The Universities groom man and the research grooms Universities

UNIVERSITY OF SINDH

Serving the nation since 1947

To develop human resources by imparting quality education in all fields of science, arts, technology and to develop a body of teacher and taught who would be aware and proud of their culture and possess a high sense of honour, integrity and work with selfless dedication, commitment and responsibility towards society to contribute the prosperity of people, peace and harmony in the country.

GRADUATE STUDIES CATALOGUE 2018

For

M.S./M.Phil. & Ph.D. Programmes
Dear aspirants of Graduate Students,

The Catalogue for M.S. / M.Phil. & Ph.D. programs being offered for 2018 session has been specifically brought out not only to cope up with and put together increasing volume of relevant information, but also to facilitate you to concentrate on the objective information you are keen to seek.

The Catalogue will serve as a compendium throughout your stay at the University providing you details of curricula and courses for the degree program you join, as well as the Regulation for Registration in these programs.

For the preparation of entry test please refer Rule No. III, under the heading registration requirements.

Please note that educational policies and procedures are continually reviewed and changed in keeping with the educational mission of the University. Consequently, this document cannot be considered as binding. All syllabi and programs listed are subject to revision / approval by the Academic Council of the University.

Catalogue Preparation / Editing committee comprises the following:

<table>
<thead>
<tr>
<th>PROF. DR. ASHIQUE ALI JHATIAL</th>
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<tr>
<td>Director, Research &amp; Graduate Studies</td>
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| Program Coordinator |

| MR. MUHAMMAD ALI URSANI |
| IT Coordinator |

| MR. PIR BUX BABAR PATHAN |
| Evaluation Coordinator |

| Mr. Riaz Ali Shah |
| Research Coordinator |

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<th>OTHER STAFF MEMBERS</th>
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<tr>
<td>Mr. Tarique Ashraf Shaikh</td>
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<td>Mr. Aijaz Ali Bhanbhro</td>
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<td>Mr. Arshad Umran</td>
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<td>Mr. Mujeeb-ur-Rehman</td>
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My dear Sindh University admission aspirants,

First and foremost, as Vice-Chancellor, University of Sindh I thank you for your interest to seek admission to our institution.

Thereafter, I take it appropriate to inform that University of Sindh is completing 70 years of successful service to the masses of Sindh, Pakistan, the Middle East and a number of brotherly Islamic countries from across the globe.

I take pride in the fact that University of Sindh enjoys the status of Mother higher education institution in the province, as almost all other general and professional Universities are its offshoots.

Universities, I believe, serve as the centres of national development with the mission to produce open-minded, inclusive, secular and liberal service-providers to the given societies.

I must also assure you that once you are selected, we will ensure that we transform you into individuals capable in all forms to transform society through your contributions.

Moreover, I intend to see University of Sindh as an institution for objective criticism and the search for new channels for a more enlightened future; an institution offering new contents for genuine, participative citizenship and for the practice of peace, tolerance and ethics; an institution which will help reduce unacceptable economic and social imbalances and asymmetries; in short, a University to strengthen social, scientific and economic development, freedom, dignity and authentic democracy. I deem it appropriate to share that we are overhauling most of the system so that we depart from the traditional model of awarding merely paper degrees; and are well on our way to adopt a far-more improvised model of higher education which ensures knowledge exchange leading to cultivation of critical thinking, wisdom, global responsibilities and care for communities.

I believe knowledge means three-dimensional development of an individual i.e. it should promote learners’ knowledge, skills and attitudes. In addition, it is also the mandate of a University to prepare youth for the available job market, yet its greater obligation it to produce citizen leaders who care for the world they inhabit, understand its various problems, strive honestly and devotedly to resolve them; and by doing so make this planet a better and happier place to live in.

I understand, University of Sindh remains the first higher education priority of thousands of lower, lower-middle and middle class people of Sindh, as they cannot bear the exorbitant cost of private Universities. Hence, University of Sindh houses humbler segment of society who deserve our greatest attention and efforts.

I have joined the University as Vice-Chancellor with the above mission in mind, and I am pretty sure that by the help of University faculty, students, parents of the students, Federal and Provincial governments, civil society, community leadership and positive youth leadership; I will be able to bring about a massive turn around in the identity of University of Sindh and
getting it the place it deserves i.e. making it a world class institution of higher education.

