increased bioavailability of iron and zinc (CERA-Biosafety)</td>
<td>Dr M Irfan</td>
<td>CERA, USA</td>
<td>2014-2015</td>
</tr>
<tr>
<td>8</td>
<td>Incidence of Leptin and Melanocortin 4 receptor Gene Mutations and Metabolic Profile in Subjects with Early Onset Severe Obesity.</td>
<td>Dr M Arslan</td>
<td>Pakistan Academy of Sciences</td>
<td>2015-2017</td>
</tr>
<tr>
<td>9</td>
<td>Subterranean termite management through baiting technology without environment contaminations</td>
<td>Dr Khalid Zamir Rasib</td>
<td>Pakistan Science Foundation</td>
<td>2012-2015</td>
</tr>
<tr>
<td>10</td>
<td>Development and Commercialization of a Blood Based Tuberculosis Diagnostic Test</td>
<td>Dr Natasha Anwar</td>
<td>Pak-US Science and Technology</td>
<td>2013-2016</td>
</tr>
<tr>
<td>11</td>
<td>Isolation and characterization of secondary metabolites produced by rhizobacteria and their potential as biocontrol agents (HEC Secondary metabolites)</td>
<td>Dr Samina Mehnaz</td>
<td>Higher Education Commission</td>
<td>2015-2017</td>
</tr>
<tr>
<td>12</td>
<td>Phytoremediation for constructed wetlands</td>
<td>Dr Aisha S Khan</td>
<td>WWF-Pak</td>
<td>2013-2015</td>
</tr>
<tr>
<td></td>
<td><strong>Research Projects under Review</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Improvement in Cotton Staple Length integrating integrating classical and molecular genetic approaches</td>
<td>Dr Aftab Bashir</td>
<td>PARB</td>
<td>2015-2018</td>
</tr>
<tr>
<td>2</td>
<td>Overcoming the wheat yield gap in Pakistan: Development of drought and salinity tolerant wheat</td>
<td>Dr Kauser A Malik</td>
<td>HEC/US-Pak S&amp;T Cooperation</td>
<td>2015-2018</td>
</tr>
<tr>
<td>3</td>
<td>Development of dipstick for detection of Bt (Cry1ac &amp; Cry2ab) proteins in cotton</td>
<td>Dr Aftab Bashir</td>
<td>PSF</td>
<td>2015-2017</td>
</tr>
<tr>
<td>4</td>
<td>Development of a new herbicide trait and its transformation into chloroplasts</td>
<td>Dr M Imran</td>
<td>PARB</td>
<td>2015-2018</td>
</tr>
</tbody>
</table>
Seminars and Workshops

**Seminar on Genetic Spectrum of Severely Obese Children from Pakistan**
A seminar was conducted on genetic spectrum of severely obese children in Pakistan. A visiting scholar from Imperial College, UK discussed the genetics basis of the severe obesity in Pakistan, particularly, in children. She also talked about the collaborative project with Biological Sciences Department on severe obesity in children.

**Seminar on Fluorescent Cell Imager, ChemiDoc Touch imaging system and V3 Western Workflow**
A seminar was organized on Fluorescent Cell Imager, ChemiDoc Touch Imaging System and V3 Western Workflow. The seminar was conducted by a BioRad expert about the qualities and principle involved in the above mentioned high tech instruments. Faculty and students attended the seminar and took interest in the discussion. The seminar was followed by a demonstration of the instruments by the Bio-Rad team.
Faculty

Dr Samina Mehnaz  
Professor and Chairperson  
PhD (Quaid-i-Azam University, Islamabad)
Alexander von Humboldt Fellow (Germany); National Science & Engineering Research Council Fellow (Canada); International Atomic Energy Agency Fellow (Vienna); Postdoctoral Fellow (USA)  
Over 24 years of teaching and research experience; 36 national and international publications  
**Research Interests:** Plant Microbes Interactions, Characterization of Secondary Metabolites of Rhizobacteria  
HEC approved supervisor

Dr Mian Wajahat Hussain  
Professor and Controller of Examinations  
PhD (University of Florida, USA)  
Over 40 years of teaching and research experience; 22 national and international publications  
**Research Interests:** Plant Biochemistry, Enzymes Kinetics  
HEC approved supervisor

Dr Hamid Saeed  
Professor and Registrar  
PhD (Punjab University, Lahore)  
Over 40 years of teaching and research experience  
**Research Interests:** Paleopalynology, Air Pollution, Sustainable Development, Solid Waste Management, Occupational Health and Safety

Dr Kauser Abdulla Malik HI, SI, TI  
Professor and Dean of Postgraduate Studies  
PhD (University of Aston, UK)  
Alexander von Humboldt Fellow (Germany); Distinguished National Professor (Biotechnology); Founder Director General of NIBGE; Former Chairman of Pakistan Agricultural Research Council; Former Member of Biosciences, Pakistan Atomic Energy Commission; Former Member of Planning Commission (Food and Agriculture), Islamabad; Fellow of Pakistan Academy of Sciences; Fellow of Third World Academy of Sciences  
More than 40 years of teaching and research experience; over 250 national and international publications; 5 patents  
**Research Interests:** Molecular Biology of Plant Microbes Interactions, Osmo-Regulation and Bioenergy Production  
HEC approved supervisor

Dr Muhammad Arslan  
Professor  
PhD (University of Wisconsin, USA)  
Fulbright Senior Scholar, USA; Fellow of Pakistan Academy of Sciences; Visiting Scientist at University of Muenster, Germany and University of Pittsburgh, USA; Former Vice Chancellor and Meritorious Professor of Quaid-i-Azam University, Islamabad; Former Chairman of Pakistan Council of Science and Technology; Former Head of the Department of
Physiology and Cell Biology, University of Health Sciences, Lahore; Former Dean of Faculty of Science, University of Lahore. More than 50 years of teaching and research experience; Over 100 national and international publications

**Research Interests:**
Endocrinology and Metabolism, Genetic and Endocrine Aspects of Obesity in Children, Reproductive Dysfunction Associated with Familial Metabolic Diseases

HEC approved supervisor

**Dr M Rehan Siddiqi**  
Professor Emeritus  
PhD (Miami University, USA)  
Deutscher Akademischer Austausch Dienst (DAAD) Postdoctoral Fellow, Germany; Fulbright Fellow (USA); President of Pakistan Best Teacher Award 1993; Former Principal, Dean of Natural Sciences and Head of Botany Department of Forman Christian College; Former Principal of Pakistan Education Center, Doha-Qatar  
Over 50 years of teaching and research experience; 14 national and international publications

**Research Interests:** Integrative Plant Anatomy

**Dr Aftab Bashir**  
Professor  
PhD (University of Illinois, USA)  
Postdoctoral Fellow (USA and UK); Training in Industrial Biotechnology at GBF, Germany  
29 years of teaching and research experience; 23 national and international publications

**Research Interests:** Development of Transgenic Plants for Specific Traits including cotton fiber improvement, disease resistance, drought and salt tolerance and utilization of sweet proteins

HEC approved supervisor

**Dr Khalid Zamir Rasib**  
Associate Professor  
PhD (Punjab University, Lahore) Postdoctoral Fellow (UK)  
18 years of teaching and research experience; 8 national and international publications

**Research Interests:** Biology of Termites, Integrated Pest Management Strategies, Biological Control of Pests

HEC approved supervisor

**Dr Natasha Anwar**  
Associate Professor  
PhD (Imperial College of Sciences, UK) PGD Biomedical Ethics; Former Consultant Molecular Biologist at Shaukat Khanum Memorial Cancer Hospital & Research Center, Lahore  
15 years of teaching and research experience; 19 national and international publications

**Research Interests:** Molecular Diagnostics of Infectious Diseases, Molecular Biology of Cancers

HEC approved supervisor

**Dr Aisha Saleem Khan**  
Associate Professor  
PhD (Punjab University, Lahore) Postdoctoral Fellow (USA)  
11 years of teaching and research
experience; 11 national and international publications

**Research Interests:** Plant Anatomy, Electron microscopy, Heavy Metal Toxicity HEC approved supervisor

**Dr Zaffar Mehmood**  
Associate Professor  
PhD (Food Nanotechnology/Nanobiotechnology) (The University of Queensland, Australia)  
5 years of teaching and research experience, 9 national and international publications  
**Research Interests:** Food Nanotechnology, Nanobiotechnology, Delivery Systems for Biological Applications

**Dr Adnan Arshad**  
Assistant Professor  
MBBS, PhD (Radio-Oncology) (University of Paris 11, France)  
6 years of teaching and research experience; 2 international publications  
**Research Interests:** Molecular Oncology, Radiobiology, Tumor Microenvironment, Circulating Tumor Cells Biology, Clinical Research, Cancer Stem Cell Biology

**Dr Saba Butt**  
Assistant Professor  
PhD (Punjab University, Lahore)  
8 years of teaching and research experience; 2 national publications  
**Research Interests:** Animal and Human Physiology, Endocrinology, Medical Microbiology, Protozoology

**Dr Asma Maqbool**  
Assistant Professor  
PhD (Punjab University, Lahore)  
7 years of teaching and research experience; 15 national and international publications  
**Research Interests:** Plant Molecular Biology, Stress Tolerance, Genomics  
HEC approved supervisor

**Dr Deeba Noreen Baig**  
Assistant Professor  
PhD (Punjab University, Lahore)  
Postdoctoral Fellow (Pakistan, Japan and USA)  
7 years of teaching and research experience; 6 international publications  
HEC approved supervisor  
**Research Interests:** Molecular Biology of Cognitive Diseases, Isolation and Identification of Vip (Insecticidal Protein) Positive Bacillus thuringenesis Strains

**Dr Muhammad Irfan**  
Assistant Professor  
PhD (Punjab University, Lahore)  
6 years of teaching and research experience; 12 national and international publications  
**Research Interests:** Plant Molecular Biology, Stress Tolerance, Genomics  
HEC approved supervisor

**Dr Nadeem Asad**  
Assistant Professor  
PhD (University of Kansas)  
USA (Fulbright Fellow)  
6 years of teaching and research experience; 2 international publications  
**Research Interests:** RNAi and
Environmental Sciences Program Faculty

Dr Hamid Saeed
Registrar, Professor and Coordinator of the Environmental Sciences Program
PhD (Punjab University, Lahore)
Over 40 years of teaching experience
Research Interests: Paleopalynology; Air pollution, Sustainable development, Solid waste management, Occupational health and safety

Dr Syed Farhat Ali
Assistant Professor
PhD (Punjab University, Lahore)
3 years of teaching and research experience; 2 national and international publications
Research Interests: Protein Biochemistry, Production of Industrial Enzymes

Dr Nazia Perveen
Assistant Professor
PhD (University of Pierre et Marie Curie, Paris, France)
Research Interests: Microbial ecology, plant microbial interactions, Priming effect, Biogeochemical modeling, Impacts of global change on ecosystem functioning, Effect of microbial diversity on soil C storage, Soil organic matter mineralization, by laboratory incubations, C and N cycling and isotopes.

Dr Sohaib Aslam
Assistant Professor
PhD (AgroParisTech, France)
Research Interests: Soil and water pollution; Recycling of organic wastes; Terrestrial ecology, Risk assessment modeling

Ms Sílvia Machado
Lecturer
Effects of Medicinally Important Products on Caenorhabditis elegans, Development of Caenorhabditis elegans models to study human diseases

Dr Muhammad Imran
Assistant Professor
PhD (University of Manchester, UK)
3 years of teaching and research experience; 3 national and international publications
Research Interests: Structural Biology, Membrane protein Electron Microscopy and X-Ray Crystallography, Rational Design of Insecticides

Dr Ibatsam Khokhar
Assistant Professor
PhD (Punjab University, Lahore)
1 year of teaching and research experience; 29 national and international publications
Research Interests: Mycology and Plant Pathology

Umarah Mubeen (on leave)
Lecturer
MPhil (GC University, Lahore)
4 years of teaching and research experience; 6 national and international publications
Research Interests: Bioenergy, Microalgal Biotechnology

Dr Syed Farhat Ali
Registrar, Professor and Coordinator of the Environmental Sciences Program
PhD (Punjab University, Lahore)
Over 40 years of teaching experience
Research Interests: Paleopalynology; Air pollution, Sustainable development, Solid waste management, Occupational health and safety

Dr Sohaib Aslam
Assistant Professor
PhD (AgroParisTech, France)
Research Interests: Soil and water pollution; Recycling of organic wastes; Terrestrial ecology, Risk assessment modeling

Ms Sílvia Machado
Lecturer
Effects of Medicinally Important Products on Caenorhabditis elegans, Development of Caenorhabditis elegans models to study human diseases
MPhil (Polytechnic Institute of Viana do Castelo, Portugal)  
Research Interests: Water management, Ecosystems services, Land use management and planning, Spatial modeling

Ms Sara Ali  
Lecturer  
MPhil (Lahore School of Economics)  
Research Interests: Integrated management systems, implementation of ISO standards, occupational health, safety and environment, climate change and carbon markets

Visiting Faculty

Dr Adnan Arshad  
Assistant Professor (University of Lahore, Lahore)  
MBBS, MS (Oncology), PhD (Radio-Oncology) University of Paris 11

Dr Farhana Badar  
Senior Epidemiologist and Biostatistician, Shaukat Khanum Memorial Cancer Hospital, Lahore  
MBBS

Dr Ijaz Ahmad  
Principal Scientific Officer, PCSIR, Lahore.  
PhD (University of Agriculture, Faisalabad)

Omar Malik  
MSc (Aston University, Birmingham, UK)  
Over 13 years in senior corporate management positions;  
co-founder & Chief Operating Officer InVitro Vogue Pvt Ltd Pakistan and InVitro Vogue Canada Inc.; co-founder and CEO ITTEHAD Life Sciences.

Dr Qurat-ul-Ain  
Chief Scientific Officer, PCSIR, Lahore.  
PhD (Punjab University, Lahore)

Dr Rabia Butt  
Histopathologist, Chughtais Lahore Lab, Lahore.  
MBBS

Dr Sakhawat Ali  
Chief Scientific Officer, PCSIR, Lahore.  
PhD (Punjab University, Lahore)

Dr Saqib Mahmood  
Head Allied Health Sciences; Assistant Professor Department of Human Genetic and Molecular Biology, University of Health Sciences, Lahore.  
PhD (QAU, Islamabad)  
MSc (University of London)  
MBBS(AIMC, Lahore)

Dr Shahid Mansoor  
Director National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad.  
PhD Biochemistry (University of East Anglia, UK)

Dr Shinwar Waseem  
Assistant Professor at Institute of Agricultural Sciences, Punjab University, Lahore.  
PhD (Nanjin Agriculture University, China)
8. Department of Chemistry
The Department of Chemistry is one of the oldest at Forman Christian College. It enjoys a rich heritage of eminent scholars, three especially being worthy of mention. Dr Carter Speers was Head of the Chemistry Department and Professor of Technical Chemistry, University of Punjab. Dr Robert F Tebbe, a prominent Organic Chemist and teacher, spent 12 years at FCC as Professor of Chemistry and also served as the Principal of the College. Dr Khairat M Ibne-Rasa, a scientist of international repute, served as Professor of Organic Chemistry and Head of the Department.

At present, the faculty is committed to continuing these rich traditions. Most of the faculty members are Higher Education Commission (HEC)-approved PhD supervisors for varied HEC-funded schemes. They are meticulous teachers and active researchers. Two of them have recently received the Research Productivity Award for the year 2012 by Pakistan Council for Science and Technology.

The department has state-of-the-art facilities available for research in several significant areas including Natural Products, Organic Synthesis, Organometallics, Nano and Composite Materials, and Pharmaceutical Chemistry. It also provides opportunities for students to work on projects funded by organizations like the Pakistan Science Foundation (PSF), and the HEC.

The Chemistry Department makes efforts to prepare its students to play a productive role in different capacities, such as educators, researchers and chemists. It also lays a strong foundation for students who plan further education in Pakistan or abroad.

The department has four dedicated teaching laboratories and six postgraduate research laboratories. The research and teaching instruments available include: Atomic Absorption Spectrophotometer (AAS), TGA-DSC Analyzer, CHNS/O Analyzer, Gas Chromatography-Mass Spectrometer (GC-MS), HPLC Equipment, Gas Chromatograph, FT-IR Spectrophotometer, UV-VIS Spectrophotometers, Digital Polarimeter, and Rotavapors.

**MPhil Chemistry**

The MPhil Chemistry program is a two-year, four-semester degree program. The first year, comprising two semesters, is dedicated to course work. Each student must pass a Comprehensive Examination at the end of their first year. During the second year, the students conduct research under the
supervision of a faculty member. A full year of research plays a crucial role in training and preparing the students for higher studies and/or to pursue a career.

**Admission Criteria**
The applicant must have a baccalaureate degree from a recognized local or foreign university, with a major in Chemistry or a related field and a minimum of 2.5 CGPA

OR

A conventional MSc in Chemistry or a related field with a minimum 60% marks or 2.5 CGPA

- Provisional admission can be sought by students awaiting final results. Such candidates must meet the eligibility requirements
- The applicant must have passed the Graduate Assessment Test (GAT)
- The applicants must pass the FC College Aptitude Test in Chemistry (FATC)
- Applicants with a strong background in mathematics or research experience will be preferred

**Degree Requirements**

**Year 1: Course Work**

**Semester I:** 4 courses of 3 credits each (total 12 credits) from the following:

CHEM 520, CHEM 524, CHEM 529, CHEM 542, CHEM 549, CHEM 566

**Semester II:** 4 courses of 3 credits each (total 12 credits) from the following:

CHEM 506, CHEM 508, CHEM 525, CHEM 526, CHEM 541, CHEM 563

**Year 2: Research Work**

**Semesters III & IV**

- 2 Seminars (1 credit hour each) relating to the research project
- Research thesis (14 credit hours)

**Total:** 40 credits
CHEM 506: Advanced Polymer Chemistry (3 credits)
Nature, types and structures of polymers; synthesis and characterization techniques; properties, applications and processing; advances in polymer chemistry; glass and conducting polymers, degradable polymers and recycling strategies.

CHEM 520: Thermal Methods of Analysis (3 credits)
Thermoanalytical techniques; theory, instrumentation and applications of thermogravimetric analysis, differential thermal analysis and differential scanning calorimetry; determination of thermodynamic and kinetic parameters by model-based and model-independent methods.

CHEM 524: Inorganic Electronic Spectroscopy (3 credits)
Brief introduction of Group Theory; Term symbols; Russel Saunders coupling scheme; development of correlation and Tanabe-Sugano diagrams; Crystal field and Ligand field diagrams. Energy level calculations; Selection rules; Band Intensities and Band assignments; Interpretation of Crystal Field and Charge Transfer spectra; Spectra of low symmetry complexes; Application of group theory to vibrational spectra of simple and coordination compounds.

CHEM 525: Bioinorganic Chemistry (3 credits)
Essential and non-essential elements; extra- and intra-cellular electrolytes; sodium-potassium pump; biochemistry of selenium; biological role of Zn and Fe, Co, Ni, Cu and Mn; structural and active role of transition elements in metallo-proteins and metallo-enzymes; inorganic ions as enzyme inhibitors; chelates in medicine; metal-based drugs.

CHEM 526: Analytical Techniques (3 credits)
Sampling, sample handling and preparation; quality control of analytical data; analytical spectroscopy, atomic spectroscopy, spectrophotometry, spectrofluorimetry, mass spectrometry and $y$-spectrometry; chromatography; electrophoresis and electroanalytical techniques.

CHEM 529: Organometallic Chemistry (3 credits)
Introduction to organometallic compounds; Grignard reagents; metal-olefin, -polyene and allyl compounds; metal-sandwich compounds; bonding and reactivity of organometallic compounds; synthetic applications and catalytic role of organometallic compounds.

CHEM 541: Chemistry of Isoprenoids and Polyphenols (3 credits)
Natural products and their importance; distribution and synthesis of
terpenoids, steroids and polyphenols in living organisms; isolation, structure, reactivity and medicinal activities of terpenoids; total synthesis of some representative terpenoids; structure and reactivity of flavonoids and isoflavonoids, coumarins, saponins and glycosides; isolation techniques; medicinal applications of polyphenols and flavonoids.

**CHEM 542: Advanced Spectroscopy of Organic Compounds (3 credits)**
1D proton and C-13 NMR; chemical shifts, spin-spin couplings, NOE, DEPT and structure elucidation; basic concepts of 2D NMR, homo- and hetero-nuclear correlation spectroscopic techniques; electron impact and chemical ionization, field ionization, field desorption, HRMS; fast atom bombardment (FAB), plasma desorption, thermospray, electrospray mass spectra; fragmentation pattern of common functional groups; structure elucidation using mass spectrometry and other spectroscopic techniques.

**CHEM 549: Biomolecules: Structure and Function (3 credits)**
Forces determining structure and function of different types of proteins; thermodynamics of globular protein denaturation and re-naturation; chemistry of specific amino acids and co-factors in enzymatic catalysis; hemoglobin and myoglobin as examples of enzyme structure and biological function; role of inorganic ions in structure and function; multi-protein complexes; structure-function of lipids and membranes.

**CHEM 563: Mathematics for Chemists (3 credits)**
Basic algebra, trigonometry and graphic methods, logarithms and exponentials, combinatorial functions, complex numbers and complex functions, vectors, differentiation, concepts of maxima and minima, method of undetermined multipliers, integration, definite and indefinite integrals, Cartesian and polar coordinates and their transformations, power series and Taylor expansion, convergence tests and radius of convergence, matrices and matrix arithmetic, solution of simultaneous linear equations, including determinants, introduction to basic statistical techniques and measures for describing quantitative data, measures of central tendency and measures of dispersion, linear regression, line- and curve-fitting, correlation and tests of significance.

**CHEM 566: Advanced Topics in Physical Chemistry (3 credits)**
Special topics covered in detail according to the recent innovations in field of physical chemistry.

**CHEM 696: Research Seminars (1 credit)**
Two research seminars in each semester of the research period covered.
CHEM 699: Research Thesis (14 credits)

- Research is a full one-year project with the thesis evaluated by external examiners upon completion
- Research projects are assigned and approved by the department in consultation with the students and their supervisor
- Before starting the research, students must prepare outlines/synopses of their proposed research projects
- The research project has to be completed within the specified period of time, after which the research theses duly signed by the students and their supervisors are submitted to the department for evaluation
- At the end of the research work, students are required to write comprehensive theses explaining their research findings
- Research theses, which must represent original discovery fulfilling the university’s integrity criteria, are accepted only when they meet all the formatting and writing standards of the department
- Research theses are evaluated by external examiners appointed by the university, after which viva voce is arranged
- Students are expected to work in the laboratory/library for at least 35 hours a week during the research year. Group discussions among students are also encouraged
- Seminars are held during which students present their work before a committee of faculty members for evaluation

PhD Chemistry

The Department of Chemistry at FCC, is determined to demonstrate the distinguished features of this great institution including excellence in learning and research. The department boasts an excellent PhD faculty, most being HEC approved supervisors. Equipments like GC-MS, AAS, CHNSO analyzer, FTIR, UV-Visible Spectrophotometer and HPLC, etc. are available. The Department of Chemistry follows, in general, the admission and qualification criteria as recommended by Higher Education Commission of Pakistan subject to approval by relevant bodies of the university.

PhD in Chemistry is a 3-year program focusing on independent research and learning. The scholars are encouraged to research in areas like natural products, organic synthesis, medicinal chemistry, colloidal chemistry, organometallics, modern materials and bioactivities among others.
Admission Criteria

- MPhil/MS (with research) from a recognized university in any area related to Chemical Sciences with a CGPA equivalent to 70% aggregate as prescribed by HEC criteria or First Division (in the Annual System) in the MPhil/MS
- Passing a subject test conducted by the National Testing Service (NTS) or ETS (USA) in the area of specialization chosen at the PhD level, and/or Admission Test conducted by Department of Chemistry with 60% score
- In the case of GAT subject test (http://www.nts.org.pk/GAT/GATSubject.asp) a minimum of 60% marks are required
- In the case of GRE subject test, 60% percentile score is required

Degree Requirements

- In the first two semesters, a PhD student studies 6 courses of three credit hours each (three courses per semester)
- The course work is followed by a Comprehensive Examination for granting a student the candidacy as a PhD researcher
- At the end of the second semester, a student must obtain a minimum CGPA of 2.5 and must also pass all the courses in order to be promoted to the next semester for research
- A student who has earned ‘F’ or ‘D’ grade in a course may be allowed to repeat the same course when offered or take one additional course, as offered by the department, to fulfill the minimum criteria of course work prior to the formal inception of his/her research work

Course Descriptions

**CHEM 703: Quality Assurance in Research (3 credits)**
Definitions and terminology, accreditation, scope, and specification of analytical requirements; analytical strategy; non-routine analysis; sample handling and preparation; quality assurance and quality control in chemistry research, issues related to environment, equipment, reagents, traceability, measurement uncertainty, methods/procedures for calibrations, method validation, and reference materials.

**CHEM 705: Characterization of Coordination Complexes (3 credits)**
Elemental analysis, use of ChemSketch and ChemDraw software; structural elucidation, vibrational /rotational spectroscopy, electronic spectroscopy, circular dichroism, nuclear magnetic resonance, determination of magnetic susceptibility, electron spin resonance; determination of ionic charge on
metal ions; crystallography.

**CHEM 745: Medicinal Chemistry (3 credits)**
Principles of drug design, nature and types of drug molecules, drug-receptors interactions, biochemical aspects of drug designing, new approaches to drug designing and drug delivery, categories of different drugs and mechanism of their action.

**CHEM 746: Advances in Natural Products (3 credits)**
Recent advances in chemistry of natural products, alkaloids, terpenoids and flavonoids, and their application in various fields such as medicine, food and agriculture; advances in isolation techniques, structural elucidation, structure-activity relationship (SAR) and derivatization.

**CHEM 762: Computational Chemistry (3 credits)**
Background, concepts and applications; different computational programs and their application to predict molecular structures, mechanisms, and structure to activity relationship; role of computational chemistry in drug discovery and other fields.

**CHEM 763: Electroanalytical Techniques (3 credits)**
Controlled potential techniques, chronoamperometry, polarography, pulse voltammetry, AC voltammetry, stripping analysis, flow analysis, electrochemical sensors.

**Research Work**
**CHEM 799: Research Thesis (12 credits)**
After the successful completion of the course work and other requirements, a PhD scholar will conduct research under the supervision of a faculty member, and thereafter write, based on his/ research, a research thesis and submit it to the Department for evaluation. At least one research paper, based on the research work, has to be published in an HEC approved journal.
Research Projects

The Pakistan Science Foundation, Islamabad, has provided funds for a research project aimed at the isolation of natural products from a medicinal plant of Pakistan and their Chemical and Biotechnological studies. The principal investigator of the project is Dr Dildar Ahmed, while Dr Kauser A Malik, Distinguished Professor of Biotechnology, is co-investigator. Two groups of students under their supervision are working on this project. This has been successfully completed.

HEC, Pakistan has funded a project entitled “Activity-guided isolation of bioactive chemical constituents from the medicinal plant Carissa opaca”. Dr Dildar Ahmed is the principal investigator of the project. A number of our MPhil/PhD students are working on various aspects of these projects.

HEC (NRPU) Project “Synthesis of novel sulfonamide derivatives as inhibitors of ecto-nucleotidases” has recently been awarded to Dr Mariya al-Rashida (Principal Investigator) and Dr Jamshed Iqbal (Co-Principal Investigator, COMSATS, Abbottabad).

Collaborations with Other Institutions

In order for our students to avail facilities available at other institutions, collaborations have been established with institutions like HEJ Research Institute of Chemistry, PCSIR Laboratories, B&F Pharmaceutical Company, NovaMed Pharmaceuticals and Pharmagen Ltd, Lahore.
Faculty

Dr Dildar Ahmed
Professor & Chairperson
PhD (HEJ Research Institute of Chemistry, Karachi)
More than 20 years of teaching experience; translated two books by Prof (Dr) Atta-ur-Rahman on NMR spectroscopy into Urdu, which were published by National Language Authority, Islamabad; published over 50 scientific research papers in peer-reviewed international journals.
Research Interests: Natural products isolation and characterization, herbal medicines, organic synthesis, antioxidants, and pharmacological studies.
HEC approved PhD supervisor.

Dr Christy Munir
Professor Emeritus
PhD (Wayne State University, USA)
Taught at Quaid-i-Azam University (1974 -2001) where he supervised PhD, MPhil and MSc students; directed various government-sponsored research projects; member of American Chemical Society; life member of Pakistan Chemical Society; published over 50 papers in national and international journals.
Research Interests: Coordination chemistry, medicinal compounds.

Dr Athar Yaseen Khan
Professor
PhD (Southampton University, UK)
Commonwealth Scholar (1966-69); Postdoctoral Research Associate SUNY, Binghamton USA (1969-71); DAAD Fellow (1992); taught at the Quaid-i-Azam University for 32 years and served as Professor and Chairman; Eminent Professor of HEC (2003-05); Professor and Consultant Allama Iqbal Open University (2005-2010); Focal Point of HEC in Physical Chemistry; Member National Core Group in Chemistry; Fellow Chemical Society of Pakistan; has been member of American Chemical Society and Electrochemical Society USA; supervised numerous PhD and MPhil students; published more than 70 research papers in national and international journals.
Research Interests: Coordination chemistry, medicinal compounds.

Dr Mohammad Saeed Iqbal
Professor
PhD (Strathclyde, UK)
Over 35 years experience in teaching, research and industry; over 80 research publications in peer-reviewed international journals; 2 patents of drug molecules; HEC-approved PhD supervisor; produced 12 PhDs; worked on some technology transfer projects.
Research Interests: Metal-based drugs, application of analytical chemistry to the biological problems; nanomedicine;
development of biomaterials as drug delivery devices; pharmacokinetics.

Dr Seemal Jelani
Associate Professor
PhD (Punjab University, Lahore)
Associated with Forman Christian College since 2003; worked with Ministry of Education, Islamabad, on deputation for over five years to develop National Curriculum of Pakistan, research-oriented projects completed with the involvement of top institutions and educationists, notable experience in imparting skill-based education and transferring skills to learners by utilizing latest methodologies.

Research Interests: Natural products (gums, essential oils, perfumes and flavors), textile chemistry (isolation, structural studies and synthesis of natural and synthetic dyes and to investigate new technologies for the applications of dyes); environmental chemistry (water analysis projects).

Dr Amjid Iqbal
Associate Professor
PhD (University of Cambridge, UK)
Has been a part of FCC's faculty since before moving to UK for higher studies; Worked as visiting research scholar at University of Oxford (Mark Moloney Group) and University of East Anglia, UK (Chris Hamilton Group); Was awarded the Cambridge Commonwealth Trust's award for pursuing his PhD at University of Cambridge, UK (Finian Leeper Group).

Research Interests: Interface of Organic synthesis and Chemical Biology, designing of substrate based enzyme inhibitors and use of novel Lead (IV) compounds for carbon-carbon linkage.

Shazma Azeem
Assistant Professor
MPhil (Quaid-i-Azam University, Islamabad)
PhD GC University, Lahore (in progress); done research on biopolymers at The University of Nottingham, UK, in 2012; published a number of research publications in peer-reviewed international journals.

Dr Muhammad Nadeem Asghar
Assistant Professor
MPhil (Quaid-i-Azam University, Islamabad)
PhD GC University, Lahore (in progress); done research on biopolymers at The University of Nottingham, UK, in 2012; published a number of research publications in peer-reviewed international journals.

Research Interests: Isolation and study of biomaterials useful for pharmaceutical applications such as binders in tablets, suspensions, capsule shell, contact lenses, targeted and controlled drug delivery devices; stability constants of metal complexes.

Dr Muhammad Nadeem Asghar
Assistant Professor
PhD (GCU, Lahore)
Postdoctoral research fellowship on Materials Chemistry at University College London, UK, by HEC Pakistan. HEC approved PhD supervisor since 2010, awarded Best Lecture Award by National Core Group in Chemistry in 2007, awarded Outstanding Research Paper Award in analytical Chemistry by HEC in 2009 and Research Productivity Awards (2013 and 2015) by Pakistan Council for Science and Technology; published 42
Dr Mariya al-Rashida  
Assistant Professor  
PhD (University of the Punjab, Lahore)  
Life Member Chemical Society of Pakistan; Editor, International Journal of Analytical Sciences.  
Guest Editor, Special Issue “Recent Developments of Carbonic Anhydrase Inhibitors as Potential Drugs” in BioMed Research International. Review Editor for Frontiers in Chemistry (Medicinal & Pharmaceutical Chemistry section).  
Research Interests: Synthesis (organic and inorganic), design of inhibitors of metalloenzymes (carbonic anhydrase, ecto-nucleotidases); DNA-interaction, bio-inorganic chemistry, computational chemistry, molecular docking studies.

Dr Hafiz Muhammad Abd Ur Rahman  
Assistant Professor  
PhD (Regensburg University, Germany)  
Postdoctorate from Regensburg University, Germany; Teaches Physical and General Chemistry and has published 5 research papers in peer-reviewed international journals.  
Research Interests: Interaction and dynamics in aqueous and non-aqueous electrolyte solutions and neat solvents; phase separation in miceller solutions; green chemistry, synthesis and characterization of microemulsions; interaction of drugs and dyes in micellar solution.

Dr Naeem Asad  
Assistant Professor  
PhD (University of Kansas, USA)  
He has been teaching at FCC since 2003, was recipient of Fulbright scholarship in 2008 for a PhD in the US. Teaches Organic/Physical/Biochemistry and General Chemistry and has published 4 research papers in peer-reviewed high impact factor international journals including one book chapter in comprehensive organic synthesis II published by Elsevier.  
Research Interests: One-pot sequential processes towards the synthesis of biologically relevant molecules; methodology development and library synthesis of novel heteroycles and privileged structures with a special emphasis on sulfur, phosphorus and selenium containing compounds; Isolation and derivatization of natural products for biological evaluation and SAR studies.

Hina Abid  
Lecturer  
MPhil (UET, Lahore)  
PhD Scholar University of Punjab; teaches industrial/applied chemistry, environmental national and international peer-reviewed research articles.  
Research Interests: Analytical chemistry; oxidative stress status evaluation; organo-metallic synthesis, characterization and applications; materials chemistry
chemistry, and polymer Chemistry.

**Research Interests:** Currently working on the study of biomass as a potential biosorbant for the toxic trace metals from soil and water.
9. Department of Economics
Established in 1915, the Department of Economics at Forman Christian College has long offered undergraduate and graduate degree programs. In 2004, the Department started a 4-year BS Honors degree in Economics which is now one of the most popular degree programs at the university. Currently, more than 400 Baccalaureate students are majoring in Economics and around 3,200 students attend Economics courses each year.

The Department of Economics is well equipped with major academic needs such as lecture halls, seminar rooms, classrooms, meeting rooms, workshop rooms, a computer lab and faculty offices. It continues to meet challenges by updating and revising its curricula, introducing new programs and adding new scholars to teach contemporary courses.

**MPhil Applied Economics**

This is a 2-year program following the completion of 16 years of education i.e. BS (Hons) or conventional MA/MSc Economics. After completion of MPhil, a student will have exposure to those courses and skills which are helpful to pursue a doctoral program or enter the teaching/research professions.

The MPhil Applied Economics consists of two semesters (27 credit hours) of coursework. In the summer term, MPhil Applied Economics students choose their advisors and prepare a research proposal. In the second year, students focus their efforts on the MPhil research thesis (12 credit hours) under the supervision of a PhD faculty member.

**Admission Criteria**

Candidates must

- Submit an application and two reference letters (at least one must be from a previous teacher)
- Have at least 16 years of education (BSc Hons) with 48 credit hours in Economics and a minimum CGPA of 2.5 OR a conventional MA/MSc in Economics with at least 60% marks
- Pass the FCC Aptitude Test in Economics (FATE)

**Selection Criteria**

- FATE score
- Interview score
- Past academic achievements

Merit of students will be determined on the basis of weighted aggregation
of FATE score (30%), interview score (20%) and past academic achievement (50%).

Note
- Students who are waiting for results can apply provisionally but must submit a complete official transcript at the time of interview.
- CGPA in the last degree will be counted towards past academic achievements.
- Candidates who fail in the FATE are not eligible to appear in the interview.

Degree Requirements
- Satisfactory completion of 39 credit hours with CGPA of 2.5 or better. 18 are earned through core courses and 9 through electives offered by the department.
- During the third semester of the program, students are required to carry out research on a topic of their choice under the guidance of a supervisor. The research thesis will be of 12 credit hours.
- The student must be a full-time student during the coursework.
- The thesis will be evaluated by an external expert and will be defended before a committee.
- The thesis must be of publication-acceptable standards.
- The university grading system will apply to this degree.
- All other rules and regulations will apply as per Department and University policy.

Areas of Specialization
The Department focuses on limited but in-demand areas to ensure quality education and research training. More areas may be added as the need arises. The following areas of specialization are currently offered:
- Applied Econometrics
- Environmental and Resource Economics
- Development Economics

Course Descriptions

Core Courses
ECON 501: Advanced Microeconomics (4 credits)
Based on the model building approach. Students learn rigorous theoretical modeling and decision making behavior of consumers and firms under certainty and uncertainty.
**ECON 502: Advanced Macroeconomics (4 credits)**
Focuses on the economic behavior of different economic aggregates in an economy and its interaction with world economy. Evaluates different stabilization polices to dampen the fluctuations in economic activity.

**ECON 505: Applied Econometrics (4 credits)**
Trains students in theoretical and practical discourse of econometrics and provides them knowledge of issues regarding application of various estimation techniques under different sets of information and assumptions.

**ECON 625: Advanced Econometric Techniques and Forecasting (3 credits)**
Focuses on advanced topics of econometrics that are useful to understand current published research literature and to develop research ability among students at graduate level. Students learn theoretical as well as application of advanced econometric techniques.

**ECON 655: Applied Economics (3 Credits)**
Designed to teach model building based upon economics and econometrics. Build up quantitative research skills in students about computer software's on spreadsheet analysis and econometrics.

**Elective Courses:**
**Note:**
- Optional courses are decided by the Department of Economics each year. Students are required to take 3 electives for a total of 9 credit hours. Please check with the Department for available courses.

**ECON 699: Research Thesis (12 credits)**
Each MPhil student will carry out research on a topic of their choice under the guidance of a supervisor. Guidelines about the research will be provided by the supervisor. Students must submit their approved theses to the supervisors for internal and external evaluation within the time period as prescribed in the University Calendar.
Dr Akmal Hussain
Distinguished Professor
DPhil (University of Sussex, UK)
Lectured on economics in Distinguished Academic Visitor series at the University of California, Riverside, and as part of the Distinguished Speaker Series lectured at the Jamia Millia Islamia New Delhi; Gave presentations on development issues at Harvard University, United Nations University, Chinese Academy of Sciences and for Foreign Ministries of governments including the UK, Japan, the Netherlands, and the USA; served as Chairman of Working Group on Institutions for Development in Panel of Economists to advise the Government of Pakistan on economic policy; Chairman of Working Group on Poverty Reduction Strategy and Human Resource Development for Tenth Five Year Plan; worked as social mobilizer to enable local communities to acquire basic services in Pakistan; founding honorary Chief Executive Officer of the Punjab Rural Support Program; helped establish Pakistan Poverty Alleviation Fund and Leadership for Environment and Development Pakistan and served on their Boards of Directors; worked for regional cooperation as member of the Board of Governors of South Asia Centre for Policy Studies (SACEPS) and Independent Group for South Asian Cooperation (IGSAC); Principal Author of UNDP, Pakistan.