Prof. Dr. Fateh Muhammad Burfat
Vice Chancellor
University of Sindh, Jamshoro

UNIVERSITY CALENDAR

Academic Schedule for
M.S./M.Phil. and Ph.D. 2018

FIRST SEMESTER
First Semester Teaching starts ........................................... Jan. 12
(Academic programs continue as per schedule)
First Semester Teaching ends ............................................. June 30
First Semester Final Test commencing................................ July 15
First Semester Grading.......................................................... July 30
Candidates qualifying 1st semester coursework with GPA 3 or above are required to discuss research topic with proposed Supervisor and prepare research synopsis during vacation.

SECOND SEMESTER
Teaching commences ............................................................. August 03
Submission of Synopsis for approval of topic and Supervisor by the Advanced Studies and Research Board
Second Semester Teaching ends ............................................ Nov. 30
Second Semester Final Test .............................................From Dec. 1
First Semester Grading.......................................................... Dec. 2

HOLIDAYS FOR THE ACADEMIC YEAR 2018

NATIONAL HOLIDAYS
Kashmir Solidarity Day..................................................05-02-2018
Pakistan Day.................................................................23-03-2018
* Eid-ul-Fitar...............................................................14-06-2018 to 17-06-2018
Independence Day ........................................................................................................ 14-08-2018

* Eid-ul-Azha ............................................................................................................. 21-08-2018 to 24-08-2018

* Youm-e-Ashur ....................................................................................................... 20-09-2018 to 21-09-2018
  (9th and 10th Moharram)

Allama Iqbal Day ..................................................................................................... 09-11-2018

Quaid-e-Azam’s Birthday .......................................................................................... 25-12-2018

Christmas Day .......................................................................................................... 25-12-2018

*(Subject to appearance of the moon)

* OPTIONAL HOLIDAYS

Non-Muslims University employees are entitled to avail any three of the following optional Holidays, in a Calendar Year.

01. Shivartri 06. Janam Ashtami
02. Holi 07. Durga Puja
03. Easter Sunday 08. Dussehra
04. Baisakhi 09. Dewali
05. Basant Punchami 10. Guru Nanik Birthday

UNIVERSITY TOWN JAMSHORO AT A GLANCE

Jamshoro, the largest University residential campus in the country, situated about 17 km from Hyderabad on the right bank of Indus River, was a rather desolate hilly track until 1955 when it was selected for the establishment of Sindh University Campus. The site was selected to be a University township away from the humdrum of Hyderabad city which lacked room to meet the ambitious expansion program of the University.

Interestingly, Jamshoro is virtually the gateway to the Indus Valley, now world famous for its civilization and rich cultural heritage. The Ranikot Fort is located approximately 70 kms to the north of the campus, in the northward continuation of the same hilly track which become Laki Ranges, merging with the Khirthar northwards. Amri, an important archeological site, lies about 15 kms. further north. Sehwan, a well known township lies 25 km. to the north of Amri. Mancher Lake the largest freshwater lake in the region, is situated to the north west of Sehwan. Travelling about 150 km. north through the Indus plains brings one to the site of Moen-jo-Daro, the most important archeological discovery of the Valley.

The development programs initiated in 1959 have gradually though slowly borne fruit. Though still in progress, over the years about 24 teaching blocks, Arts Faculty Building, and Elsa Kazi Campus housing 58 institutes, departments and centres. Sixteen halls of student’s...
The University of Sindh, the second oldest University of the country, was constituted under the University of Sindh Act. No. XVII of 1947 passed by the then Legislative Assembly of Sindh. The Act was subsequently revised and modified in 1961 and later. The Act of 1972 under which the University is presently functioning provided for greater autonomy and representation of teachers.

From 1947 to 1951 the University functioned solely as an examining body. However, after its relocation in Hyderabad in 1951, it started functioning as a teaching university in pursuit of fulfillment of its charter and mission to disseminate knowledge. The first teaching department, namely, Department of Education, raised to the status of Faculty later, was started in view of the great dearth of trained teachers in the country. The departments of basic Science disciplines as well as other departments on humanities side were gradually added by mid-fifties.

The development of the present campus, designated as Allama I.I. Kazi Campus, at Jamshoro, about 17 kilometers from Hyderabad started in late fifties.

There are 58 teaching institutes/centres/departments functioning under various academic Faculties. Degree programs in some of the disciplines,
The University teaching institutes/ departments, on Humanities side, offer programs leading to the award of 3-year Bachelor’s (Hons.) degree in various general and basic disciplines **while 4-year Bachelor degree** is offered under the Faculties of Natural Sciences, Social Sciences, Commerce and Business Administration, Education and Arts. Degree in Pharmacy (Pharm-D) and Bachelor of Law are five year duration.

The Master degree programs generally comprise minimum one year duration after 3-Year. Hons. And of 2-year duration after Bachelor (Pass) degrees. Students obtaining 4-year. Bachelor degree are taken directly for M.S. / M.Phil. Studies since the 4 year BS is equaled to Masters.

### AUTHORITY OF THE UNIVERSITY

As per Charter of the University, following are the authorities of the University of Sindh:

1. Senate
2. Syndicate
3. Academic Council
4. Boards of Faculties
5. Board of Studies
6. Selection Board
7. Advanced Studies and Research Board
8. Affiliation Committee
9. Finance & Planning Committee
10. Discipline Committee

### SYNDICATE

The **Syndicate** vested with executive authority, presently comprises the following members. The tenure of office of members other than Ex-officio members is three years.

**CHAIRMAN**

01. Prof. Dr. Fateh Muhammad Burfat
    Vice Chancellor
MEMBERS

02. Prof. Dr. Anwar Ali Shah G. Syed
Pro-Vice Chancellor, Shaheed Mohtarma Benazir Bhutto Sindh University Campus, Dadu.

03. Prof. Dr. Muhammad Siddique Kalhoro
Pro-Vice Chancellor, Sindh University Laar Campus, Badin.

04. Mr. Muhammad Nawaz Narejo
Pro-Vice Chancellor, Syed Allahndo Shah Sindh University Campus, Nousheroferoz.

05. Prof. Dr. Noor Muhammad Jamali
Pro-Vice Chancellor, Sindh University Campus, Larkana.

06. Mrs. Kulsoom Akhtar Chandio
Member of Provincial Assembly of Sindh

07. Justice Abdul Rasool Memon
Judge, High Court of Sindh, Karachi

08. The Secretary
Education & Literacy Department, Government of Sindh, Karachi

09. Chairman HEC or His Nominee

10. Mr. Jhamat Jethanand
Dean, Faculty of Law
University of Sindh, Hyderabad

11. Justice (Retired) Deedar Hussain Shah
67/1/2 16 Lane Khayaban-e-Badar,
Phase VII, Defence Housing Authority (DHA) Karachi.

12. Syed Ghulam Nabi Shah
Flat No. 301 Plot No. 4/C
Street No. 8, Badar Commercial Phase-V, Extension
Defence Housing Authority (DHA), Karachi.

13. Prof. Dr. Muhammad Saleem Chandio
Professor,
Institute of Mathematics & Computer Science, University of Sindh, Jamshoro

14. Dr. Arfana Begum Mallah
Associate Professor,
Dr. M. A. Kazi Institute of Chemistry, University of Sindh, Jamshoro

15. Mr. Umed Ali Rind
Assistant Professor,
Department of Statistics, University of Sindh, Jamshoro

16. Mr. Mehar Ali Kazi
Lecturer,
Institute of Biochemistry, University of Sindh, Jamshoro

17. Mufti Abdul Rehman Memon Thattvi
Hashimabad Housing Society, Makli, Taluka & District Thatta.

18. Dr. Ruqia Aijaz Talpur
A-86 Qasim Nagar, Qasimabad, Hyderabad

19. Prof. Dr. Muhammad Saleem Chandio
Registrar/Secretary, University of Sindh, Jamshoro

Faculties and Constituent Centres/Institutes & Departments of the University of Sindh

Faculty of Arts
1. Institute of Arts & Design
2. Institute of English Language and Literature
3. Institute of Languages (Arabic and Persian)
4. Department of Philosophy
5. Department of Sindhi
6. Department of Urdu

Faculty of Commerce and Business Administration
1. Institute of Business Administration
2. Institute of Commerce

Faculty of Education
1. Department of Curriculum Development & Special Education.
2. Department of Distance, Continuing and Computer Education.
3. Department of Education
4. Department of Educational Management and Supervision
5. Department of Psychological Testing, Guidance & Research
6. Department of Science and Technical Education.