Dr Babar Aziz
Professor & Chairman
PhD (Bahauddin Zakaryia University, Multan)
Over 20 years teaching and research experience; has published fifteen papers in well reputed journals; served as Research Associate at PIDE & Quaid-i-Azam University, Islamabad; Lecturer at Government Postgraduate College Vehari & BZU Multan; Assistant Professor at GCU, Faisalabad; member Economics faculty at FCC since August 2010; Supervised research in the areas of economic growth & institutions, consumer demand systems analysis, economies of scale in food consumption, trade & growth, food insecurity & variation in the quality of life, shadow economy, family ties & behavioral economics; Teaching interest includes Basic & Applied Micro Economics, Mathematical Economics, International Trade, Public Finance, Research Methods & Computer Applications & Managerial Economics.

National Human Development Report 2003; presented over 50 papers on development issues at international conferences around the world including SID World Conference on Development in Rome, Wilton Park Conference on Regional Cooperation in South Asia, World Bank Conference on Equity and Development in New Delhi, Stanford University Conference on Regional Integration in South Asia; authored three books on economic policy and contributed chapters to 32 other books on development issues; and over 200 newspaper articles on economic and social issues.

Research Interests: Development Policy, & Institutions.

Dr Michael Murphy
Professor of Business and Economics
PhD (UCLA, USA)
Charles Walgreen Fellow at the University of Chicago’s Graduate School of Business; member Economics faculty at Southern Methodist University (USA); served for over 20 years at AT&T, Qwest and President and CEO of Wytec, Inc; published several papers in areas of market regulation and price controls; member of Business and Economics Faculty at FCC since January 2006; published several papers in areas of market regulation and price controls.


Dr Shabib Haider Syed (On study leave)
Associate Professor
PhD (Quaid-i-Azam University, Islamabad)
Over 22 years teaching and research experience in various institutions in Pakistan; Served as Adjunct faculty member at Quaid-i-Azam University, International Islamic University, Muhammad Ali Jinnah University and Institute of Cost and Management Accountants Islamabad; Member Economics faculty at FCC since August 2005; Supervised research in the areas of economic growth, trade, energy, crime, terrorism, suicide and climate change.


Dr Tanvir Ahmed
Associate Professor
PhD (Development Economics), (University of Agriculture, Faisalabad)
Has published papers in journals and presented in conferences. Currently Managing Editor of the Forman Journal of Economic Studies. Served as Lecturer and Teaching Assistant at University of Agriculture, Faisalabad; Consumer Banking Officer at Bank Alfalah Limited; Lecturer and Assistant
Professor at GCU, Faisalabad; seven foreign visits to share research with international scholars and to get training. 

**Research Interests:** Applied Econometrics, Microeconomics, & Environmental Economics.

**Dr Muhammad Ali Bhatti**  
**Associate Professor**  
**PhD (Quaid-i-Azam University, Islamabad)**  
Has 27 years long teaching and research experience, besides strong academic leadership and professional services; served as visiting faculty at Quaid-i-Azam University (Islamabad), Fatima Jinnah Women’s University (Rawalpindi), Kashmir Institute of Economics, University of AJK (Muzaffarabad), Allama Iqbal Open University, (Islamabad) and International Islamic University (Islamabad); PhD thesis on Stock Market Volatility at Karachi Stock Exchange: A Firm Level Analysis; Research work includes four conference papers and one research report.  

**Zahid Iqbal**  
**Assistant Professor**  
**MPhil (GCU, Lahore)**  
Currently PhD candidate at GCU, Faisalabad;  
Has 19 years of teaching experience; has published several research papers in well reputed journals; Co-supervised number of graduate students in the areas of microeconomics, trade, behavioral economics and applied economics. 

**Research Interests:** Macroeconomics, Quantitative Economics, & Monetary Economics.

**Dr Rizwan Ahmad**  
**Assistant Professor**  
**PhD (GCU, Lahore)**  
Has Teaching experience of over 11 years in different private and public universities. He has published number of research articles in HEC recognized journals.  
**Research Interests:** Youth labor market, Demographic and Health Economics, Issues of Education Sector, & Islamic Banking and Finance.

**Dr Uzma Hanif**  
**Assistant Professor**  
**Postdoc (London School of Economics & Political Science)**  
**PhD (Punjab University)**  
Over 12 years teaching and research experience including 10 years of teaching and research experience at FCC, Lahore. Her PhD. dissertation is very first academic research in Pakistan in the areas of economic quantification and economic impact assessment of climate change on agricultural sector.  
**Research Interests:** Development, Economics of Climate Change, Environment and Natural Resource Economics,
Climate Change Policy and Energy Economics.

**Dr Ghulam Shabbir**
**Assistant Professor**
**PhD (NCBA&E, Lahore)**
Has 19 years of teaching and research experience; has published ten research articles in international and national journals, and a book; worked as visiting faculty at University of the Punjab, Lahore and GCU, Faisalabad.

**Research Interests:**

**Dr Abdul Jalil Khan**
**Assistant Professor**
**PhD (GCU, Lahore)**
**Research Center, Karachi**
Primary teaching interest is Macroeconomic issues.

**Research Interests:** Technology and Productivity, Exchange Rate Risk, GARCH models, & International Economics.

**Azma Batool**
**Assistant Professor**
**MPhil (Quaid-i-Azam University, Islamabad)**
Has 17 years of teaching experience; Worked as HOD, Economics at International Islamic University; program coordinator, HIMS, Hamdard University, Faisalabad campus; visiting faculty at IMS (Pak-Aims) Lahore; Assistant Professor in Management Science Department, FAST University Lahore. Taught courses on Quantitative Economics including Game Theory, Advance Mathematical Economics, Dynamic Methods and Models in Economics, Econometrics, Statistics and Basic Mathematical Economics.

**Research Interests:** Poverty Reduction Strategies, Consumer Behaviour, & Game Theory.

**Muhammad Salahuddin Ayyubi**
**Assistant Professor**
**MPhil (UCP, Lahore)**
Currently PhD candidate at UCP, Lahore
Teaching experience of over fourteen years at various institutions over a wide range of courses. Teaching interest includes Macroeconomics, International Trade and finance, Financial Markets of Pakistan and Managerial Economics.

**Research Interests:** Fiscal Responsibility, & Pakistan’s Potential for Regional Trade and discouraged workers in labor markets.

**Ayesha Anwar**
**Assistant Professor**
**MPhil (GCU, Faisalabad)**
Has over 7 years of teaching and research experience as lecturer at GCUFF. Has 3 papers published one at National Level and two papers internationally. Working as Associate Editor with Pakistan Journal of Life and Social Sciences.

**Research Interests:** Consumer
Behavior, Applied Microeconomics, & Public Sector Economics.

**Fazilda Nabeel**  
**Assistant Professor**  
**MPA (Brown University, USA)**  
Is a Fulbright scholar with an MSc in Economics from LUMS and an MPA from Brown University, USA; has been engaged with the Mahbub ul Haq Human Development Centre at LUMS since 2011 and was responsible for conducting background research and drafting chapters for the annual ‘Human Development in South Asia’ report. Her research and teaching experience of the last six years has been focused on development issues in the South Asian region, including education, health, social protection, urbanization and transboundary water governance; was also selected for the prestigious Lead Pakistan Fellowship (2014-215) on Transboundary Water Resource Management.

**Dr Suleman Abdia**  
**Assistant Professor**  
**PhD (Southern Illinois University, Carbondale, USA)**  
His Doctoral dissertation is entitled “An Empirical Analysis of Foreign Aid Heterogeneity according to Donors for Pakistan” under supervision of Dr. Sajal Lahiri; Worked as an Assistant Economic Advisor, at the Economic and Development Section, Embassy of Japan, Islamabad from 2006-2010; Presented one paper titled as “Effect of Bilateral Aid Heterogeneity on Taxes, Public Investment and Consumption Evidence from Pakistan”, at the 14th Annual Missouri Economics Conference, Columbia, MO.  
**Research Interests:** Development Economics, Monetary Economics, Applied Econometrics and Issues relating to Foreign Aid, Poverty, Growth and Production Efficiency.

**Luqman Saeed**  
**Lecturer**  
**MPhil FCC, Lahore**  
MPhil thesis was an economic study of terrorism in Pakistan. Serving as Lecturer since Oct 2012 in FCC.  
**Research Interests:** Macro Economics, Institutiona Economics, & Terrorism/Conflict Studies.

**Syed Ali Abbas (On study leave)**  
**Lecturer**  
**MS Economics (LSE, Lahore)**  
Worked as Research Associate in Center for Research in Economics & Business (CREB), Lahore School of Economics.  
**Research Interests:** Macroeconomic Modeling, International Trade, Economic Growth & Development.
Sameen Zafar (On study leave)
Lecturer
MSc University of Nottingham, UK
Worked as Research Associate in Technology Upgradation & Skill Development Company (TUSDEC), Ministry of Industries, Government of Pakistan.

Research Interests:
10. Department of English
The connection between Forman Christian College and the teaching of English has a very long history. FCC evolved from the Mission School, which was established in 1849 as the first English-medium school in Lahore. In 1864 a College section was started, which was later renamed Forman Christian College after its founder. By 1901, FCC had started English MA classes. The English Department has benefitted from the teaching of great scholars such as Dr H C Velte, Dr F M Velte, Rev H D Griswold, Dr E J Sinclair and Dr S L Sheets. The graduates of the English Department have distinguished themselves as writers, poets, civil servants, judges, lawyers, diplomats, politicians, and entrepreneurs.

Having offered a 4-year BS Honors degree in English for the past many years, this is an appropriate time to offer a higher degree. The MPhil English program will allow graduates and in-service professionals to upgrade their qualifications in English. As an evening program, many current teachers will be able to benefit from it. MPhil graduates will be equipped with analytical and critical research approaches to face the challenges of today’s world. The program will carry on FCC’s rich legacy of research and quality teaching.

**MPhil English**

The MPhil English program is an evening program and is aimed both at students continuing their education as well as in-service practitioners who want to upgrade their qualifications. The program has a number of objectives. It will advance the levels of English communication and fluency skills within Pakistan and develop well-groomed leadership for research and publication in English. It will improve philological and pedagogical practices in English in the country and enhance ethical values by ensuring original work in the field. It will emphasize the importance of English language and literature through both local and global interactions.

**Admission Criteria**

- Sixteen years of education in the discipline of English (Conventional MA 45%, Baccalaureate, credits completed with at least CGPA 2.50)
- HEC Admissions Policy = Passing GAT with 50% cumulative
- Entry Test with interview for FCC = Pass with 50% marks

**Degree Requirements**

MPhil English is a 2-year program consisting of four semesters - three semesters of coursework followed by one semester of thesis writing. Coursework includes core and elective courses.
Core courses:

- ENGL 501: Research Methods and Publishing (3 credits)
- ENGL 510: Transcultural Literary Texts and Contexts (3 credits)
- ENGL 511: Translation Studies: Theory and Practice (3 credits)
- ENGL 520: Critical Theory and Praxis I: Society & Culture (3 credits)
- ENGL 521: Critical Theory and Praxis II: Text & Language (3 credits)
- ENGL 690: Special Research Seminar (3 credits)

Semester 1:
3 core courses of 3 credit hours each – total 9 credit hours
ENGL 501, ENGL 520, ENGL 511

Semester 2:
3 core courses of 3 credit hours each – total 9 credit hours
ENGL 521, ENGL 510, ENGL 690

Semester 3:
4 elective courses of 3 credit hours each – total 12 credit hours
ENGL 515, ENGL 516, ENGL 525, ENGL 610, ENGL 615, ENGL 616, ENGL 617, ENGL 618

Semester 4:
Compulsory thesis (ENGL 699) and viva of 6 credit hours

Total:
36 credit hours

- Successful completion of coursework, seminars and thesis (30+6 = 36 credit hours). MPhil students complete 6x3=18 credit hours of core courses and 12 credit hours of electives + 6 credit hours of research (36 credit hours)
- Successful defense of thesis before an external examiner and departmental committee
- Qualifying grade = 3 out of 4, equivalent to “B” (acceptable internationally and nationally by HEC)
- Comprehensive Examination to be passed before the Thesis is submitted in the 4th semester

Note: A student will not be awarded a degree or transcript if he/she decides to drop out of the program at any time or for any reason during the two years or fails to submit his/her thesis.

Course Descriptions

ENGL 501: Research Methods and Publishing (3 credits)
Preparing and designing research projects, writing research papers and preparing for publishing; basic understanding of conducting research in Literature; understanding and critiquing various research methodologies; identifying and selecting a methodology; skills for presenting research at academic and literary forums; formatting and documenting research through citations, bibliographies (MLA); attending workshops, seminars and
discussions; preparing for thesis supervision on one-to-one basis at the end of degree.

ENGL 510: Transcultural Literary Texts and Contexts (3 credits)
Exploring interconnectedness through globalized mobility; transcultural and transnational perspectives of literary and nonliterary writings in English by diverse socio-cultural groups; reading a range of voices across continents to reflect outside own cultural bearing to imagine the belonging of others; includes some Anglo-American classics along with selections from the Caribbean, China, Africa, Canada, Australia and other hinterlands offering a good comparative study on colonial/postcolonial dynamic to train thinking beyond rigid ideologies; enabling readers critique independently texts and contexts that involve representative transcultural exchanges by deconstructing binary or oppositional paradigms in terms of race, class, ethnicity, gender or nationality.

ENGL 511: Translation Studies: Theory and Practice (3 credits)
Introducing major concepts in translation theory; focusing on their application to translation practice; cognitive and critical parameters allow readers to study a wide range of literature across cultures and engage with practicing translation skills; comprehensive overview of discipline of translation studies to create awareness of diversity of possible approaches to translation and relationships between these approaches.

ENGL 515: South Asian Literary Genres (3 credits)
Elective
Understanding diversity of South Asian culture and history through studying various genres from its literature, including drama, short story, film, autobiography and folk genres; identifying particulars of one or more literary genres by specific characteristics of cultural and social context of time of writing; writing research paper on one particular genre and/or preparing a comparative analysis of various genres; sources include texts from various South Asian vernaculars in English translation.

ENGL 516: Minority Literature(s) in English (3 credits)
Elective
Issues and paradigms related to literature representing minorities across the world; understanding the term ‘minority’ and how it is used in tagging certain classes, ethnicity, religious factions and instigating discriminatory and paradoxical notions of ‘inclusive’ vs ‘exclusive’ through identity politics; sources include representation of minorities in selected contemporary American, South Asian, British and diasporic literature and film; selection of texts and/or choice of focusing on a specific country/region based on
discretion of instructor and interests of students.

**ENGL 520: Critical Theory and Praxis: Society and Culture – Part 1 (3 credits)**

(NOTE: The course is divided into two major groups of theories due to the complex nature of the texts and availability of the time. The groups are not chronologically or historically formed but are based on the correlation and association of the critical theories investigated.)

Introducing a wide range of canonical 20th century critical theories and methodologies/frameworks; inculcating essential critical and analytical thinking for research thorough discursive approach; Part I covers Psychoanalysis, Marxism, Feminism, Gender Studies, Race Studies, Queer Theory, The New Historicism, and Postcolonial Theory via exposure to original texts as well as materials from literature, film and pop culture to comprehend process of hermeneutics and praxis; theorizing, criticizing, and interpreting theoretical/critical paradigms from diverse standpoints.

**ENGL 521: Critical Theory and Praxis: Text and Language – Part 2 (3 credits)**

Reading a particular text; language construction and use to create ideologies within societies; theories including The New Criticism, Russian Formalism, Semiotics and Structuralism, Post-Structuralism, Frankfurt Critical School, Deconstruction, and Reader-Response Theory; ability to develop critical and analytical sensitivity towards language and its manifestations within society; investigation of transfiguration and development of language across diverse historical and spatio-temporal frameworks.

**ENGL 525: Literary Stylistics (3 credits)**

Elective

Stylistic analysis of literature; focus on all three main genres (poetry, prose fiction and drama); examining poetry and patterns of lexis, phonetic and metrical organization and relationship to meaning; examining fiction through narratology, style variation and speech and thought representation; examining drama through pragmatics, considering topics such as patterns in turn-taking and their relationship to roles and functions of characters, speech act analysis and styles of politeness behavior; social and cultural context of all genres.

**ENGL 610: Digital Approaches to Literature (3 credits)**

Elective

Investigating theoretical and practical role of digital approaches to literary works and their forms; looking into future possibility of digital literariness by exploring new literary and linguistic dimensions, their changing borders
and broadening domains along with their innovative production that affects the experience of reading; tracing the role and engagement of electronic devices in English literary studies by asking questions like how digital and electronic methods shape the scope of English literary expression differently.

**ENGL 615: British Women Writers (3 credits)**
**Elective**
Introduction to British women writers in multiple genres; analysis of relationship between women’s practice of literary genres and socio-cultural milieu; emphasis on women writers’ particular experimental narrative strategies and manipulation of the dominant language that created an alternative and distinct women’s literary tradition; socio-economic factors that influenced production and reception of women writers in the market.

**ENGL 616: American Literature (3 credits)**
**Elective**
Detailed study and analysis of development of different literary forms, themes, and evolution of American English in the United States; in-depth survey and exploration of leading developments in different genres in American literature (poetry, novel, short story, drama, and non-fictional prose) in the United States in different ages; possible selections (based on instructor’s choice) can be: 1) American Literature from 1820-1865, intensive examination of the formative period (often called the American Renaissance) of American literature as well as life and culture; 2) American literature from 1865-1918, representing the transition from Anglo-European literary traditions to Americanized language and literary forms; 3) American literature from 1918-onwards, covering modernism, postmodernism and anti-postmodernism.

**ENGL 617: Modern to Contemporary Continental Drama (3 credits)**
**Elective**
Exploring experiments in modern to contemporary continental drama; avant garde effects of 20th century and changing types; investigating dominant dramaturgical traditions in history of Western drama, theater and performance; improvisation challenging plot, characterization, language, setting, movement; Ibsen as pioneer of Modern Drama and his genius to substantiate human experience; various dramatists and their disapproval of conventional morality, religion or other accepted mores of their times; their radicalism in form and philosophy of art, concerns about families-in-crises, inspiration for human sentiment, devotion to Marxist or other ideas and ideologies; conflicts of diverse cultural backgrounds.
ENGL 618: Aesthetics and Poetry (3 credits)
Elective
Changing concepts of aesthetic values in poetry in different ages; critical discussion of Modernism; modernist aesthetic characterized by dislocation or abstraction of elements from nature into invented and autotelic artifact; dramatic shift from temporal aesthetic of Romantics to poetics of space in; relationship of an aesthetics of release and enduring forces of restraint.

ENGL 690: Special Research Seminar (3 credits)
Preparing to conduct research independently and learning from and engaging in critical academic discussions; weekly seminars with regular attendance and interaction with academics and experts invited as guest speakers specializing in a specific area of Literary Studies, Critical Theory or any interdisciplinary area; preparing and presenting two major research papers (6,000 words each) focusing on two different topics covered during these interactions.

ENGL 699: Thesis and Viva (6 credits)
One-on-one supervision through guided practice and weekly tutorial given by assigned thesis supervisor; students are encouraged to prepare drafts of continuous writing (thesis chapters); supervisor will give detailed comments and guidance on further reading; development of critical thinking and argumentation; weekly presentations based on readings; training in understanding theory and conventions of academic writing in MLA style and preparing 30,000 word thesis to be submitted at end of semester.
Dr Waseem Anwar
Professor & Dean of Humanities
PhD (Indiana University of Pennsylvania, USA)
PG Diploma TEIL (British Council, UGC and AIOU)
MA (Punjab University)
Post-Doctorate Duke University, USA; Fulbright Fellow 1995 and 2007; Gale Group American Scholar; ex-officio member Executive Committee of the South Asian Literary Association, USA; Member MLA; author “Black” Women’s Dramatic Discourse (2009); extensive international and national publications and conference presentations; member Advisory and Editorial Boards for Transformations, Studies in the Novel, Pakistaniaat, Solidarity International, and Journal of Research (Humanities); co-guest editor of 2010 South Asian Review, first ever issue on Pakistani creative writing; Editor-in-Chief Journal of English Literary and Linguistic Studies; former Chairperson English, GCU, Lahore (2003-2006); Punjab Education Department Salam Teacher Award 2004; Pakistan HEC Best Teacher Award 2003; HEC-approved supervisor.