Faculty of Islamic Studies
1. Department of Comparative Religion & Islamic Culture
2. Department of Muslim History

Faculty of Law
1. Institute of Law

Faculty of Natural Sciences
01. National Center of Excellence in Analytical Chemistry
02. Centre for Environmental Science
03. Centre for Health and Physical Education and Sports Science
04. Centre for Pure & Applied Geology
05. Institute of Biochemistry
06. Institute of Biotechnology & Genetic Engineering
07. Dr. M.A. Kazi Institute of Chemistry
08. Institute for Advanced Research Studies in Chemical Sciences.
09. Institute of Information and Communication Technology
10. Institute of Mathematics and Computer Science
11. Institute of Plant Sciences
12. Institute of Physics
13. Department of Anthropology and Archaeology
14. Department of Freshwater Biology and Fisheries
15. Department of Geography
16. Department of Microbiology
17. Department of Physiology
18. Department of Statistics
19. Department of Zoology

Faculty of Pharmacy
01. Department of Pharmaceutics
02. Department of Pharmaceutical Chemistry
03. Department of Pharmacology
04. Department of Pharmacognosy

Faculty of Social Sciences
01. Far East South East Asia Area Study Center
02. Sindh Development Studies Centre
03. Pakistan Studies Centre
04. Institute of Gender Studies
05. Department of Economics
06. Department of General History
07. Department of International Relations
08. Department of Library Information Science and Archive Studies
09. Department of Media & Communication Studies
10. Department of Political Science
11. Department of Psychology
12. Department of Public Administration
13. Department of Sociology
14. Department of Social Work
15. Department of Criminology

M.S. / M.Phil. and Ph.D. PROGRAMS OFFERED IN THE FOLLOWING DISCIPLINES

FACULTY OF ARTS
M.S. / M.Phil. / Ph.D. Arabic
Ph.D.
FACULTY OF COMMERCE AND BUSINESS ADMINISTRATION
M.S. / M.Phil. / Ph.D. Commerce
M.S. / M.Phil. / Ph.D. Business Administration
FACULTY OF EDUCATION
M.Phil. / Ph.D. Education
FACULTY OF NATURAL SCIENCES
M.S. / M.Phil. / Ph.D. Analytical Chemistry
M.S. / M.Phil. / Ph.D. Biochemistry
M.S. / M.Phil. / Ph.D. Biotechnology
M.S. / M.Phil. / Ph.D. Bioinformatics
M.S. / M.Phil. / Ph.D. Botany
M.S. / M.Phil. / Ph.D. Chemical Sciences
M.S. / M.Phil. / Ph.D. Computer Science
M.S. / M.Phil. / Ph.D. Electronics
M.S. / M.Phil. / Ph.D. Environmental Sciences
M.S. / M.Phil. / Ph.D. Freshwater Biology & Fisheries
M.S. / M.Phil. / Ph.D. Genetics
M.S. / M.Phil. / Ph.D. Geology
M.S. / M.Phil. / Ph.D. Inorganic Chemistry
M.S. / M.Phil. / Ph.D. Information Technology
M.S. / M.Phil. / Ph.D. Mathematics
M.S. / M.Phil. / Ph.D. Microbiology
M.S. / M.Phil. / Ph.D. Nutrition & Food Technology
M.S. / M.Phil. / Ph.D.
M.S. / M.Phil. / Ph.D.
M.S. / M.Phil. / Ph.D.
M.S. / M.Phil. / Ph.D.
M.S. / M.Phil.
M.S. / M.Phil.
M.S. / M.Phil.
M.S. / M.Phil.
M.S. / M.Phil.
M.S. / M.Phil.
M.S. / M.Phil.

Ph.D.

Ph.D. Program is restricted to disciplines where at least three regular faculty have Ph.D degrees.

If number of students enrolled in MS / M.Phil. program in any discipline is less than 10, the program shall not be started.

NOTE:

- Organic Chemistry
- Petroleum Geosciences
- Physiology
- Physics
- Physical Chemistry
- Software Engineering
- Statistics
- Telecommunication
- Physical Education, Health & Sports
- Sciences
- Zoology
- Development Studies
- Economics
- Media & Communication Studies
- Political Science
- Pakistan Studies
- Psychology
- Public Administration
- Sociology

REVISED M.S. / M.Phil. RULES AND REGULATIONS

Process for M.S. / M.Phil. Degree

MS/MPhil admission

Research Proposal submission after successful completion of 12 CH of course work with GPA 3.0 or above

Research proposal Evaluation

By scrutiny committee

Proposal Defence

Major Revision/suggestions in research proposal

Yes

Successful

No

Research (6 CH)

One Research Paper from Thesis must be Published in HEC recognized journals

Submission of Initial Draft of Thesis

Final Defense

Thesis Evaluation

Thesis examination (Viva Voce)
2. ADMISSION
2.1 HEC Rules and Regulations will be followed in letter and spirit approved by the Statutory Bodies of this University.
2.2 Graduates with holding degree of BS/BE may eligible to apply for MS program and graduates holding M.A/MSc/MCS/Pharm-D or other 16-year degree may be eligible to apply for M.Phil. program.
2.3 Foreign degrees equivalent to BS / BE / M.A / M.Sc. / MCS / Pharm-D are also accepted for admission to M.Phil. / MS.
2.4 A prerequisite for admission to M.S. / M.Phil. programme is 130-136 credit hours in the respective subject from HEC recognized institutions.
2.5 A minimum CGPA of 2.40 on a scale of 4.00 in BS / BE / M.Sc. / MCS / Pharm-D on semester system, or 50% marks in M.A./M.Sc. in Annual System is required for admission to M.S. / M.Phil.
2.6 All faculty Deans and Departmental Chairmen / Chairpersons / Directors will be responsible for the development of entry tests in their respective Department/Center/Institute for applicants.
2.7 Selection shall be made based on cumulative merit determined from previous academic degree(s) / certificate(s) CGPA/average (semester system/annual system), and marks obtained in the written entry test and Interview with following weights:
   i. Written Entry test: 50%
   ii. Academic Qualifications: 30%
   iii. Interview: 20%

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<tr>
<th>Type of Assessment</th>
<th>Course with Laboratory</th>
<th>Courses without Laboratory</th>
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</thead>
<tbody>
<tr>
<td>Mid Semester Exam</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Assignment/Reports</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Practical</td>
<td>10%</td>
<td>-</td>
</tr>
<tr>
<td>Terminal Examination</td>
<td>60%</td>
<td>60%</td>
</tr>
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2.8 The entry tests for admission to M.S. / M.Phil. programs will be organized and conducted by the Sindh University Testing Service. The test will be on based on GRE (Subject) pattern and all questions will be in the form of MCQs. The test covers English (25%), Simple Mathematics (15%), and Subject (60%).
2.9 The students having NTS GRE test with a minimum 50% valid score will be exempted from appearing in pre-admission written entry test.
2.10 Interviews for admission to M.S. / M.Phil. programs of studies will be conducted through Departmental Admission Committee (DAC). The Department offering M.S. / M.Phil. is responsible for sorting and verifying documents, and suitability of the applicants.
2.11 If an applicant is a government servant, he/she needs to produce N.O.C. from the department concerned along with the study leave.

3. DURATION OF PROGRAM
The duration of the M.S. / M.Phil. program will be a minimum of two years (four semesters) and a maximum of three years.

4. COURSE WORK
4.1 The course work of 24 credit hours needs to be completed by each student during the first year of study, spread over two semesters, while 06 credit hours of research work/thesis is to be completed during the second/last year of the studies, spread over one or two semesters.
4.2 Every concerned Institute/Department/Centre is responsible for the design core and elective courses, and for obtaining approval for the same through the proper channel.
4.3 A credit hour of a theory/lecture is of one-hour duration (including 10-minute break) per week during a Semester. However, in the case of project/laboratory/research/ project work, one credit hour may require two to three contact hours per week during a semester.
4.4 The distribution of marks in a course are given in the table below:

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</tr>
<tr>
<td>Terminal Examination</td>
<td>60%</td>
<td>60%</td>
</tr>
</tbody>
</table>

4.5 Faculty members having M.S. / M.Phil. degrees will be also eligible to teach the M.Phil. coursework.
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4.6 75% attendance is mandatory for appearing in semesters’ examinations for coursework.

4.7 The result of course work should be sent to the controller of examination (semester) for announcement and issuance of transcript.

5. M.S. / M.Phil. RESEARCH PROPOSAL

5.1 M.Phil. candidates will, on completion of 1st semester coursework with GPA 3.0 or above, submit their research proposal, using the prescribed template, consisting of not more than 700 words, with the topic approval application form, to the Director of Graduate Studies through the research supervisor, Director/Chairperson of the Institute/Department/Center and concerned Dean, for processing and submission to Advanced Studies and Research Board through Scrutiny Committee concerned.

5.2 The scrutiny committee shall examine the viability of the topic of research, its scope and the facilities available. It shall also scrutinize applications for appointment/change of guide and co-guide, revision of topic, as well as M.Phil. leading to Ph.D. cases.

5.3 The scrutiny committee meeting shall be held during every last week of the calendar month.

5.4 The scrutiny Committee may consist of:
   i. The Dean of the Faculty
   ii. Director/Chairperson of the Institutes / Departments / Centers concerned (wherever available).
   iii. One Professor other than Chairperson from the concerned Institute/Department/Centre.
   iv. One Professor of any relevant field from outside the Institute/Department/Centre, to be appointed by the Dean.
   v. Supervisor
   vi. Director of Graduate Studies

6. M.S. / M.Phil. RESEARCH SUPERVISION

6.1 The Advanced Studies and Research Board shall appoint a Supervisor (and Co-supervisor if deemed necessary) for research.