Dr Kamal ud Din
Professor
PhD (Indiana University of Pennsylvania, USA)
MA (Punjab University)
Attended British Council Summer Schools at University of Leeds (1985) and University of Aberdeen (1991); Fulbright Scholar (1994); adaptive software technology course from the Adaptive Technology Center, University of New Orleans as an independent researcher.


Dr Nukhbah Taj Langah
Associate Professor & Chair
PhD (University of Leeds, UK)
Worked with several academic and literary forums such as The Poetry Translation Centre in London and Pakistan Workshop (UK); publications include Poetry as Resistance: Islam and Ethnicity in Postcolonial Pakistan and Noshi Gillani: Poems (selected poems co-translated with Lavinia Greenlaw); translator, political activist and social worker.

Research Interests: South Asian and Postcolonial Literature, contemporary literature being produced within Pakistan and by Pakistani diaspora writers, resistance literature, and the ideology of sub-nationalisms within Pakistan.
Dr Ayesha Malik
Assistant Professor
PhD (State University of New York, Buffalo, USA)
Fulbright Scholar; published ‘When the Dead Share the Table: the Uncanny Colonial Home in James Joyce’s ‘The Dead’, book chapter in Resisting the Place of Belonging: Uncanny Homecomings in Religion, Narrative, and the Arts; Presented at international conferences including SAML; worked at NUML as a lecturer (2006-07).

Fatima Syeda
Assistant Professor
MPhil (PU, Lahore)
PhD candidate at Punjab University; teaching at FCC since 2005; designed and taught courses for Baccalaureate and MA levels; teacher trainer; has held workshops at FCC’s International Teachers’ Conferences.
Research Interests: Critical Theory, Drama, Fiction & South Asian Literature in English.

Jacqoline J Austin
Assistant Professor
MA TESL (University of Mississippi, USA)
Fulbright Scholar; senator of graduate council at the University of Mississippi 2010-2011; presented at various language learning/teaching and other forums including SPLET, Fulbright and Humphrey conference, International Teachers’ Conference, and FCC Humanities symposium; convener and representative of English Language Teaching Reforms (ELTRs) under HEC from English Department; 15 years teaching experience.
Research Interests: Intercultural communication, language and gender studies, corpus/socio linguistics, pedagogy, teacher training.

Alvina Wasim
Assistant Professor
MPhil Linguistics (UMT, Lahore)
Diploma English Language and Role of Registers in the Teaching of the Language, Bradford University, UK
Diploma Creative Writing (Kinnaird College, Lahore)
Presented paper on discourse of Truck Art; wrote paper on the Linguistic Imperialism and its effects on the learning of the language across Pakistan.
Research Interests: Discourse Analysis and Translation Studies.

Faiza Zaheer
Assistant Professor
MPhil, MA (Government College University, Lahore)
Teaching at FCC since 2004; currently research scholar at University of Management & Technology, Lahore.
Research Interests: Derrida’s Theory of Deconstruction and its
Application to the American Dream.

Rehana John
Assistant Professor
MPhil ELT (Kinnaird College for Women, Lahore)
MA (Punjab University, Lahore)
Has taught for over 30 years in leading educational institutions; shared expertise in teaching English in multicultural dimensions; trainer at Directorate of Staff Development; conducts training sessions on classroom management and communications skills.

Research Interest: Sociolinguists; Teaching English as a Secondary Language.

Aysha Pervaiz
Assistant Professor
MPhil (GCU, Lahore)
FLTA (Stanford University, USA)
Currently enrolled in MA TESOL at LCWU; Fulbright Scholar at The Language Center, Stanford University, USA; member American Council for Teaching of Foreign Languages; organized Modified Oral Proficiency Interviews workshops and conducted professional interviews for Language Center, Stanford University; trained as Teacher Mentor and Classroom Observer by Center for Learning and Teaching, FCC; publications include Easy Way Spoken English, Critical Notes on Thomas Hardy’s Under the Greenwood Tree, Critical Notes on a New Anthology of Essays (Intermediate Level, English Literature).

Research Interests: Gothic Literature, Post-Modernism in the genre of novel, Teaching of English as Second/Foreign Language.

Muhammad Waqar Azeem (On study leave)
Assistant Professor
MPhil (GCU, Lahore)
Fulbright Scholar to State University of New York, Binghampton; Associate Editor of JELLS; taught Literary Theory to MPhil class at GCU, Lahore; worked with Directorate of Staff Development as a Teacher Trainer; presented in international conferences at University of Sindh, Jamshoro, IIU and QAU, Islamabad, and FCC, Lahore.

Research Interests: Literary Theory, Modern Literature, Friedrich Nietzsche, W. B. Yeats, Harold Bloom, Theory of Influence, Violence, Contemporary South Asian Fiction in English.

Rana Muhammad Bilal Anwar
(On study leave)
Assistant Professor
MA ELT (University of Sussex, UK)
Over 9 years experience in education, research, teacher training and development; worked with local and international organizations in education, research, faculty development, community development, and human rights programs; internationally published author.
Research Interests: ESP, ELT Management, Curriculum Development, Teacher Training, Program Evaluations.

Harris bin Munawar
Lecturer
MA (New York University, USA)
Fulbright Scholar 2009-2011 at NYU’s Department of Media, Culture and Communication; formerly visiting faculty at the Department of Applied Linguistics at Kinnaird College for Women.

Research Interests: Science Fiction, cyborg theory, early modern history, post-human sexuality, and the politics of design and technology.

Muhammad Abdullah
Lecturer
MA Applied Linguistics (University of Salford, UK)
Currently pursuing PhD in Linguistics at National University of Modern Languages, Islamabad; Vice Chancellor’s Scholarship from University of Salford 2010-11; taught at UKIM Islamic School, Manchester; lecturer at Department of Linguistics GCU Faisalabad; ex-Head/pioneered Department of English Riphah International University, Faisalabad campus; author Integrating Culture and Language Teaching (2012) and Career Counselling (2007); trained to teach at university by SPoRT, Manchester; certified in Edward de Bono Critical Thinking Methods; trainer for Advanced Research Methods in Humanities and Social Sciences; facilitated teacher training workshops across schools in Punjab; Certified Education Management; founder Language Methods Network (LMN) a platform to promote language research in Pakistan; member Asia TEFL; member Society for Natural Language Processing, Pakistan; Member NATESOL, UK.

Research Interests: ELT, Critical Linguistics, Islamic/Post-Feminisms; Gender Studies, Research Philosophy, History of Disciplines.
11. Department of Physics
Physics has been taught at Forman Christian College since it was established in 1864. The Physics Department was instituted in 1907 with 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.

Today, the well-qualified and experienced faculty is involved in various research programs. The last few years have been busy and productive for the Department. At the undergraduate level, we have established 4-year degrees in Physics and Environmental Sciences. The Department now offers PhD and MPhil programs, keeping in view the needs of Pakistan to upgrade the state of its industries, educational institutions and other services sectors, to compete in the modern world and meet new challenges.

The students of Physics Department, besides continuing with PhD studies, can find employment prospects in the Atomic Energy Commission, defence production units and laboratories, PCSIR, PIA, telecom, power industries, and educational institutions in the private and public sectors. Important employment fields are nuclear medicine, diagnostics, radiotherapy and imaging; energy, environment and climate change.

The Physics Department is located in the Armacost Science Building and offers four undergraduate teaching labs, three research labs, a darkroom, a workshop, a research library, and experimental equipment. This includes 4K cryogenic vacuum chamber with temperature monitors and controllers, ellipsometer, digital optical microscope for surface morphology studies, lock in amplifiers, Tesla meters, laser interferometer with optoelectronic coupling, high temperature three stage programmable furnace, UV visible spectrophotometer and centrifuge, etc.
MPhil Physics

The MPhil Physics is a two-year program consisting of two semesters of coursework followed by two semesters of research. Coursework includes core courses and electives. Research is conducted in Experimental Material Science, Nanophysics and Nanotechnology and Theoretical Physics. The program consists of four regular semesters of 40 credit hours in total. 24 credit hours of coursework must be completed in the first two semesters while the 3rd and 4th semesters will be dedicated to research. Limited teaching assistantships are available.

Admission Criteria
- Conventional MS in Physics or Mathematics in first class; or BS (Honors) comprising 16 years of education and 130 completed credit hours after grade 12, with a minimum CGPA of 2.50 overall as well as a CMGPA of 2.50 in the Physics or Mathematics major
- 50% cumulative score in GAT-General from the NTS or in the entry test conducted by the Department
- Passing the Forman Physics Aptitude Test (FPAT)
- Qualifying in the interview of the Department Admissions Committee

Degree Requirements
- A total of 40 credit hours: 24 credit hours of coursework in first two semesters. Students must maintain a minimum of 3.0 CGPA in coursework. The last two semesters will be dedicated to research on a theme chosen in consultation with the research supervisor.

Semester 1 (12 credits)

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<tr>
<td>PHYS 501: Methods of Mathematical Physics</td>
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<td>PHYS 504: Advanced Condensed Matter Physics</td>
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<td>PHYS 505: Advanced Electrodynamics</td>
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Semester 2 (12 credits)

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<td>Elective – 3</td>
<td>3</td>
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<tr>
<td>Elective – 4</td>
<td>3</td>
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<tr>
<td>PHYS 510: Experimental Techniques</td>
<td>3</td>
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</tbody>
</table>
At the end of the second semester there is a comprehensive examination based on the core courses studied in the two semesters. Two additional elective courses will be included in consultation with the supervisor from the research interest area and the Department Chairperson. Every student enrolled in MPhil Physics must pass this examination to continue the 2nd year of the program. A maximum of two attempts are allowed to pass the comprehensive examination.

**Semesters 3 & 4 (16 credits)**

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<td>PHYS 696</td>
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<tr>
<td>PHYS 699</td>
<td>Research Thesis</td>
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**Note:** Candidates may be required to take a number of non-credit undergraduate courses if the research supervisor so desires, in consultation with the faculty advisor and chair of the concerned department.

**Course Descriptions**

**Core Courses**

**PHYS 501: Methods of Mathematical Physics (3 credits)**

Linear differential equations and special functions; separation of coordinates; series solution; Wronskian; two regular singular points; three regular singular points; hypergeometric series; asymptotic series; one regular and one irregular singular point; integral representations; Green's functions; types of boundary conditions; differential equations and Green's functions; source points and boundary points; Green's functions for steady waves; wave equation; diffusion equation.

**PHYS 504: Advanced Condensed Matter Physics (3 credits)**

Symmetry and physical properties of crystals; point groups; band theory of solids; hartree approximation; nearly free electron model; tight binding methods; cellular methods; augmented plane waves; orthogonalised plane wave; pseudo-potential technique and model potentials; Fermi surface studies; superconductors; BCS theory; quantum hall effect; high magnetic fields; cyclotron resonance; high-field magneto-resistance; open orbits; magneto-acoustic oscillations; De-Haas Van Alphen effect.

**PHYS 505: Advanced Electrodynamics (3 credits)**

Maxwell's equations; gauge transformation; Poynting vector; conservation laws; plane electromagnetic waves in a non conducting and conducting medium; polarization; propagation in a dispersive medium; reflection and refraction; total internal reflection; radiation by moving charges; Lienard-Wiechert potentials and fields; general angular and frequency
distributions of radiation from accelerated charges; Thompson scattering; Cherenkov radiation; fields and radiation of localized oscillating sources; electric dipole fields and radiation; magnetic dipole and electric quadrupole fields; multi-pole fields; multi-pole expansion of the electromagnetic fields; angular distributions; sources of multi-pole radiation; spherical wave expansion of a vector plane wave; scattering of electromagnetic wave by a conducting sphere.

**Compulsory Courses**

All students must take the following courses. However, these are not included in the comprehensive examination.

**PHYS 510: Experimental Techniques (3 credits)**

High vacuum techniques; physical principles of diffusion and rotary pumps; ultra high vacuum by ionization; sorption and cryogenics; measurement of pressure; leak detection; X-ray; electron and neutron diffraction techniques; methods of recording diffraction patterns; examples of structure determination; analysis of results’ characterization techniques.

**PHYS 696: Seminar (2 credits)**

Two seminars related to the research project.

**PHYS 699: Research Project (14 credits)**

MPhil research thesis based on research to be submitted to the university and evaluated by the Departmental Committee and an external examiner.

**Elective Courses**

Note: Elective courses depend on availability and workload of faculty.

**PHYS 502: Advanced Quantum Physics (3 credits)**

Approximate Methods: Time independent perturbation theory for non degenerate and degenerate levels; variational method; WKB approximation; time dependent perturbation theory. Identical Particles and Second Quantization: Indistinguishability of identical particles; systems of identical particles; quantum dynamics of identical particle systems; statistics; symmetry of states; fermions; bosons. Theory of Scattering: Scattering experiments and cross sections; potential scattering; method of partial waves; Born’s approximation. The Interaction of Quantum Systems with Radiation: Electromagnetic field and its interaction with one electron system; transition rates; spontaneous emission; selection rules for electric dipole transitions; spin of photon and its helicity. Relativistic Quantum Mechanics: Schrödinger relativistic equation; probability and current
densities; Klein-Gordon equation and hydrogen atom; Dirac relativistic equation.

**PHYS 507: Nanophysics and Nanotechnology I (3 credits)**
Introduction to nanoscale science and technology; quantum nature of Nanoworld; solid states with nanocrystalline structures; properties of individual nanoparticles; nanofabrication and nanoanalysis; self assembly and catalysis; nanowires, fabrication and electrical conduction of nanowires; nanotubes and the crystalline forms of carbon; crystal and electronic structure of nanotubes; growth mechanism of carbon nanotubes and their applications; structure and production of fullerenes.

**PHYS 508: Nanophysics and Nanotechnology II (3 credits)**
Applications of nanomaterials; nanoelectronics; quantum nanodevices; nanoplasmonics; nanomagnetism; magnetic ordering on nanoscale; dynamics of magnetic domain walls in nanomagnetic systems; spintronics; spin dependent transport in ferromagnetic metals; magnetoresistance (MR); ordinary MR; anisotropic MR; giant magnetoresistance (GMR); tunnel magnetoresistance (TMR); magnetic characterization techniques; applications of magnetic materials.

**PHYS 511: Plasma Physics I (3 credits)**
Introduction; occurrence of plasma; concept of temperature; Debye shielding; plasma parameter. criteria for plasma; applications of plasma physics; single-particle motion in electromagnetic field; uniform and non-uniform E and B fields; time-variant E and B fields. fluid description of plasma; wave propagation in plasma; derivation of dispersion relations for simple electrostatic and electromagnetic modes; introduction to controlled fusion; basic nuclear fusion reactions; reaction rates and power density; radiation losses from plasma; operational conditions.

**PHYS 512: Plasma Physics II (3 credits)**
Introduction to Inertial Confinement Fusion (ICF): Basic requirements of ICF; laser plasma interaction; ablation physics; hydrodynamic compression; energy transport. Nonlinear Plasma Theory: Introduction; quasilinear theory; conservation of particles, momentum and energy; coherent three waves interaction; three waves interaction with random phase; nonlinear landau damping. Fluctuation, Correlations and Radiations: Shielding of a moving test charge; electric field fluctuations in maxwellian and nonmaxwellian plasmas; emission of electrostatic waves; electromagnetic fluctuations and radiations; scattering of incoherent radiation from plasma density.
fluctuations; emission of radiation from a plasma; blackbody radiation; cyclotron radiation; source theory of radiation from a plasma.

PHYS 514: Laser Physics (3 credits)
Review of quantum mechanics; interaction of radiation and atomic systems; density matrix; homogeneous and inhomogeneous broadening of atomic transitions; gain and saturation effects; hole burning; optical resonators; gaussian beams; laser oscillation; rate equations for a laser oscillator; amplitude fluctuations and spiking; some specific laser system; Q-switching and mode locking; focusing of laser beams.

PHYS 515: Materials Science I (3 credits)
Crystallography; translational periodicity; crystal classes; crystal forms; point and space groups; crystal growth; methods of purification; zone refining; zone leveling; impurity control; methods of perturbing the concentration of impurities in semiconductors; formation of n-p and n-p-n junctions; different techniques of growing single crystals; structure of materials; ionic bond; covalent bond; metallic bond; Van der Waal’s bond; polymer chains; polymerization; polymer processing; ceramics; oxide and silicate. Structures; phase transformations; fabrication technology of semiconductor electronic devices.

PHYS 516: Materials Science II (3 credits)
Imperfections in crystals; impurities; vacancie; grain boundaries; dislocations; stacking fault; Frenkel and Schottky disorder; electrons and holes; colour centres; mechanical properties of metals; polymers and ceramics; elastic and plastic deformation; fracture, creep and fatigue phenomena; strengthening mechanis; anneal; effect of imperfections on the mechanical properties of materials; modulation spectroscopy for optical properties in solids; modulation techniques; wavelength modulation; temperature modulation; stress modulation; piezo absorption and piezo-reflectance; electric field modulation.

PHYS 517: Applied Nuclear Physics (3 credits)
Neutron Physics: Interaction of neutrons with matter in bulk; thermal neutrons; cross-section (measurement of total cross-section); diffusion theory; Fermi age equation. Nuclear Energy Sources: Nuclear fission as a source of energy; four factor formula; chain reacting system; neutron cycle; critical dimensions of a thermal nuclear reactor; calculation of multiplication constant for a homogeneous thermal reactor; heterogeneous thermal reactor; energy production in stars; thermonuclear reactions; CNO and
P-P cycle in detailed, controlled thermonuclear reactions and fusion reactor; age of galaxy. Radioactive Measurement and Tracer Techniques: Energy measurement; coincidence measurements; time resolution; measurement of nuclear lifetimes; trace element analysis; mass spectrometry with accelerators.

**PHYS 518: Quantum Electrodynamics (3 credits)**
Collisions between charged particles; energy loss and scattering; Bremsstrahlung method of virtual quanta; radiative beta process; radiation damping; self fields of a particle; scattering and absorption of radiation by a bound system; wave guides, guided waves, resonant cavities impedance and admittance; scattering.

**PHYS 519: Atomic and Molecular Physics (3 credits)**
Introduction of structure of atom; Stern Gerach experiment; Schrödinger equation; approximate methods; solution of Schrödinger equation for the hydrogen spectrum; Einstein's coefficients; transition probabilities; hydrogen fine structure; two-electron system; ground and excited states of helium; rotational spectrum of diatomic molecule; rational and vibrational spectra of diatomic molecule; Franck-Condon principle; Born Oppenheimer approximation; resume of concepts of collision phenomena in ionized gases and surfaces; total collision cross-section, its analysis and measurement; momentum transfer cross-section; diffusion swarm of electrons; mean energy and drift velocity; theory and experimental methods for measurements; elastic scattering in a central force field; ionization and excitation of atoms and molecules by electron impact; inelastic collisions between heavy particles at low energies and at high energies; theory and experimental description.

**PHYS 524: Non Linear Physics (3 credits)**
Approximate solutions to nonlinear differential equations; Resonance producing secular terms; Van der Pol oscillator; Doffing oscillator; Driven damped oscillators; Introduction to Chaos - One dimensional model, Dynamical systems in two dimensions, Dynamical system; Jacobian Matrix; Characteristic Equation; Stability Criteria; Dissipative and Conservative systems; Attractors and phase space volume contraction; Non intersection of trajectories and Determinism; Sensitivity to Initial Conditions (SIC); Brusselator Model; Introduction to Lorentz equations; Strange attractor Solitons Dispersion and Non Linearity; KdV equation, solitary limit; Relation between amplitude, speed and width; Sagdiyev Potential; Conservation Laws; Non Linear Schrodinger equation; Evolution equation for envelope function.
MPhil leading to PhD in Physics
Physics is a priority area in Pakistan's Science and Technology policy. It provides the foundation for other disciplines and plays a central role in many different sectors of industry. It includes both curiosity-driven fundamental research as well as applied research linked to emerging technologies. PhDs in Physics find employment in academia, research and development organizations, the energy sector, telecommunications industry and other fields in the private and public sector.