6.2 Lecturers/Assistant professors of the University of Sindh with Ph.D. degree, but without having any prior M.Phil. supervision experience may supervise M.S. / M.Phil. research OR he/she may be recognized as a HEC approved supervisor.

6.3 The number of M.S. / M.Phil. students under the supervision of a single supervisor will not exceed 10 at any one time. However, the supervisor may be allowed to supervise extra scholars, if circumstances require.

7. PROPOSAL DEFENSE

7.1 Candidates for M.S. / M.Phil. will prepare a research proposal defense for the scrutiny Committee once their research topic is approved.

7.2 The proposal defense will be arranged at the Department / Institute / Centre where the candidate is registered for research, and shall be conducted publicly.

7.3 Requests for the conduct of the proposal defense may be sent to the Dean of Faculty concerned.

7.4 The Dean of Faculty will nominate the person to preside over the proposal defense.

8. MODIFICATION/CHANGE OF RESEARCH TOPIC

8.1 A candidate may modify/change the topic of his/her research within one calendar year of the research topic approval, upon submitting an application duly supported by the Supervisor, the Chairperson/Director, the concerned Dean, and recommended by the Scrutiny Committee, for the approval of the Advanced Studies and Research Board.

8.2 The Advanced Studies and Research Board shall approve the final title of the thesis by not less than six months before the submission of thesis.

9. CHANGE OF RESEARCH SUPERVISOR/CO-SUPERVISOR

In the case of a candidate wishing to change his/her supervisor/guide, he/she shall apply through the Director/Chairperson of the Department/Institute/Centre and the Dean concerned. Written consent from the previous and the new supervisor must be attached with the application.

10. FINAL DEFENSE

10.1 The candidate shall be eligible to submit his/her thesis at the end of the fourth semester/within two years.

10.2 The candidate shall be eligible for final defense after submission of thesis.

10.4 The date of final defense will be issued from the concerned Dean of faculty and shall be conducted publicly.

10.5 M.S. / M.Phil. final defense committee may comprise of:
11. **THESIS EVALUATION AND EXAMINATION**

11.1 All the requirements of M.S. /M.Phil. including course work and thesis, should be complete within two years or a maximum of three years.

11.2 M.S. / M.Phil. candidates will submit their thesis along with one research paper published in any recognized journals of HEC from their thesis. The candidates must be the first author of the research paper, with names of supervisor(s) as co-author.

11.3 Four copies of the thesis with spiral binding, along with a softcopy on CD, shall be submitted to the Controller of Examinations (Annual) through the Office of the Director of Graduate Research Studies.

11.4 A plagiarism test report of the thesis is necessary and must be submitted along with the submission of thesis.

11.5 The thesis shall be referred for evaluation to one (01) External Examiner (from within Country) to be appointed by the Vice Chancellor, from the duly approved list of examiners approved by the concerned board of studies through Controller of Examinations(Annual) and Internal Examiner (Supervisor).

11.6 In the case of adverse remarks by the External Examiner, the thesis will be sent (after making necessary corrections and suggestions) to another Examiner whose evaluation will be considered as final.

11.7 If both evaluation reports (Internal and External) of the thesis are positive, then the candidate proceeds for viva voce.

11.8 The Controller of Examinations shall write to the supervisor and co-supervisor(s) to set the date for the viva voce.

11.9 The viva voce committee may comprise of:

   i. The Supervisor/ Co-supervisor(s) (Internal)
   ii. External examiner/expert

12. **AWARD OF DEGREE**

12.1 The Controller of Examinations shall submit the evaluation reports of the examiners, and the report of the viva-voce examination (to be conducted after the receipt of external and internal examiner’s report) to the Advanced Studies and Research Board.

12.2 In order to obtain approval of award of M.S. /M.Phil. Degree both evaluation reports of the thesis must be positive.

12.3 On the basis of the submitted reports the Advanced Studies and Research Board will decide whether to award the M.S. /M.Phil. Degree to the candidate.

12.4 Four hard bound copies of the final thesis, after incorporating all changes, along with the softcopy on CD, shall be submitted to the Controller of Examinations (Annual) through the Office of the Director of Graduate Research Studies.

13. **M.S. /M.Phil. THESIS PREPARATION GUIDELINE**

13.1 The language of the thesis in the case of disciplines within the Faculties of Natural Sciences, Arts, Education, Commerce and Business Administration, Social Sciences and Law shall be English language only. In the case of Islamic Studies and Languages, the thesis may however be written in a language approved by the Advanced Studies and Research Board.

13.2 The final M.S. / M.Phil. thesis should not exceed 30,000 words (including Appendix) in the case of Natural Sciences disciplines, and 80,000 in the case of Social Sciences, Humanities, and Languages.

13.3 Any thesis submitted in a language other than English, e.g. in Islamic Culture and Religion etc., must have a summary of the thesis written in English as well.

13.4 Structure of M.S. /M.Phil. Thesis:

   i. Title page
   ii. Second Page (Intellectual Property and Publication Statements)
   iii. Acknowledgement page
   iv. Abstract
   v. Table of Contents
   vi. Lists of Tables
   vii. List of Figures
   viii. Abbreviations
   ix. Chapters
   x. References
   xi. Appendices

13.5 Referencing styles:

   i. APA (American Psychologists Association): For social science and Business.
   ii. IEEE (Institute of Electronics and Electrical Engineers): For Engineering, Science and IT.
13.6 Formatting:

- **Page Margins:** The page with 1.5" margin on the left and 1" margin on the other three sides.
- **Page Numbers:** Page numbers must appear at the bottom of each page preferably in the centre.
- **Maximum three heading levels:** Main Heading 1 should be 16 in size and bold, Main Heading 2 should be 14 in size and bold and Main Heading 3 should be 12 in size and bold.
- **Paragraphs:** Times New Roman, size 12 with 1.5-line spacing.
- **Figures:** Should be aligned in the centre with caption below the figure in Times New Roman, size 12. Example: Figure 1. Map of Indus valley.
- **Tables:** Should be aligned in the centre and labeled on or above the table in Times New Roman, size 12. Example: Table 1. Comparison of technologies.

### REVISED Ph.D. RULES AND REGULATIONS

#### 1. Process for Ph.D. Degree

```
\begin{tikzpicture}[node distance=2cm,EVERY_SHAPE/.style={draw, minimum width=1cm}]
    \node (admission) {PhD admission};
    \node (coursework) [below of=admission] {18 Credit Hours coursework (Two Semesters) with 3.0 CGPA};
    \node (proposal) [below of=coursework] {Research Proposal Submission for Evaluation by Scrutiny Committee};
    \node (defence) [below of=proposal] {Proposal Defence};
    \node (suggestions) [below of=defence] {Revision/suggestions in research proposal};
    \node (research) [left of=suggestions, xshift=-5cm] {Research (Minimum two years from the date of admission)};
    \node (minimum) [below of=research] {Minimum Two Papers Published in HEC recognized (Category W, X, Y category) Journals};
    \node (defense) [below of=minimum] {Public defense};
    \node (thesis) [below of=defense] {Thesis approved by two foreign relevant subject experts};
    \node (viva) [below of=thesis] {Viva Voce};
    \node (award) [below of=viva] {Award of degree};
    \node (submission) [below of=award] {Submission of thesis copy to HEC for PhD country Directory};

    \draw [->] (admission) -- (coursework);
    \draw [->] (coursework) -- (proposal);
    \draw [->] (proposal) -- (defence);
    \draw [->] (defence) -- (suggestions);
    \draw [->] (suggestions) -- (research);
    \draw [->] (research) -- (minimum);
    \draw [->] (minimum) -- (defense);
    \draw [->] (defense) -- (thesis);
    \draw [->] (thesis) -- (viva);
    \draw [->] (viva) -- (award);
    \draw [->] (award) -- (submission);
\end{tikzpicture}
```
2. **Ph.D. Program**
   - Ph.D. Degree program of the University comprises of course work and research
   - At least three (03) relevant full-time Ph.D. Faculty members required in a department/Institute/Center to launch the Ph.D. program

3. **Admission**
   3.1 HEC Rules and Regulations will be followed in letter and spirit approved by the Statutory Bodies of this University. For pursuing a Ph.D. degree, a 30-credit hour M.S. / M.Phil. degree(18-Year Education) with first division or CGPA of 3.00 on a scale of 4.00 or overall 60% marks in annual system or equivalent in the relevant subject is a prerequisite from any HEC recognized University. In case of foreign degree, it will be ascertained that it is equivalent to Pakistani M.Phil. / MS degree from any recognized University/Institution.
   3.3 Ph.D. degree program will be open for all candidates/incumbents meeting the admission criteria. However, serving candidates will have to submit an N.O.C from their respective departments with the application form. A study leave document from their respective employer for a period of three years has to be submitted at the time of registration. The candidate will be a full time regular student for three years to cover the course work and the research.
   3.4 Selection shall be made based on cumulative merit determined from previous academic degree(s) / certificate(s) CGPA/average (semester system/annual system), and marks obtained in the written entry test and Interview with following weights.
   i. Academic Qualifications: 60%
   ii. Interview: 40%