MPhil/PhD Courses
PHYS 701: Advanced Nonlinear Physics (3 credits)
Prerequisites: Nonlinear Physics –I; Plasma Physics
Chaos in Three Dimensions; Lorentz model and Galerkin Truncation; Three Dimensional dynamical systems; Fixed points; Nonlinear Schrodinger Equation; Pondermotive force; Derivation of the nonlinear Schrodinger equation; Solution of nonlinear Schrodinger equation; Modulational instability; Multidimensional Solitons; Kadomsteev-Petviashvilli equation; Solution and behavior; Drift waves; Vortices and piece wise linear solutions.

PHYS 702: Instabilities and Quasilinear Theory in Plasmas (3 credits)
Prerequisites: Plasma Physics 1 and Plasma Physics 2
Introduction; Classification of Turbulence States; Methods of Approach; Weak Particle Turbulence; Quasilinear Theory; Quasilinear Equation for Changes in a Plasma Distribution; Conservation of Particles; Momentum, and Energy in Quasilinear Theory; Landau Damping in Quasilinear Theory; The Gentle-Bump Instability in Quasilinear Theory; Plasma Wave Echoes; Initial value problem and perturbed distribution function; Coherent wave theory; Nonlinear Landau Damping; Literature.

PHYS 703: Optics and Photonics (3 credits)
Prerequisites: Undergraduate Electricity and magnetism; Quantum Mechanics Postulates of waves optics, Gaussian beam and its properties, Interferences and diffraction of light, Bragg gratings, Optical Fourier transform, Polarization of light, Optics of liquid crystal, Fiber Optics, Maxwell wave equation in material with instantaneous and impulse response, polarization response of a material, Kramers-Kronig relations, Classical Lorentz oscillator and dispersion, Drude model for the free electron gas, Drude conductivity and skin depth, Microscopic theory of refractive index, Zeeman Splitting, Faraday rotation, Stimulated absorption and emission, Rate equations, Laser oscillation, C.W Laser and Optimum output coupling,
Nonlinear Optical materials, Second harmonic generation, Laser cooling, Photonics switches and optical computing Nonlinear refraction and observation.

**PHYS 704: Plasmonics: Theory and its Applications (3 credits)**
*Pre-requisites: PHYS 705 or Electrodynamics*
Electromagnetics of metals, Introduction to plasmonics; Surface Plasmon Polariton (SPP) waves; Localized surface plasmons; Techniques for exciting surface plasmons using Kretschmann and Otto configuration; Wood’s Anomalies; Nanoplasmonics; Quasi-State approximation; Mie Theory; Long wave plasmonics on novel materials such as heavily doped semiconductors, semi-metals and conducting polymers; Fluorescence and near field microscopy for imaging of SPP waves; Nanofabrication and characterization techniques utilized in plasmonics applications in biosensors; plasmonics metamaterials.

**PHYS 705: Advanced Microscopy and Image Analysis (3 credits)**
*Prerequisites – Quantum mechanics, Solid State Physics / Condensed Matter Physics / Materials Science*
Develop an understanding of advanced microscopy, electron microscopies; scanning probe microscopy. The course has been designed to develop an interest and improve understanding in nano-science and nanotechnology. Students will learn broad applications of advanced microscopy in several research fields including nanomaterials, nanotechnology and nano-devices. To develop creative and critical thinking skills of the use of advanced microscopy in solving real world problems in research and material engineering.

**PHYS 706: Band Structure Theory in Solids (3 credits)**

**PHYS 707: Optical Properties of Solids (3 credits)**
Maxwell’s Equations and dielectric function, Analysis of Charge and Current densities, Properties of medium, Interaction of Light with medium, Absorption and dispersion, The Lorentz Oscillator, The Drude Model for
metals, Quantum Theory of absorption and dispersion, Direct and indirect inter band transitions, joint density of states and critical points, excitons, quantum confined structures, quantum well absorption and exciton.
PhD Physics

Admission to PhD programs is made in the research areas which are supported through research projects, and in which faculty research groups are currently engaged. Current PhD students are enrolled and working in both theoretical as well as experimental disciplines. Limited Teaching Assistantships are available.

Degree Requirements
The student is required to successfully complete a minimum of 30 credit hours for the degree. The details are as follows:

Course Work
Course work of 18 credit hours preferably in the first year is required to be completed, followed by a comprehensive examination for granting candidacy as a PhD researcher. A minimum of 70% score is required to pass the comprehensive exam.

Research
After successful completion of course work students are required to register for 12 credits of research work.

Foreign Expert Evaluation
The PhD Dissertation must be approved by at least two PhD experts from technologically/academically advanced foreign countries in addition to the local Committee comprised of internal and external examiners.

Plagiarism Test
A Plagiarism Test will be conducted before its submission to the two foreign experts, as described below.

Open defense
An open defense of Dissertation is an essential part of PhD Program after positive evaluation.

Research Paper
Acceptance/publication of at least one research paper in an HEC approved “X” category journal is a requirement for the award of PhD degree (“Y” in case of Social Sciences only). Or at least one publication in an ISI indexed impact factor carrying journal.
Copy of PhD Dissertation to HEC
A copy of PhD Dissertation (both hard and soft) must be submitted to the HEC for record in the PhD Country Directory.

Conduct of PhD Program
According to the HEC, there should be at least 3 relevant full time PhD faculty members in a department to launch the PhD program. The Biological Sciences department has eight (08) HEC approved PhD supervisors. The maximum number of PhD students under the supervision of a full time faculty member is three.

Program of Studies
- Students must register for courses during the first year
- A Comprehensive exam is conducted after completion of course work. A maximum of three attempts can be made to pass the exam
- Admission to PhD program will only be made in the research areas which are supported through research projects. In case of non-availability of research funding/grant, students may be registered with the approval of the Rector.

Please refer to Academic Policies for more information.

Course Descriptions

PHYS 701: Advanced Nonlinear Physics (3 credits)
MPhil/PhD Course
Prerequisites: Nonlinear Physics –I; Plasma Physics
Chaos in Three Dimensions; Lorentz model and Galerkin Truncation; Three Dimensional dynamical systems; Fixed points; Nonlinear Schroedinger Equation; Pondermotive force; Derivation of the nonlinear Schroedinger equation; Solution of nonlinear Schroedinger equation; Modulational instability; Multidimensional Solitons; Kadomsteev-Petviashvilli equation; Solution and behavior; Drift waves ; Vortices and piece wise linear solutions.

PHYS 702: Instabilities and Quasilinear Theory in Plasmas (3 credits)
MPhil/PhD Course
Prerequisites: Plasma Physics 1 and Plasma Physics 2
Introduction; Classification of Turbulence States; Methods of Approach; Weak Particle Turbulence; Quasilinear Theory; Quasilinear Equation for Changes in a Plasma Distribution; Conservation of Particles; Momentum,
and Energy in Quasilinear Theory; Landau Damping in Quasilinear Theory; The Gentle-Bump Instability in Quasilinear Theory; Plasma Wave Echoes; Initial value problem and perturbed distribution function; Coherent wave theory; Nonlinear Landau Damping; Literature.

**PHYS 703: Optics and Photonics (3 credits)**
**MPhil/PhD Course**
*Prerequisites: Undergraduate Electricity and magnetism; Quantum Mechanics*

**PHYS 704: Plasmonics: Theory and its Applications (3 credits)**
**MPhil/PhD Course**
*Prerequisites: PHYS 705 or Electrodynamics*
Electromagnetics of metals, Introduction to plasmonics; Surface Plasmon Polariton (SPP) waves; Localized surface plasmons; Techniques for exciting surface plasmons using Kretschmann and Otto configuration; Wood’s Anomalies; Nanoplasmonics; Quasi-State approximation; Mie Theory; Long wave plasmonics on novel materials such as heavily doped semiconductors, semi-metals and conducting polymers; Fluorescence and near field microscopy for imaging of SPP waves; Nanofabrication and characterization techniques utilized in plasmonics applications in biosensors; plasmonics metamaterials.

**PHYS 705: Advanced Microscopy and Image Analysis (3 credit)**
**MPhil/PhD Course**
*Prerequisites: Quantum mechanics, Solid State Physics / Condensed Matter Physics / Materials Science*
Develop an understanding of advanced microscopy, electron microscopies; scanning probe microscopy. The course has been designed to develop an
an interest and improve understanding in nano-science and nanotechnology. Students will learn broad applications of advanced microscopy in several research fields including nanomaterials, nanotechnology and nano-devices. To develop creative and critical thinking skills of the use of advanced microscopy in solving real world problems in research and material engineering.

**PHYS 706: Band Structure Theory in Solids (3 credits)**
**MPhil/PhD Course**

**PHYS 707: Optical Properties of Solids (3 credits)**
**MPhil/PhD Course**

**PHYS 708: Journal Club (2 credits)**
The course will be comprised of at least one presentation by each student on critical analysis of a recently published research article in international journals. The research article will be assigned to each student in the beginning of the semester. In addition student will be required to attend all presentations and actively participate in the weekly journal club.

**PHYS 799: Research (12 credits)**
After the successful completion of course work students are required to register for research work. A CGPA of 2.75 is required to be eligible for Research.
Collaborations

- Pakistan Council of Scientific and Industrial Research (PCSIR), Lahore
- Pakistan Institute of Nuclear Science and Technology (PINSTECH), Islamabad
- Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad
- Center for Advanced Studies in Physics (CASP), Government College University (GCU) Lahore
- Physics Department, GCU, Lahore
- Center for Solid State Physics (CSSP), Punjab University (PU), Lahore
- Physics Department, PU, Lahore
- Physics Department, University of Engineering and Technology (UET), Lahore
- Shaukat Khanum Memorial Hospital and Research Center, Lahore
Dr Monas Shahzad
Assistant Professor & Chairperson
PhD (University of Central Florida, USA)
Specialization in optical physics; research papers published in international peer-reviewed journals and conference proceedings.
Research Interests: Infrared optical properties of semiconductors, semimetals, conducting polymers, surface plasmon resonance (SPR), MEMS devices, solar cells. HEC approved supervisor.

Dr Sufian Aslam
Professor & Dean of Natural Sciences
PhD Molecular Gas Dynamics (Lomonosov Moscow State University, Russia)
Several publications in national and international research journals of Physics; participated in several national and international conferences and symposia; served in the Quaid-e-Azam University, Islamabad and in the Pakistan Council of Scientific and Industrial Research (PCSIR); joined FCC in 2005 as Professor of Physics; serving as Dean of Natural Sciences since 2011; currently Head of the Deans Council.
Research Interests: Atomic and molecular physics, atomic spectroscopy, condensed matter physics.

Dr Pervez Amirali Hoodbhoy
Professor & Zahra & Z Z Ahmed Endowed Chair
PhD Nuclear Physics, MS Solid State Physics (MIT, USA)
Recipient Baker Award for Electronics, Abdus Salam Prize for Mathematics; authored in 1990 “Islam and Science - Religious Orthodoxy and the Battle for Rationality”, now in 7 languages; in 2003 awarded UNESCO’s Kalinga Prize for popularization of science; also in 2003 invited to the Pugwash Council; sponsor of The Bulletin of the Atomic Scientists; received Joseph A Burton Award from American Physical Society (2011) and Jean Mayer Award (2011) from Tufts University. HEC approved supervisor.

Dr Fareeha Hameed
Associate Professor
PhD Neutron Physics (Technical University at Vienna, Austria)
Joined FCC in 2003; awarded HEC scholarship to do PhD; has several international publications; participated in numerous international conferences; HEC-approved supervisor; became Chairperson of department in 2013.
Research Interests: Imaging, neutron physics, materials science, nanophysics, energy applications.
Dr Sadia Zaheer  
Associate Professor  
PhD Plasma Physics (GCU, Lahore)  
Joined FCC in 2009; associated with GCU under the Salam Chair; research scholar under ICTP program for 6 years during which she also taught at GCU; PhD under HEC split program at Pittsburg University (USA) for research; HEC-approved supervisor; currently doing postdoctorate in University of Maryland, USA; author of several international publications.  
Research Interests: Theoretical plasma physics.

Dr Hamid Latif  
Assistant Professor  
PhD (UET, Lahore)  
Joined FCC in 2010; HEC-approved supervisor; currently on postdoctorate leave at Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China.  
Research Interests: Nanotechnology, thin films, radiation effects.

Dr Saqlain Abbas Shah  
Assistant Professor  
PhD (GCU, Lahore)  
Joined FCC in 2010; research papers published in international peer-reviewed journals and conference proceeding.  
Research Interests: Biomedical nanomagnetics, biomaterials. HEC approved supervisor.

Syeda Ammara Anwar  
Assistant Professor  
MPhil Solid State Physics (PU, Lahore)  
MSc Physics (PU, Lahore)  
Teaching at FCC since 2011; taught at PU, Lahore for five years; PhD candidate at UET, Lahore in field of nanophysics.  
Research Interests: Nanophysics and nanotechnology, material science, advanced electronics.

Dr Sarah Yasir  
Assistant Professor (Temporary)  
(University of Salford, UK)  
At FCC since 2012.  
Research Interests: Nonlinear optical properties of glass materials.
12. Department of Political Science
The Department of Political Science at Forman Christian University is one of the largest departments in Social Sciences. 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 Anwar M Barkat, Dr Arshad Karim Syed, 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 has been 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 Advisory Committee for the department provides valuable links with foreign scholars who help to establish connections with foreign universities.

**MPhil Political Science**

FCC’s MPhil Political Science program is designed to expose graduate students to concrete and theoretical knowledge and scholarly research and to empower them with critical thinking, analytical, research, and writing skills.

This program in Political Science builds on training received at the Baccalaureate level.

This program has a strong emphasis on research skills that will be beneficial for those pursuing careers in the government or private sectors, civil society, or teaching among others.

MPhil Political Science is a 2-year program comprising 30 credit hours of mandatory course work and a written thesis for 12 credits. Course work will involve eight core courses and two optional courses offered by the department. Teaching will be mostly in the form of lectures, seminars and colloquium. The program is designed to lead to PhD for those desiring to pursue a terminal degree in the field.

**Admission Criteria**
- Minimum of 16 years of education
- 4-year Baccalaureate/BSc (Hons) degree in Political Science, International Relations, History, Sociology, or any related discipline and a minimum of 2.5 CGPA
• A minimum Graduate Assessment Test (GAT) of 50%
• A 100-word statement of purpose included in the application, describing the reason(s) why you are applying to the program
• An exposition of approximately 500 words about a problem in political science in which you are interested
• Must pass the ACCUPLACER WRITEPLACER test at Level 5 or higher.

Acceptance is based on an overall evaluation of the candidate, including their academic achievement, statement of purpose, English language proficiency and general compatibility with the program of the department.

Degree Requirements
• Must complete 30 credit hours of course work including eight core courses and any two electives
• Must complete an MPhil thesis proposal before the start of the second year
• A 12 credit hour MPhil thesis must be submitted, defended and approved by the thesis defense committee within four years of starting the program
• A cumulative grade point average of at least 2.5 must be maintained for the totality of the MPhil course work

Course Descriptions

Core Courses
PLSC 501: Qualitative Research in Political Science (3 credits)
Research techniques and tools used in Political Science; gathering quantitative and qualitative evidence through the use of established social science research methods; analysis of data from published and archival sources.

PLSC 502: Theories of Comparative Politics (3 credits)
Conditions for democratic transition as a central research agenda in contemporary Political Science; failure of state development in the post-industrial era of globalization and economic integration. Module One: Traditional approach to the study of politics and comparative political approach. Module Two: Introduction to theories of political development, indicators and agents.

PLSC 503: Quantitative Research in Political Science (3 credits)
Introduction to Statistics; basic mathematical tools used in social science modeling and statistics; probability theory; theory of estimation and inference and statistical methods, especially differences of means and regression.
PLSC 504: Political Thought (3 credits)
Review of fundamental concepts of ruling parties, justice and resistance and its methods; equality and liberty in the society; examination of traditions to explain their possible normative implication for the present.

PLSC 505: Political Dynamics- Domestic and Regional (3 credits)
Domestic and regional political dynamics, both emerging and traditional; theoretical foundation related to practice; emerging domestic and regional entrants in socio-economic and political spheres; tensions or undercurrents in societies both in Pakistan and in the region, with the potential of turning into crises in the future.

PLSC 506: Theories of International Relations (3 credits)
Theories of international relations; the world order; conflicting situations; imperialism; the balance of power and integration as important modes adopted to avoid disorder; basic theoretical and analytical tools developed by political scientists to understand the complexities of international politics; features of the contemporary global system.

PLSC 507: Constitutional and Political Processes in Pakistan (3 credits)
Analysis of the political and constitutional developments in Pakistan since its creation; issues in constitution making; study of the constitutions of 1956, 1962 and 1973 and the amendments made; impact of constitution making on Pakistani politics.

PLSC 508: Foreign Policy Analysis (3 credits)
Constraints on foreign-policy making; impact of international institutions, multi-national corporations, as well as epistemic communities and global norms; regime type and strategic culture; process of foreign-policy making and the impact of partisan ideology, government veto players, bureaucratic and organizational politics, sub-state interest groups; public opinion and media; factors that influence foreign policy decision-making; focus on American, European and South and East Asian foreign policies.

PLSC 699: Research Thesis (12 credits)
Students will undertake research on a topic approved by the Departmental Committee and produce a thesis of at least 25000 words. The research proposal must have appropriate design and relate to the substantive and methodological understanding developed in the first year of the program through course work. Students will conduct research under the guidance of a faculty member of the Department of Political Science with expertise in
the relevant field.

**Optional Courses**

**PLSC 509: Political Sociology (3 credits)**
Study of political behavior constituting political sociology; importance of sociology in the study of political process; Vision of a Society as outlined by Karl Marx, Max Weber, and Talcot Parson; nature and distribution of power; political socialization; socio-political development and change encompassing nation-building/modernization, social and political movements—political parties/culture; social change focusing on social behavior and social order.

**PLSC 510: Devolution of Power and Good Governance (Emphasis on Pakistan) (3 credits)**
Concepts of local self government; study of the meanings, scope, methods, basic models, rationale and various challenges to the existence and smooth functioning of LSG; comparative analysis with the LSG institutions prevailing in UK & USA.

**PLSC 511: US Foreign Policy since 1945 (3 credits)**
Evolution of US foreign policy since 1945, the ideological underpinnings to understand the ‘why’ and ‘how’ of the US foreign policy-making; role of the President, the State Department and the Congress in the foreign policy-making process; sources of American foreign policy, the process, politics and structure of US foreign policy-making.

**PLSC 512: Foreign Policies of Regional Powers (China, India, Russia) (3 credits)**
Patterns of change and continuity in the foreign policy behavior of the regional powers after the Cold War; foreign policies of neighboring states; interplay in the domestic context, regional factors and systemic forces; dynamics of foreign policy behavior.

**PLSC 513: Current Issues in International Politics (3 credits)**
Issues in contemporary politics; collapse of Eastern Europe and disintegration of Soviet Union; New World Order; terrorism; Environmental concerns; democracy and human rights; globalization; changing role of United Nations; changing character of State; good governance; emerging regional blocks; ethnicity and international politics; Islam and New World Order.

**PLSC 514: International Organizations (3 credits)**
Emergence of international organizations; their concepts and debates;
specific focus on the emergence of United Nations and its roles; regional organizations; new economic grouping; challenges of international organizations

**PLSC 515: Politico-Strategic Dynamics of the Middle East (3 credits)**
Historic antecedents and contemporary issues that have shaped the Middle East; politico-strategic issues affecting the region; politics of the Arab-Israeli conflict; the rise of Arab nationalism; Iranian revolution and its impact on the region; American intervention in Iraq; the emergence of the 'Arab Spring'.

**PLSC 516: Crisis Management and Conflict Resolution (3 credits)**
Dynamics of crises and instruments available to manage them; available tools, techniques, and methods for conflict resolution.

**PLSC 517: Politico-Strategic Dynamics of South Asia (3 credits)**
Drive behind Muslim struggle for establishment of an independent state; dynamics of South Asian politics; terrorism, conflicts about Kashmir, Siachin and water; mutual mistrust, the arms race, nuclear weapons; politico-strategic dynamics of South Asia which damage relations between India and Pakistan.
Faculty

Dr Muhammad Younis
Chairperson, Assistant Professor
PhD (Huazhong University of Science & Technology, China)

Dr Syed Farooq Hasnat
Professor
PhD (University of South Carolina, USA)

Dr Wajid Ali Ranjha
Associate Professor
PhD (University of Adelaide, Australia)

Dr Ryan Brasher
Assistant Professor
PhD (Indiana University, USA)

Dr Nighat Noureen
Assistant Professor
PhD (University of Punjab Lahore)

Shakila Noor Sindhu
Assistant Professor
MPhil (GCU, Lahore)

Qalandar Memon
Assistant Professor
MSc (London School of Economics, UK)

Muneeza Mirza
Assistant Professor
PhD (Quaid-e-Azam University/ in progress)
MPhil (PU, Lahore)

Shehzadi Zamurad
Assistant Professor
PhD (Punjab University/ in progress)
MPhil (GCU, Lahore)

Advisory Committee
Dr Charles Kennedy
Professor
Wake Forest University

Dr Marvin Weinbaum
Distinguished Scholar
Middle East Institute

Dr Riffat Hussain
Dean of Social Sciences NUST

Dr Rasul Baksh Rais
Director, Institute for Strategic Studies

Dr Waseem Mohammed
Professor
LUMS
13. Center for Public Policy and Governance
The Center for Public Policy and Governance (CPPG) was established in 2007 as an academic, research and training institute. Its first activities were the launch of its Faculty Seminar Series and the Research and News Quarterly publication, while designing a degree program in Public Policy. In 2009 it introduced the Executive MA in Public Policy at FCC, geared towards public, private and non-profit sector managers. In 2014 it launched its MPhil in Public Policy Program. This first batch of Public Policy graduates will qualify in 2016. In both the above programs, students go through a rigorous regimen of theory and practice which leads to skill development in public policy. A final thesis is a requirement which is based on a research proposal, faculty presentations and public defense. CPPG will soon be initiating its PhD in Public Policy. The Center for Public Policy and Governance is committed to promote and disseminate teaching and research on public policy that focuses on citizen welfare, distributive justice, participatory development, humane governance and consultative and transparent policy processes.

The CPPG degree programs are located in the Business and Social Sciences Building. In 2013, with support from USAID Small Grants Project, we established the FCC Public Policy Research and Resource Center (PPRRC), designed to serve as a resource hub for the public policy research community. The Resource Center provides library services, a digital archive of public policy literature and statistical data sources. There is a functional library here where students, faculty and externals can become members as well as life long members. Research area and digitized data is available with printing and photocopy facility. CPPG research programs with external donors and entities are executed here.

In 2011 we also launched the Monograph series and published two studies titled ‘Pakistan, Afghanistan and US Relations: Implications and Future Directions’ and ‘Industrial Policy in Punjab: A Case Study of Sunder’.

Executive Masters Public Policy

The Center for Public Policy and Governance offers a 1-year interdisciplinary and analytical degree program in Public Policy. It is designed to cater to professional needs of mid-career leaders. The program integrates domestic requirements, philosophical dimensions and futuristic vision to help students formulate citizen-friendly policies and provide transparent governance to public policy beneficiaries. The program consists of three semesters requiring the completion of 32 credit hours. All classes are
scheduled in the afternoon to facilitate working professionals.

Classes are held four days a week while at least one academic seminar is organized every month. Students go through a rigorous program which includes theoretical frameworks and skills development as they finalize their research proposals after having gone through a series of discussions with their supervisor and presentations to the faculty. CPPG also organizes policy dialogues and short-term training.

**Admissions Criteria**
- Minimum 16 years of education from an HEC recognized institution
- At least four years of work experience for all candidates
- Submit the application form in Ahmad Saeed Building, Forman Christian College
- Succeed in the CPPG Entrance Test (4 sections: a) Comprehension and Précis Writing b) Quantitative (GMAT and SAT sort) c) Essay Writing d) Analysis and Reasoning
- Short listed candidates appear for an Interview

**Degree Requirements**
A total of 32 credits over 1 year distributed as follows:
- Four Core Courses (12 credits): CPPG 601, CPPG 602, CPPG 603, CPPG 604
- One Research Course (6 credits): CPPG 698
- Two Skills courses (5 credits): CPPG 605, CPPG 606, CPPG 610, CPPG 611, CPPG 612
- Any 3 courses out of 1 concentrations (9 credits):
  - Governance, Democracy and Institution Building: CPPG 650, CPPG 651, CPPG 652, CPPG 653, CPPG 654, CPPG 655
  - Environment, Demography and Urban Change: EDUC: CPPG 675, CPPG 676, CPPG 677, CPPG 678, CPPG 679
- All participants are required to take four core courses 1.) Introduction to Public Policy, 2.) Introduction to Statistics, 3.) Economics and Accounting Concepts, 4.) ICT Concepts and Tools for Policy Makers and Research Methods. The program offers two concentration areas:
  - Governance, Democracy and Institution Building (GDIB)
  - Environment, Demography and Urban Change (EDUC)
- The program ends with a Research Thesis, under active faculty guidance. Participants of the program are advised to develop a research paper on an actionable policy issue. This provides an
opportunity to the students to re-design public policy to influence the policy process of their interest and passion.

Course Descriptions

Core Courses

CPPG 601: Introduction to Public Policy (3 credits)
Provides an overview of key components of the policy analysis process: defining problems, selecting criteria to evaluate alternatives, developing policy design; construction of policy design; components of the policy analysis framework; participants are expected to write a position paper at the end of the course.

CPPG 602: Introduction to Statistics, Economics and Accounting Concepts (3 credits)
Provides basic statistical, economic and accounting knowledge; descriptive and inferential statistics; GDP, growth rate, and capital accumulation; analysis of financial statements; training for statistical and analytical calculations through computing software.

CPPG 603: ICT Concepts and Tools for Policy Makers (3 credits)
Trains students in various information and communication technologies (ICT) (word processing, document packaging, spreadsheets, presentation, correspondence and research); explores Management Information Systems and their evolution from standalone to enterprise systems.

CPPG 604: Research Methods (3 credits)
Familiarizes participants with research tools; qualitative aspects of research and report writing; research variables; designing a research proposals and questionnaires; research methods including, case study, participant observation, content analysis, and comparative studies.

CPPG 698: Research Thesis
Students work with their supervisors/faculty members regularly on their approved research projects. The faculty emphasizes that students learn to work on research projects independently. Students are required to meet with their supervisors twice a month to discuss progress.

Skill Development Courses

CPPG 605: Writing and Communicating Public Policy (2 credits)
Develops writing skills and familiarizes students with major written formats; communication through short paper exercises in writing, speaking and
and debating; examines real world cases on successful policies.

**CPPG 606: Policy Analysis: Policy Design (3 credits)**

*Advanced level course*

A follow-up of Introduction to Public Policy; Discusses the required public policy framework; ongoing debates about motivational and institutional foundations of public policy; defining policy problems and setting up policy agendas; issues around delivery, implementation and evaluation of public policies.

**CPPG 610: Cost Benefit Analysis (3 credits)**

Students learn to differentiate between economic and financial evaluation; challenges involved in their accurate measurement. The first part of the course concentrates on theory and concepts, while the second part evaluates existing public projects.

**CPPG 611: E-Governance and Technology Policy (3 credits)**

Follow up on ICT Concepts and Tools for Policy Makers’ course

Discusses how ICT can be used to improve departmental productivity; examines automation processes, re-engineering and their organizational implication; reassesses organizational processes in view of available technologies using case studies of government departments.

**CPPG 612: Quantitative Techniques for Policy Making and Administration (3 credits)**

*Pre-requisite: Introduction to Statistics, Economics and Accounting Concepts*

Covers basic regression models, research design, data collection, data processing and presentation of research findings; explores research papers to discuss public policy design, evaluation, monitoring and administration.

**Concentration Area Courses**

**Governance, Democracy and Institution Building**

**CPPG 650: Federalism and Decentralization (3 credits)**

Examines the theories of federalism and relates these to Pakistan’s constitutional development; cuts across the disciplines of political science and economics while theorizing the issues of power-sharing and autonomy.
CPPG 651: Political Institutions and Policy Process (3 credits)
Examines the relationship between political institutions and policy process; analyzes the political economy surrounding economic and social development in developing, newly industrialized, and transitional countries with a special emphasis on Pakistan.

CPPG 652: Governance and Management in a Multicultural Society (3 credits)
Discusses the conceptual framework for inter-cultural communications; exploring traditions of other regions; best practices, theories, techniques and policies relevant for governance and management.

CPPG 653: Leadership theories, Governance and Management Change (3 credits)
Conducted like a seminar where participants will be encouraged to situate and test their leadership and policy skills needed for public service; uses readings, discussions, case studies, simulations, and self-assessment exercises for skill development.

CPPG 654: Organization Theory and Human Resource Management (3 credits)
Explores theories and strategies of human resource management; organizational culture and structure, improvement and compensation; competency based-organizational skill set and career planning.

CPPG 655: Political Economy of Public Policy (3 credits)
Applies political economy framework to encourage participants to understand and analyze processes of public policy formulation and reform; relies on Game Theory to formulate and promote interactive decision making among the participants.

Environment, Demography and Urban Change
CPPG 675: Environmental Issues and Public Policy (3 credits)
Builds on the theoretical and empirical concepts of environmental science and policy; evaluates national and international environmental laws and policies; societies and states’ responses to concerns on environmental issues and what can be done to educate citizens.

CPPG 676: The Informal Sector (3 credits)
Explores the informality debate to include socio-cultural domains of informality; looks at the continuum between the formal and informal variety, their linkages and relationships in light of their impact on the poor.
CPPG 677: Demography and Security (3 credits)
Makes a comparative analysis of countries where demographic transition, has either led to reduced or intensified conflict; explores successfully managed public policies used to reduce conflict, improve quality of person power and security, and increase life expectancy.

CPPG 678: Urban growth, Environment and Security in South Asia (3 credits)
Seeks to understand the linkages between accelerated urbanization in South Asia and its impact on environment and human security, makes a comparative analysis of urban and environmental policies of South Asian states; relationship among economic, social and political factors.

CPPG 679: Gender and Population (3 credits)
Explores concepts, theories, policies and laws on gender and how gender, culture and religion reinforce gender identities; examines changing organization of gender relations with regards to education, marriage, family, reproductive health, migration and human trafficking.
The MPhil in Public Policy is a 2-year program that aims to contribute to the education of a new generation of public policy-makers and policy analysts. The program equips students with the skills necessary for an in-depth understanding of policy-making in emerging democracies.

Admissions Criteria
- Baccalaureate or 16 years of education from any HEC recognized university
- Open to all who fulfill the above criteria and have degree in Social Sciences/ Humanities/ Sciences.
- Submit the application form in Ahmad Saeed Building, Forman Christian College.
- Succeed in the CPPG Entrance Test (4 sections: a) Comprehension and Précis Writing b) Quantitative (GMAT and SAT sort) c) Essay Writing d) Analysis and Reasoning
- Short listed candidates will appear for an Interview

Degree Requirements
The coursework must be completed in one year. Students will be required to take four core courses, two in each of the semesters. The second year of the program is dedicated to the MPhil Thesis entailing original research on a topic of the participants' choice. The MPhil program shall not extend beyond three years.

A total of nine courses totaling 30 credit hours are studied as follows:
1. Four core courses from the following: CPPG 615, CPPG 616, CPPG 617, CPPG 618, CPPG 619, CPPG 620, CPPG 621, CPPG 622,
2. One research course: CPPG 699
3. Three from any of the listed concentrations as well as one additional course from a different group
   - Governance, Democracy and Institution Building : CPPG 625, CPPG 626, CPPG 627, CPPG 628, CPPG 629, CPPG 630, CPPG 631, CPPG 632, CPPG 633, CPPG 634
4. Participants in the MPhil Public Policy program are required to take a total of eight courses consisting of 3 credit hours each. Three of these courses must be taken from one of the 3 specializations offered; Governance, Democracy and Institution Building; Environment Policy, Demography, and Urban Change; and Peace Building and Conflict Management. Additionally, participants will need to take
1 course from an area other than their opted specialization. They will also be required to take 4 core courses, two in each of the semesters. The coursework must be completed in one year.

5. The second year of the program is dedicated to the MPhil Thesis and entails original research on a topic of the participants’ choice. The thesis is of 6 credit hours, bringing the total credits of the program to 30. The MPhil program shall not extend beyond three years.

6. Three concentrations, Foreign Policy and Strategic Studies, Culture Media and Globalization, and, Social Change and Sustainable Development are offered in the second phase of the program.

Course Descriptions

**CPPG 615: Public Policy: Theories and Analysis (3 credits)**
This course covers the formulation of public policies; its stages; theory and practice of policy analysis, issues surrounding the delivery, implementation and evaluation of public policies; and current debates and perspectives in public policy.

**CPPG 616: Research Methodology (3 credits)**
Familiarizes students with research methods in social sciences in general and public policy in particular; the epistemological and methodological concerns, both qualitative and quantitative, as they determine the nature and scope of research.

**CPPG 617: Economics and Public Policy (3 credits)**
Examines the economic aspects of government intervention in the economy; explores market failure, property rights, mixed goods; the nature of government as a producer and the political system as a mechanism for revealing consumer preferences; studies the economic literature on topics such as taxation, and the evaluation of public spending.

**CPPG 618: Strategic Leadership and Governance (3 credits)**
The course will analyze strategic leadership and governance to achieve efficient and effective outputs; will help to develop a critical understanding of the theory and practice of strategic leadership, governance and conflict management.

**CPPG 619: Human Development (3 credits)**
Looks at human development beyond the life-span development approach; the human behavior acquired, maintained and modified in a social environment and with economic, socio-cultural and political
constructs; Development Theory, theories of Social, Human and Institutional Capital; methodologies and strategies for human development within the context of state policy.

CPPG 620: Independent Study Research Report Writing (3 credits)
The course will help participants refine their thesis topic, develop their research design and complete a working outline for their project report. Emphasis will be placed on completing the literature review and methodology sections of the thesis. Students will be required to write a research report on the selected topics at the end of the semester.

CPPG 621: Technology and Public Policy (3 credits)
Explores the theoretical relationship of science, technology and society; policies regarding science and technology and Information and Communication Technologies to assess contemporary issues of governance and development will be studied.

CPPG 622: Institutionalism and Public Policy (3 credits)
Offers theory and practice on global institutions and policy issues; institutional causes and consequences of public policies; formulation of alternative and workable solutions to build sustainable institutions.

CPPG 699: Research (6 credits)
The research projects in MPhil are designed to make an original contribution to knowledge in public policy, governance, and politics. The faculty members help students learn theories, use them, theorize public policy issues, and conceive solutions to the problems of their choice.

Specializations and Elective Courses
Governance, Democracy and Institution Building
CPPG 625: Leadership Theories and Governance (3 credits)
The seminar-based course that explores skills needed for leadership and policy-making at the senior management level. Instruction is done through readings, discussions, case studies, simulations, and self-assessment exercises.

CPPG 626: Analyzing and Communicating Public Policy (3 credits)
Focuses on the application of the tools of policy analysis to inform and educate the public and to induce social change; the examination of why policies succeed or fail. Participants will be given exercises in writing and speaking, conducting meetings, making presentations and working with the media.
CPPG 627: Public Economics (3 credits)
Looks at the role of government and the ways in which its policies affect the economy; study efficiency and equity; the public sector and its decision-making; review of the sources of market failure: public goods, club goods, imperfect competition, externalities and information; and taxation.

CPPG 628: International Trade Policy and Globalization (3 credits)
Provides an understanding of the intellectual and practical problems those arise from the economic interaction between countries; existing patterns of international trade and assessment of the potential for answers; the global financial crisis, its causes and timing and consequent concerns for policy makers globally.

CPPG 629: Political Leadership and Policy Making in Pakistan (3 credits)
Studies how different political regimes and political leadership have affected policy making in Pakistan. It will study Pakistan's political history with a focus on policy priorities for specific political regimes.

CPPG 630: Federalism, Provincial Autonomy and the Impact of 18th Amendment (3 credits)
Studies the theory and practice of federalism; power sharing and autonomy; the 18th Amendment and its implications for governance in Pakistan; the issues of federation-province relations; the degree of differentiation and autonomy at all levels of the government.

CPPG 631: Local Governance and Community Development (3 credits)
Explores the theoretical and institutional framework for citizens' participation in governance; skills needed to devise a community inclusive in the decision-making process; understanding of citizenship, the civil society, the commons and participatory democracy; will explore case studies on organizing communities for efficient decision-making and provision of social services and budgeting.

CPPG 632: Democracy and Institution Building in Pakistan (3 credits)
Provides students with insight into the structure of key institutions in a functioning democracy; their consequent role in democratic consolidation; and the development of Pakistan's key institution.
CPPG 633: Political Economy of Public Policy (3 credits)
Applies a political economy framework to analyze processes of public policy formulation and reform; use of Game Theory to formulate interactive decision-making among the participants; policy reforms such as democratic economies, autocratic economies, transition economies; reforms in health, environment and transportation, trade and agriculture sectors will be studied.

CPPG 634: Marketing, Strategic Planning and Communication in Public and Non Profit Sectors (3 credits)
Explores how public and nonprofit organizations/sectors interact with their external environment; their sources of revenue generation; development of their brand name/identity; application of private sector marketing techniques, methodologies and strategic plans.

Environment, Demography and Urban Change
CPPG 640: Climate Change Policy and Governance in Asia (3 credits)
Critiques traditional governance paradigms; will discover better governance solutions to the climate change problem; the role of traditional governance in compounding the problem of exploitation of natural resources.

CPPG 641: Urban Change in South Asia and South East Asia (3 credits)
Explores the forces behind urban change; the factors which changes cities; the effects of this change on consumerism, democracy, economic growth and human wellbeing as well as on new social movements, fashions and fads, political struggle and identity politics; and the effect of these factors on the nation’s stability.

CPPG 642: Water Policy and Governance in South Asia (3 credits)
Analyzes water policies of Asian countries; developing critical insights to make and remake water policies; the effect of developmental activities on reservoir pollution; water management; policies and governance responses to the water crisis.

CPPG 643: Migration, Human Trafficking in South Asia (3 credits)
Examines linkages between migration, human trafficking and violence in South Asian States; the impact of internal and international migration on human trafficking and violence; its causes; and the response of different countries.
CPPG 644: Urban Governance and Security in South Asia (3 credits)
Studies the link between urban governance and security and the evolving nature of these challenges; the role of policing and civilian law enforcement in the South Asian context, and Pakistan in particular; the increased rural-urban migration and the resulting urban violence.

CPPG 645: Environmental Issues and Public Policy (3 credits)
Explores the nature and causes of existing environmental issues, with a particular focus on their impact for the developing world; existing environmental policies – both global and local – and the drivers behind policy development.

CPPG 646: Comparative Urban Policy (3 credits)
Studies contemporary debates in urban policy and planning at the local and international level, with a specific focus on South Asia; the evolution of public spaces; service delivery; and the capacity of the government to meet the needs of rapidly expanding urban centers.

CPPG 647: Migration and Urbanization (3 credits)
Studies the drivers behind migration to urban centers; how urban centers can be planned to successfully accommodate their ever-growing populations.

CPPG 648: Demography, Governance and Security (3 credits)
Studies the linkages between demographic changes in states and societies and how that helps in promoting security and in reducing conflict; a comparative analysis of countries where demographic transition has either led to reducing or intensifying conflict; and the lessons learnt from successful public policies.

CPPG 649: Gender and Population (3 credits)
Explores theories, policies and laws regarding gender; the changing dynamics of gender relations with regards to education, marriage, family and fertility; how culture and religion reinforce gender identities; reproductive health, migration and trafficking of women and children.

CPPG 656: Informal Economy and Urban Development (3 credits)
Explores the state’s lack of policy regulation or its implementation and how that leads to an existing policy framework which facilitates or creates hurdles for the informal economy; and its impact on urban development issues.
CPPG 657: Social Entrepreneurship (3 credits)
Introduces concepts, practices and challenges of social entrepreneurship; analytical frameworks, approaches and tools to achieve social and financial goals and to become effective social entrepreneurs.

Peace Building and Conflict Management
CPPG 660: Theories of Peace Building and Conflict Management (3 credits)
Explores conflict management and peacekeeping; methodologies, strategies and processes of conflict management and resolution based on the formulation of conflict due to differences in perspectives, human relationships, and communication problems.

CPPG 661: Conflict Analysis and Resolution Strategies (3 credits)
Analyzes the context, actors and dynamics of underlying conflict; the necessary peace-building strategies; tools and methodologies used for conflict analysis; issues such as stakeholder participation, ethics, gender and choice of qualitative versus quantitative research methodologies.

CPPG 662: Dialogue, Negotiation, Mediation and Facilitation Practicum (3 credits)
Builds upon the theoretical frameworks learnt in conflict management by applying conflict resolution strategies through practical exercises based on scenarios and role playing. Participants will explore the stages of negotiations and mediations, and apply techniques through a practicum involving case studies and simulation exercises.

CPPG 663: Minorities and Public Policy in Pakistan (3 credits)
Studies the consequences of diversity for nation building, policy-making and administrative governance; legal framework of the state, minority representation in political parties, administrative institutions and civil society advocacy groups’ highlighting minority rights; policy responses to the existing challenges; the relationship of an Islamic State with minorities and human rights and insecurity among minorities.

CPPG 664: Globalization and Transformation of Religion and Politics in South Asia (3 credits)
Analyzes the contradictory processes that globalization unleashes such as conflict, giving new sensibility to ethnicity, extremism, nationalism, cultural wars; the impact of globalization on politics; usage of religion in South Asia; and the effect of globalization on the styles and modes of governance.
CPPG 665: Diplomacy and International Relations in Peace Building (3 credits)
Explores conflict; tools and perspectives in diplomacy and international relations including multilateral and bilateral processes, Track I and II diplomacy; role of international institutions in conflict resolution and peace building; the history and politics of UN bodies; linkages between diplomatic history, institutional structure and international politics.

CPPG 666: Terrorism and Counter Terrorism Policies and Strategies (3 credits)
Explores the history of terrorism, the goals and structure of terrorist groups, their means of resource acquisition; their use of ideologies for recruitment and creating support; the role of states, its use of non-state actors for various policy objectives and political opposition; counter-terrorism methods.

CPPG 667: Radicalism and De-radicalization in Pakistan (3 credits)
Investigates perspectives and frameworks of radicalization; identify factors fueling extremism; discuss, formulate and analyze de-radicalization methodologies and strategies within the framework of socio-cultural, legal and the political economy of policy reforms in Pakistan.

CPPG 668: Disaster Management, Reconstruction and Rehabilitation (3 credits)
Looks at the theory and practice of disaster management by exploring its phases; politics of disaster management, leadership, and the role of agency coordination; tools for vulnerability mapping, early warning, infrastructure protection, emergency management and assessment of reconstruction and healthcare.

CPPG 669: Discourse, Media and Violent Extremism (3 credits)
Explores the relationship between media and violent extremism on the basis of discourse presented in the media; role of media; discourse of terrorist organizations and their use of media; comparison of mainstream media and terrorist narratives; reasons for their convergence or divergences.

CPPG 670: Security and Peace Building (3 credits)
Discusses the theory and practice of peace building; security dynamics of Pakistan and South Asia; Pakistan’s current security concerns and issues; peace building exercises from different parts of the world; polices and interventions that can be applied to Pakistan’s security environment.
Collaborative Workshops

CPPG has conducted policy workshops in collaboration with UNCTAD, Fulbright-USEFP, UNDP, DFID, CWS and many others. Such workshops encourage in-depth discussion with and among stakeholders to brainstorm policy issues or to develop a consensus on specific policy options.

CPPG’s Publications

The CPPG has published the following works through its Monograph Series:

- Rickshaw and Environmental Pollution: Assessing Punjab Government Rickshaw Policy, Raheem ul Haque (2009)
- Pakistan, Afghanistan and US Relations: Implications and Future Directions, Saeed Shafqat and Raheem ul Haque (2011)

Reports

- The Criminal Justice System as a Tool of Anti Terrorist Efforts in Punjab, Rabia Chaudhry (2014)
- Pattern of Electoral Violence in Punjab, Maheen Saleem Khosa (2014)

Position Papers

- Lahore Vision 2035:
  1. Governance and Management in Lahore, Khalida Ahson
  2. Transport Planning in Lahore, AR, Sarah Mushir Naqvi
  3. Water, Sewerage and Solid Waste Management in Lahore, Atif Hassan
  4. Real estate Markets in Lahore, Dr Sania Nazir Chaudhry
  5. Improving Trade in Lahore Region, Dr Imdad Hussain
Faculty

Dr Saeed Shafqat  
Professor and Director, CPPG  
PhD (University of Pennsylvania)  
Founding Director of CPPG; Fulbright Fellow; was Director of Fulbright Seminar in Pakistan; was Visiting Professor at MAISON DES SCIENCES DEL'HOMME, Paris and Adjunct Professor at LUMS; Quaid-i-Azam Distinguished Professor; Chair of the Pakistan Center and Adjunct Professor at SIPA, Columbia University; regional member on the Board of Directors, Regional Center for Strategic Studies; was Chief Executive, National Trust for Population Welfare (NATPOW); was Executive Director, NIPS; is President of PAP, and Executive Director and Chairman of the Board of Directors at SDPI; founder and former Chairman of the Department of Pakistan Studies at Quaid-i-Azam University; has served as Chief Instructor and Warden, Pakistan Civil Services Academy; was President (1990) of Institute of Regional Studies; has done consultancies on educational reform, governance, institution building, electoral reform and democracy for Asian Development Bank, UNDP, GTZ and USAID.  
Research Interests: Globalization, Security Demographics, Governance and Civil Service Reform.

Dr Sikandar Hyatt  
Distinguished Professor of History and Public Policy  
PhD (Quaid-e-Azam University, Islamabad)  
Has served at the National Management College and as Dean of the National Institute of Public Policy, worked at Quaid-i- Azam University, Islamabad, and retired as Professor and Chairman of the History Department; received the American Institute of Pakistan Studies Scholar-in-Residence Award; taught at Western Michigan University and Arkansas State University; was selected for the Fulbright Visiting Specialists Program: ‘Direct Access to the Muslim World’ and taught at Juniata College, Pennsylvania; has published three books; is currently working on a biography of Jinnah as part of the Routledge Historical Biographies Series.

Dr Imdad Hussain  
Assistant Professor  
PhD (National Graduate Institute for Policy Studies, Tokyo)  
Researches issues and expressions of transformations in urban Pakistan, Islamic transformations, education and urban economy; is currently leading USAID-CPPG joint project, ‘Program Design for Policy, Institutional, and Regulatory Reform in the City of Lahore’, which focuses on ways to reform institutions and policies related to transport, governance, water supply, sanitation and solid...
waste management, urban economy, real estate and land use in the region of Lahore; has published research on water, gender-based violence, minorities, religious harmony and urbanism.

Raheem ul Haque
Research Fellow
MPP (SAIS Johns Hopkins University)
Has spent 11 years in the technology industry, concentrating on Business Process Analysis, Project Lifecycle and Program Management; co-editor of CPPG’s Research and News Quarterly journal; recent research include papers on Public Policy, Public Administration and Governance; Environmental Pollution, Demand-Based Training Project, PITB; Market Assessment and Policy Recommendations for Software Technology Park.

Research Interests: The Informal Sector and the Role of ICT for Governance and Development.

Rashid Munir Kahlon
Research Fellow
MSc (Adam Smith School of Economics, University of Glasgow)
Has 10 years of teaching, research and administrative experience at Lahore School of Economics, COMSATS and University College Lahore among others; has wide experience of working with leading international educational institutions including London School of Economics and Political Science and University of London International Programs in the fields of Economics, Management, Finance and Social Sciences; has hands-on experience in curriculum development; has published several academic papers and attended international conferences in his areas of interest.

Research Interests: International Economics, FDI, Stock Exchange Efficiency and Monetary Economics.

Hajra Zafar
Research Fellow
MA (Boston University)
Was selected for USAID-funded scholarship program, WLTIE (Women’s Leadership Training in Economics) for her graduate studies; has researched on Social Justice and Climate change, Analyzing Changes in Economic Policies of Poland: A Historical Perspective and The Basel approach to Bank regulation, Industrial Policy in Punjab: A Case Study of Sunder Industrial Estate, Changing trends in the lifestyle of Pakistani youth; is Co-editor for the Research and News Quarterly journal of the Centre; has acted as a focal member of the CPPG team in forming collaboration with strategic partners and institutions for the seminars and policy dialogues held at the Centre.

Research Interests: Environmental policy, Development strategies and Industrial policy.
Visiting Faculty

Javed Masud SI
Advisor and Visiting Fellow
MA (Boston University)
MA (PU, Lahore)
Has over thirty-five years experience in public and private sectors; founder and former CEO of Pakistan Credit Rating Agency Limited (PACRA); has worked in the Ministry of Finance, Planning Division and Production Division; served as Senior VP of Bankers Equity Limited, Member Corporate Law Authority; currently Member, Provincial Finance Commission; has extensive financial sector and privatization, consulting experience with the World Bank, IFC and United Nations.


Tariq Mahmud
Visiting Fellow
MA (University of East Anglia)
MA (Dhaka University)
Certificate (US Department of Agriculture)
Career civil servant with a vast experience of policy formulation and implementation; has served as Federal Secretary Communications, Secretary Interior and Secretary Food and Agriculture, Additional Chief Secretary, Planning and Development, Principal Secretary to Governor Punjab, Senior Member of the Board of Revenue, Secretary Home, Health, Information and Culture, Secretary to Chief Minister Punjab, Commissioner Bahawalpur, and Deputy Commissioner in various districts; has managed mega infrastructure projects; made considerable headway in Counter Insurgency Measures, border controls and managed migrations; represented Pakistan at several regional and multilateral moots; was unanimously elected Chairman, Asian Highways Network Conference; has been visiting faculty, Civil Services Academy; designed a module on Rural Development for NIPA Lahore.

Research Interests: Ethnicity and change management issues for institutional stability, and legitimacy in authoritarian regimes and newly evolving democracies.

Afzal Latif
Visiting Fellow
MA (University of Sussex)
Has worked for the provincial governments of NWFP and Balochistan as well as the Government of Pakistan; has served in the provincial departments of Education and Planning and Development, and the Establishment Division of the federal government; has worked closely with the International Fund for Agricultural Development, the Asian Development Bank, and the Japan Bank for International Cooperation; has designed rural development initiatives in Vietnam and civil service reform in Afghanistan.

Research Interests: Institutional Development and Civil Service Reform.
Fareed Mahmood Chaudhry
Visiting Fellow
MPA (Columbia University)
MBA (PU, Lahore)
Has over 24 years of professional experience in the public as well as private sector; has worked as Electrical Design Engineer in NESPAK (Pvt) Ltd; has been involved in policy formulation for autonomous Punjab Government organizations; has developed a training module on local energy and environment policymaking for the China Ministry of Housing and Urban-Rural Development; has conducted an environmental audit of the Jinnah Gardens.


Dr Amna Imam
Visiting Fellow
PhD Policy, Planning and Development (University of Southern California)
Has worked with the Central Superior Services, Pakistan Administrative Service, Governments of Sindh and Punjab; is currently working with the Civil Services Academy, Pakistan Administrative Service (PAS) Campus, Lahore; has worked on City of Inglewood Feasibility Study to Enhance Bus Transit Center Development, Spatial Research on The Changing

Research Interests: Natural and built environment, sustainability, and inter-sectoral governance.

Muhammad Abdullah Khan Sumbal
Visiting Fellow
MSc Development Administration and Planning (University College, London)
Is a career Civil Servant and has served in different provincial departments; drafted the Interim Poverty Reduction Strategy Paper for the Government of the Punjab which involved considerable research and economic/financial analysis; has also been Visiting Speaker at the Civil Services Academy and Lahore University of Management Sciences.

Research Interests: Fiscal Decentralization in Developing Countries.
14. School of Management (SoM)
The School of Management was established in 2005 and has gained a reputation for the quality and diversity of its programs. At SoM we offer a full-time 2-year MBA, a modular 2-year Executive MBA, a 4-year BS (Hons) Business with specializations in Accounting, Finance, Marketing & Sales and Operations Management, as well as short duration executive education courses.

The MBA in particular aims to develop the functional competence any contemporary manager is expected to have in today’s increasingly global business environment. The program has a general management orientation without compromising any essentials of the core functional areas. The Executive MBA has been designed for optimal flexibility while retaining the rigor of comparable international programs.

Three factors give SoM its distinctive edge. First, our faculty specializes in consulting and case writing and has close linkages with the corporate sector. Many of our faculty members are members of various boards as well as providing policy advice to the public sector. Second, we offer three specializations in our Baccalaureate program. Third, the triangulation of our pedagogical method combines cases with conceptual understanding of specific subjects, including experiential exercises.

Our mission is to provide a fresh approach to business education through a highly motivated faculty in a young and challenging program resulting in graduates who are bold, can think on their feet, and can adapt themselves to any environment or set of circumstances while adhering to strong values.

**Masters in Business Administration**

This is a two-year program with a general management focus. The program aims to develop high quality professionals who will be agents of change through a combination of their creativity, initiative, competence and adaptability. The learning experience is highly interactive and offers the best mix of cases, simulations, and lectures to ensure that students gain both from theory and best practice of business. There is a strong emphasis on understanding and managing modern enterprise in the Pakistani environment. The key to this is the varied experience of the SoM faculty.

We want our students to have a strong entrepreneurial spirit and be able to adapt to challenging situations in diverse environments. Over the last two years our graduates have gone into a variety of professions, including the corporate sector, financial sector, charitable organizations, family businesses, academia, government, and further education. The program is
designed to build upon skills and techniques developed in the first year and their application to more complex and integrated business issues in the second year. Students take a total of 72 credit hours (24 courses) as well as undertaking a mandatory Internship between the first and second year of the program. Each course is worth three credit hours.

Admission Criteria
Applicants are expected to have:

- A strong application form showing diversity of strengths and interests
- 16 years of education or professional equivalence as recognized by the HEC
- A good GMAT or Forman Management Aptitude Test (FMAT) score
- A successful interview
- Work experience is desirable but not compulsory.

Degree Requirements
Students must maintain a CGPA of 2.50/4.00 to graduate from the MBA program. Outstanding students are recognized and honored through awards sponsored by Engro Foods Limited and the Abdul Karim Medal for Business Strategy, sponsored by a former Dean of the SoM.

Course Descriptions

Year 1

BUSN 501 Financial Accounting (3 credits)
Focuses on construction and composition of financial statements, consolidation and group accounts, treatment of leasing, etc.

BUSN 506 Management Accounting (3 credits)
Focuses on critical concepts and tools of cost accounting, including CVP, planning and control, allocation, revenues, cost information, etc.

BUSN 510 Applied Quantitative Techniques (3 credits)
Introduces fundamental mathematical and statistical tools for decision making including data collection for surveys, modelling, evaluating quantitative data, etc.

BUSN 521 Managerial Economics (3 credits)
Applies microeconomic analysis to specific business decisions, including production analysis, pricing, capital budgeting and risk assessment.

BUSN 522 Macroeconomics (3 credits)
Examines determinants of aggregate trends in the economy, including
national income, unemployment, inflation, investment, and international trade, etc.

**BUSN 531 Principles of Finance (3 credits)**
Focuses on critical concepts, tools and techniques, including time value of money, valuation, short-term financing, cost of capital, and risk-return analysis.

**BUSN 550 Organizational Behavior (3 credits)**
Investigates the impact of individuals, groups, and structures on behavior within organizations, including leadership skills, team structures, and conflicts, etc.

**BUSN 560 Operations Management (3 credits)**
Equips students with understanding of efficient management, focusing on interfunctional coordination to meet output targets, etc.

**BUSN 570 Logic & Critical Thinking I (3 credits)**
Makes students more effective professionals by enhancing critical analytical and communicative skills which impact on managerial performance.

**BUSN 571 Logic & Critical Thinking II (3 credits)**
This is a follow on course from BUSN 570.

**BUSN 580 Marketing & Sales Management (3 credits)**
Takes students across the spectrum of marketing concepts and application, and introduces critical issues faced by the salesforce in operations.

**BUSN 585 Marketing Research & Analysis (3 credits)**
Covers concepts, tools, and techniques used in marketing research, including consumer behavior, research methodolgies, and statistical applications.

**Year 2**
**BUSN 601 Reporting & Governance (3 credits)**
Introduces students to the critical issue of corporate governance and the specific role of reporting standards in achieving the aims of governance.

**BUSN 605 Management Control Systems (3 credits)**
Focuses on importance of implementation of control systems in organizations and develops understanding of differences in selection of control systems.
BUSN 622 Topics in Investment & Finance (3 credits)
Focuses on more complex issues such as portfolio management, dividend policy, international finance, financial engineering and corporate finance.

BUSN 625 Business Ethics (3 credits)
Focuses on the importance of adhering to values and ethical behavior in the practical business environment.

BUSN 630 Management Information Systems (3 credits)
Focuses on the importance of implementation of efficient data collection and processing systems for operational efficiencies.

BUSN 640 Entrepreneurship (3 credits)
Challenges the young minds to generate innovative business ideas and to go through the idea implementation phase in detail.

BUSN 650 Human Resource Management (3 credits)
Focuses on importance of HR, its evolution as an organizational function, and the challenges of finding the right HR on national and international levels.

BUSN 660 Business Law (3 credits)
Focuses on critical components of law which impact on business practice in Pakistan. These include corporate law, company registration, and labor laws.

BUSN 670 New Product Development (3 credits)
Focuses on business innovation, new products and technologies for customer satisfaction, while maintaining quality and competitive advantage.

BUSN 690 Business Strategy 1 (3 credits)
Focuses on developing an understanding the conceptual frameworks in the field of business strategy.

BUSN 692 Business Strategy 2 (3 credits)
This is a follow on course from BUSN 690 and focuses more on analytical thinking and contemporary and relevant reference to local environment.

BUSN 695 Managerial Negotiations (3 credits)
Prepares the students for carrying out effective negotiations in the practical business world.
**BUSN 698 Internship (3 credits)**
An internship is undertaken between the first and second year of the program.

## Executive Masters in Business Administration

### Admission Criteria
Applicants are expected to have:
- A minimum of 14 years of education (i.e. candidates with conventional 2-year BA/BS can apply)
- A minimum of 4 years of work experience
- Passed the Forman Management Aptitude Test (FMAT)
- Successful interview

### Degree Requirements
The Executive MBA has a unique structure. A total of 66 credit hours are earned through 14 modules and one project. Each module is ten days of instruction (3 hours a day) in the evening, with one full day (Saturday) for a total of 40 hours of classroom contact hours per module. With online assignments, there are 48 contact hours per module (as per international standards). Thus, each module, with the exception of the last, is 4 credit hours.

The 14th and final module includes a Business Simulation game which will enable the students to apply all the concepts learnt during the entire program. Therefore, this module is 6 credit hours. Students will also be required to undertake a project under the supervision of a faculty advisor. This project will be spread out over a period of almost one year and is 8 credit hours.

## Program Modules
The modules are taught in the following order:

**BUSN 675: Management Communications (4 credits)**
Critical analyses of communication processes with practical applications of skills learnt.

**BUSN 624: Managerial Economics (4 credits)**
Key economic principles and their applications in the business and economy.
BUSN 610: Quantitative Methods for Business (4 credits)
Basic statistical tools used by businesses for interpreting data.

BUSN 654: Organizational Behavior (4 credits)
Human behavior and its impact on teams; work-groups and organizations.

BUSN 604: Financial Accounting (4 credits)
Basic accounting principles; preparation and analyses of key financial statements.

BUSN 684: Marketing and Sales Management (4 credits)
Critical marketing concepts, their applications and innovation; sales force and channel management.

BUSN 609: Cost Accounting & Control Systems (4 credits)
Cost accounting, budgeting and management of control systems.

BUSN 665: Law, Ethics & Governance (4 credits)
Impact of key laws and regulations on corporate practices; significance of corporate governance.

BUSN 628: Financial Management (4 credits)
Basic tools of financial and investment management; corporate value addition through informed financial decision-making.

BUSN 664: Operations Management (4 credits)
Dynamics of the product; design, development and production processes.

BUSN 655: Human Resource Management (4 credits)
Managing human capital in an organization.

BUSN 694: Business Strategy (4 credits)
Holistic perspective on decision-making in organizations.

BUSN 634: Entrepreneurship (4 credits)
Business start-ups, resources required, risk analysis.

BUSN 674A: Management Information Systems (MIS) (4 credits)
Integration of all the modules; design and development of information systems; Business Process Re-engineering; technological applications to businesses.
BUSN 674B: Business Simulation (2 credits)
Exposure to actual market conditions through computer-simulated environment; decision-making and analysis of impacts on business management.

BUSN 699: Business Project (8 credits)
Overall application of knowledge, skills and tools to current business perspective under the supervision of a faculty adviser.
Dr Bashir Ahmad Khan  
**Professor of Finance**  
**DPhil (Oxford University, UK)**  
Taught banking and finance at LUMS for 18 years; Associate Dean of Executive Education at LUMS; published in books and journals abroad in the areas of financial liberalization, deregulation, and financial markets; consulted for a number of Pakistani organizations; served on the Boards of Askari Investment Management Ltd, the Securities and Exchange Commission of Pakistan, and Askari Bank Ltd; Commonwealth Staff Scholar at Oxford University (1990-92); Charles Wallace Trust Fellow (2003), sponsored by the British Council.  
**Research Interests:** IPO performance of technology companies; governance of non-profit organizations.

Mr Wasif M Khan  
**Professor of Entrepreneurship**  
**MPPM (Yale University, USA)**  
**MSME (Oregon State University, USA)**  
Founding faculty member at Graduate School of Business Administration of LUMS; taught at LUMS for 18 years and pioneered teaching of graduate level Entrepreneurship and Management Control Systems in Pakistan; part of faculty team which taught first ever Executive Development Program offered by LUMS; written over 25 business cases; research on Family Firms, Management Control Systems, and Entrepreneurship has been published in refereed journals and conference proceedings in Europe, USA and Asia; management consultant to Pakistan’s leading business groups and numerous growth oriented family firms.  
**Research Interests:** Interplay of theory and practice in growing firms operating in a low-trust context; currently working on developing cost and control systems for one of Pakistan’s largest textile groups.

Dr Akmal Hussain  
**Distinguished Professor**  
**DPhil (University of Sussex)**  
Lectured on economics in Distinguished Academic Visitor series at the University of California, Riverside, and as part of the Distinguished Speaker Series lectured at the Jamia Millia Islamia New Delhi; Gave presentations on development issues at Harvard University, United Nations University, Chinese Academy of Sciences and for Foreign Ministries of governments including the UK, Japan, the Netherlands, and the USA; served as Chairman of Working Group on Institutions for Development in Panel of Economists to advise the Government of Pakistan on economic policy; Chairman of Working Group on Poverty Reduction Strategy and Human Resource Development for Tenth
Dr Michael Murphy  
Adjunct Professor of Business and Economics PhD (UCLA, USA)  
Appointed Charles Walgreen Fellow at University of Chicago’s Graduate School of Business; joined Economics faculty at Southern Methodist University; in 1978 embarked on a career in business, serving as an Executive for over 20 years at AT&T, Qwest and, most recently, as the President and CEO of Wytec, Inc.; published several papers in areas of market regulation and price controls; member FCC Board of Directors and Board of Governors.  
Research Interests: Industrial organization, economics of the firm, government and industry.

Dr Farid A Malik  
Professor of Operations Management  
PhD (Union Institute, Cincinnati, USA)  
Principal Consultant, EMR Consult, Lahore; involved in energy projects e.g. Thar Coal and development of the mining sector of Pakistan; executive member of Concerned Citizens of Pakistan (CCP), a pressure group involved in public welfare causes and rule of law; founder member of Pakistan Professionals Institute (PPI); over 20 publications; holds four US patents; currently working on Green Energy project at FCC which includes solar energy, biogas and sewage water recycling for campus.

Research Interests: Development Policy, & Institutions.
Research Interests: Collaborative development, technology transfer, operations and project management, re-engineering.

Muntazar Bashir Ahmed, FCA
Visiting Professor of Accounting
Fellow, ICAE&W (UK)
Fellow, ICAP (Pakistan)

Sufian Mazhar
Associate Professor of MIS
MBA (McGill University, Canada)

Worked as a consultant in Canada with McGill International Consulting Group and Kraft Canada; associated as Principal Consultant with Viristek, based in Canada, USA and Pakistan; currently serving on board of Askari Investment Management Ltd, an asset management company.

Research Interests: New product development, MIS.

Dr Aamir Ali Chughtai
Associate Professor of Organizational Behavior
PhD (Dublin City University, Ireland)

Post-doctoral researcher at Dublin City University, Ireland; Deputy Registrar at Lahore School of Economics; area sales executive at Nestle Pakistan; published in various international journals.

Research Interests: Work engagement, organizational trust, job satisfaction, workplace commitment, higher education management.

Dr Rao Raza Hashim
Assistant Professor of Business Law & Ethics
PhD (University of Warwick, UK)

HEC Scholar; worked with well-known legal firms; taught in LLM program at Punjab University; expertise in contract law; corporate law and governance, international economic law including WTO, trademarks and copyright law; consulted with major commercial organizations; acted as legal advisor for several government departments for contentious and non-contentious matters; member Punjab Bar Association; member Lahore High Court Bar Association.


Ayesha Naweed
Assistant Professor of Management & Director of Executive Education
MBA (LUMS, Pakistan)

Extensive corporate experience in both public and private sector in Pakistan; management consultant; CEO of an executive training firm for over 10 years; specialist instructor for executive education; taught at LUMS and UET.
Zeeshan Bhutta  
Assistant Professor of Management  
MBA (LUMS, Pakistan)  
Over 10 years experience working in Pakistani media; former Resident Editor and one of founding-editors of Daily Times; wrote and edited news reports, columns and editorials for many years; helped team launch Pakistan’s first Berliner – Pakistan Today; has since been advisor to COO Pakistan Today; hired by GEO network as editor for their English language channel; responsible for testing, interviewing and hiring the team across Pakistan, with Directors of Geo network.  
Research Interests: Tax and audit issues in Pakistan; corporate governance.

Zeeshan Bhutta  
Assistant Professor of Management  
MBA (LUMS, Pakistan)  
Over 10 years experience working in Pakistani media; former Resident Editor and one of founding-editors of Daily Times; wrote and edited news reports, columns and editorials for many years; helped team launch Pakistan’s first Berliner – Pakistan Today; has since been advisor to COO Pakistan Today; hired by GEO network as editor for their English language channel; responsible for testing, interviewing and hiring the team across Pakistan, with Directors of Geo network.  
Research Interests: Tax and audit issues in Pakistan; corporate governance.

Mannan Amin  
Assistant Professor of Entrepreneurship & Strategy  
MSc (Stanford University, USA)  
Teaching since 2008; co-founder of mobile games and apps development studio Tintash, thought leader, mentor, and connector within the local mobile games and technology startups space; consulted for global tier companies including Chillingo/EA, BBCWorldwide/LonelyPlanet, and PocketGems. Worked with Fortune 10 Consultant, Behnam Tabrizi; consulted for GlobalGiving.org and co-founded OurShelves.com; Stanford-trained in entrepreneurship by Steve Blank (founder of Customer Development & Lean Startups Movement) and within innovation at the Hasso-Plattner D School (IDEO led school of cross disciplinary innovation).  
Research Interests: Competitive strategy and cultivation of the Pakistani entrepreneurial ecosystem, enabling global/remote entrepreneurial partnerships to leverage advantages of different locations.

Bilal Hussain Awan, ACA  
Assistant Professor of Accounting  
Associate, ICAP (Pakistan)  
Worked as audit consultant at S M Masood & Co, a member of Nexia international; presently an audit consultant at Muniff, Zia-ud-din & Co, a member firm of BKR International; also a consultant to EPA (Pvt) Ltd which is engaged in manufacturing and tax and financial advisory services to SECCO Pak (Pvt) Ltd; running an NGO.  
Research Interests: HR solutions for the banking industry.

Irtifa Nasir  
Assistant Professor of Marketing  
MAdv (University of Florida, USA)  
Fulbright alumna; professionally
associated with marketing communications industry for over 8 years working in diverse areas from creative development to strategic planning; co-founder & director at TTS Global, a management consulting & training firm; professional corporate trainer; marketing consultant for for iDroid Corp, an international technology startup and OPM Analytics, a digital design and analytics firm; actively leading Joy Drive; a growing non-profit initiative for underprivileged children; co-founder of creative hotshop Thinkbox Communications; taught at Lahore School of Economics. 

**Research Interests:** Exploring creativity, culture and emotions in advertising; consumer behavior.

**Muhammad Salman Bilal**  
**Assistant Professor of Operations Management**  
**PhD Candidate (UET, Pakistan)**  
Professional Engineer with double post graduations in the fields of Engineering & Management; Project Manager (PMP®), Risk Manager (PMI-RMP®), Project Scheduler (PMI-SP®), Agile Practitioner (PMI-ACP®) & Quality Specialist (ASQ-CSSGB®), conferred by USA based PMI® & ASQ® after ratification of proven experience in high end Petroleum, Petrochemical, Automation & Manufacturing Industries; transcontinental experience with Schlumberger Oilfield Services; part of Engro fertilizer management team who envisioned Engro Foods; CEO & principal consultant of MSB training consultancy supporting TOTAL, PTCL, OMV, and Engro primarily for PMI® USA certifications; project manager with multinational NGO.  

**Research Interests:** Risk management and agile waterfalls.

**Mariam Khalid**  
**Assistant Professor of Business & Economics**  
**MA (University of Manchester, UK)**  
Worked in media industry and hosts economic affairs program on TV; consultant in economics; extensive teaching experience.  

**Research Interests:** Emerging markets and trade-related issues.

**Dr Junaid bin Jahangir**  
**Adjunct Faculty of Business & Economics**  
**PhD (University of Alberta, Canada)**  
MA (University of Alberta, Canada) Teaches at University of Alberta; presented papers in conferences on empirical methods in Energy Economics; assisted Parkland Institute at University of Alberta with budget analysis; received Department of Economics Contract Instructor and Graduate Student Teaching Award (2012-2013 and 2013-2014); William Hardy Alexander Award for Excellence in Undergraduate Teaching (2014).  

**Research Interests:** Energy efficiency and environment.
Uzma Khan  
Adjunct Faculty in Business Communications  
MA (Webster University, Switzerland)  
PG Cert TESOL (University of Toronto, Canada)  
Cert TEFLA (Cambridge University/Royal Society of the Arts, UK)  
Currently Director IEAP at FCC; Christian College; over 30 years work experience in corporate and development sectors and in academic institutions; taught in Executive Education programs at LUMS (2002-2007); teaching at the SoM since 2007; Board Member HomeNet Pakistan.

Zainab Shamail  
Adjunct Faculty in Business Communications, Business Development Manager at SoM  
MSc (University of Manchester, UK)  
Degree in Corporate Communications and Reputation Management; actively involved with in-house employee training; freelance content writer; working for business development for 5 years.  
**Research Interests:** Evolving stakeholder relationships, corporate social responsibility, and crisis communications.
15. Administration
Administration

Office of the Rector

Dr James A Tebbe
Rector

Eileen Dass
Executive Assistant to the Rector

Office of the Vice Rector

Dr Joseph Jones
Vice Rector for Academic Affairs

William Alfred
Administrative Associate to Vice Rector

Aisha Kanwal
Director Evening Programs

Academic Office

Hina Abel
Director Academic Office

Sharoon Javed
Degree Audit Coordinator

Rashid Emmanuel
Registration Coordinator

Sara Pervaiz Chugtai
Graduate and Scheduling Coordinator

Mariah Rauf
Academic Services Adviser

Damien Honey
Academic Services Adviser

Controller of Examinations

Dr Mian Wajahat Hussain
Controller of Examinations

Student Affairs

Cheryl Burke
Dean of Students

Kashif Sharoon
Director Student Affairs

Prof Muhammad Nawaz
Chief Proctor

Admissions Office

Amber Mall
Director Admissions

Suleman Khairullah
University Recruitment Officer

Stephen John
Office Manager

Financial Assistance Office

Kamil Shamshad
Director Student Financial Aid

Hostels

Haroon Dawood
Director Residential Life

Robin Dass
Manager Food & Beverages
Mercy Health Center

Shawna Person
Health Services Director

Aisha Ateeq
University Counselor

Ivan Suneel Samuel
University Counselor

Career Services Office

Romel John
Director Career Services

Ameek Asif George
Manager Internships

International Education Office

Kiran Salamat
Director International Education

Ewing Memorial Library

Bushra Almas Jaswal
Chief Librarian

Religious Life

Dr Robert Wetmore
Dean of Chapel

Rev Babar Iqbal
Chaplain

Dr Hamid Saeed
Chairperson Mosque Committee

Quality Enhancement Cell

Dr Hamid Saeed
Acting Director of Assessment and Institutional Research

Shajeel Imran Khokhar
Research Associate

Amoon Austin
Research Associate

Safoora Samuel
Administrative Assistant

Saher Imdad
Administrative Assistant

Office of Communications & Publications

Michelle Jacob
Head of Communications and Publications

Unum Haroon
Media and Marketing Manager

Fraz Bukhsh
Digital Communications Assistant

Anil Joseph
Administrative Assistant

Accounts & Finance

Andrew John (ACA)
Chief Fiscal and Supply Chain Officer

Fatima Andleeb (ACA)
Financial Controller
Registrar’s Office

Dr Hamid Saeed
Registrar

P L Nasir
Assistant Registrar

Najam- ul-Saher
Office Manager

Sharoon Younis
Director Human Resources

Security

Lt Col (Retd) Rana Khaqan Mahmood
Director of Security

Office of University Advancement

Yvette Jones
Chief Advancement Officer

Haroon Samson
Director Development

Bilal Ala-Ud-Din
Director Corporate Relations

Sharoon Gill
Director Annual Fund

Adeel Riaz
Director Prospect Research

Amna Arshad Ali
Director Alumni Relations

Saheer John Reuben
Senior Academic Initiative Manager

Farhan James
Manager Operations

Majid Rasheed
Data Officer

Shahzad Caleb
Assistant Manager Operations

Friends of Forman in USA

Dr Michael Murphy
Board Chairman

Dr James Tebbe
Acting Director

Sandy O’Meara
Chief Financial Officer (part time)

Susan Mann
Grants Officer

Gail Blumberg
Accountant (part time)

Pamela Rath
Marketing Associate (part time)
16. Board of Directors
Board of Directors

Dr Michael Murphy  
Chairperson  
Chairperson, Friends of Forman, USA

Philip Lall  
Vice Chairperson  
CEO Procell

Dr James A Tebbe  
Secretary  
Rector, Forman Christian College

Bishop Sebastian Shaw  
Member  
Archbishop of Lahore Diocese, Church of Pakistan

Dr Rukhana David  
Member  
Principal, Kinnaird College, Lahore

Dr Nayer Fardows  
Member  
Principal, Edwards College, Peshawar

Edgar Pace  
Member  
Recording Ministries (retired), Faisalabad

Rev Dr Majid Abel  
Member  
Pastor, Naulakha Presbyterian Church, Lahore

Dr Gary Van Brocklin  
Member  
PCUSA Representative for South Asia

Rt Rev Irfan Jamil  
Member  
Bishop of Lahore Diocese, Church of Pakistan

Dr Peter J David  
Member  
GP/ Professor, Kings College, UK

Joseph Lall  
Member  
Administrator Taxila Hospital

Dr Mira Phailbus  
Member  
Former Punjab Ombudswoman

Rt Rev Dr Alexander John Malik  
Member  
Bishop Emeritus Lahore Diocese, Church of Pakistan
17. Board of Governors
Board of Governors

Dr Michael Murphy  
Chairperson  
Chairperson, Friends of Forman, USA

Dr James A Tebbe  
Secretary  
Rector, Forman Christian College

Mr Muhammad Abdullah Khan Sumbul  
Ex-Officio Member  
Secretary Higher Education

Dr Mujahid Kamran  
Ex-Officio Member  
VC Punjab University

Dr Shahid Amjad Chaudhry  
Ex-Officio Member  
HEC Nominee

Ch Ahmad Saeed  
Member  
Former President Service Group of Industries

Rt Rev Dr Alexander J Malik  
Member  
Bishop Emeritus Lahore Diocese, Church of Pakistan

Rev Dr Majid Abel  
Member  
Pastor, Naulakha Presbyterian Church, Lahore

Mr Philip Lall  
Member  
CEO Procell

Mr Yusuf Shirazi  
Member  
Chairman Shirazi Investments

Rt Rev Irfan Jamil  
Member  
Bishop Lahore Diocese, Church of Pakistan

Dr Nayer Fardows  
Member  
Principal, Edwards College, Peshawar

Dr Mira Phailbus  
Member  
Former Punjab Ombudswoman

Mr Joseph Lall  
Member  
Administrator Taxila Hospital
18. Formanite Alumini Association
Forman Christian College is establishing a strong communication network for Formanites all over the world to share news and information about the College. We invite Formanites to promote the idea of fellowship, to raise funds and lead FC College towards growth and development.

Dr James A Tebbe  
Rector of FCC

Ch Muhammad Ilyas  
Director  
Businessman

Ch Ahmad Saeed  
President  
Former President Service Group of Industries

Dawood Barry  
Director  
Proprietor Barry & Co

Abdul Majeed  
Vice President  
Chairman, National Foods

Dr Maj (r) Akram Khokhar  
Director  
Retired military official

MS Babar  
Secretary  
Advocate

Dr Hamid Saeed  
Director  
Professor (Botany) and Registrar, FCC, Lahore

Parvez A Shahid  
Treasurer  
Former Co-chairman, Bank Alfalah

Imtiaz Rafi Butt  
Director  
Chairman Rafi Group

Hafeez Akhtar Randhawa  
Director  
Former Chief Secretary, Government of the Punjab

Ishaq Khan Khakwani  
Director  
Former Minister of State for Railways, Government of Pakistan

Tajammal Husain Jafri  
Director  
Pharmacist

Khushnood Akhtat Lashari  
Director  
Former Education Secretary, Government of Punjab

Muneeb Khan  
Director  
Executive Director Sherpak Pvt Limited

Tariq Aziz  
Director  
Former Secretary National Security Council

Ather M Ansari  
Director  
CEO Techno Medical Systems
Tassaduq Hussain Jillani
Director
Former Justice Supreme Court of Pakistan

Mohammed Mian Soomro
Director
Former Chairman Senate of Pakistan

Ch Pervaiz Elahi
Director
Former Chief Minister Punjab

Jamsheed KA Marker
Director
Former Special Advisor United Nations

Shaheen Zafar
Director
Director Eastern Leather Company Pvt Ltd

Jahangir Khan Tareen
Director
CEO, JDW Group

Saleem Ghauri
Director
CEO, NetSol Limited

Brig (r) Javaid Iqbal Warraich
Director
Retired military official
FORMAN
CHRISTIAN
COLLEGE
(A CHARTERED UNIVERSITY)

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Fee: www.fccollege.edu.pk/admissions/fee-structure
www.fccollege.edu.pk