<table>
<thead>
<tr>
<th>Degree Certificates</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S. / M.Phil. (18-year academic qualification)</td>
<td>40%</td>
</tr>
<tr>
<td>BS/BE/BBA/B.Sc. (Hons.)/M.A., M.Sc.</td>
<td>20%</td>
</tr>
<tr>
<td>(16-years academic qualification)</td>
<td></td>
</tr>
<tr>
<td>Interview</td>
<td>40%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

3.5 Interviews for admission to Ph.D. programs will be conducted through Departmental Interview Committee. The respective departments are required to sort and verify documents, and determine suitability of the applicants.

4. **Duration of Program**
   - **Full-time Ph.D.**
     - Minimum requirement: 3 years
     - Maximum requirement: 5 years
   - **Part-time Ph.D.**
     - Minimum requirement: 5 years
     - Maximum requirement: 7 years
   However, the Advanced Studies Research Board may extend the period up to two years on account of any special circumstances on the recommendation of supervisor

5. **Course Work**
   5.1 Every concerned Department/Center/Institute is responsible for designing Ph.D. course including core and elective courses on semester system and get approval through proper channel.
   5.2 Courses of 18 credit hours shall be completed during the first year (two semesters) of Ph.D. degree program
   5.3 In case a Ph.D. candidate wants to switch university (HEC recognized) s/he will be required to get his course work credit hours transferred to the new one. To achieve this aim, the candidate will submit an application to the relevant department through Director Graduate Studies and Research studies.
   5.4 Transfer of credits earned in other Institutions may be approved in individual case determined by the chairperson/director of the department/Institute/Centre which offers Ph.D. program.
   5.5 Course work of 18 credit hours includes core and electives and a semester shall not be more than 12 CH.
   5.6 A credit hour of a theory/lecture is of one-hour duration (including 10 minutes break) per week during a Semester.
   5.7 Faculty members having Ph.D. degrees will be eligible to teach the Ph.D. courses.
5.8 75% attendance is mandatory for appearing in semesters’ examinations for Ph.D. course work

5.8 The result of course work should be sent to controller of examination (semester) for announcement and issuance of transcript through concerned Dean of the Faculty and Director Graduate and Research Studies.

6. Ph.D. Research Proposal

6.5 Ph.D. candidates can submit research proposal after completion of 18 CH coursework with Minimum 3.0 CGPA

6.6 The Ph.D. research proposal should not be more than 1000 words. It must be on prescribed application form and submitted to the Director Graduate Studies through the research supervisor, Director/Chairperson of the Institute/Department/Centre and concerned Dean, for processing and submission to Advanced Studies and Research Board.

6.7 The scrutiny committee shall examine the viability of the topic of research, its scope and the facilities available. It shall also scrutinize application for appointment/change of guide and co-guide, revision of topic as well as M.Phil. leading to Ph.D. cases

6.8 The Scrutiny Committee may consist of:
- The Dean of the Faculty
- Director/Chairperson of the institutes/departments/centers concerned (wherever available).
- One Professor other than Chairperson from the concerned Institute/Department/Centre.
- One Professor of any relevant field from outside the institute/department/center to be appointed by the Dean.
- Supervisor
- Director Graduate Studies

6.9 The scrutiny committee meeting shall be held at every last week of the calendar month

7. Ph.D. Research Supervision

7.1 The Advanced Studies and Research Board shall appoint a Supervisor (and co-supervisor wherever deemed necessary) for research

7.2 Lecturer/Assistant professors in university of Sindh with Ph.D. degree can supervise Ph.D. scholar if s/he is HEC approved supervisor.

7.3 A Ph.D. Supervisor can register maximum 08 research scholars at a time.

7.4 The supervisor shall submit progress report of the research scholar through the director/Chairperson to the concerned Dean and Director Graduate and Research Studies after every six months.

8. Proposal Defense

8.1 After approval of research topic from scrutiny committee the Ph.D. candidate shall prepare research proposal for defense

8.2 The proposal defense will be arranged for open discussion at the department/institute/Centre where candidate is registered

8.3 Request for the conduct of Proposal defense may be sent to the concerned Dean of Faculty

8.4 Dean of the faculty will nominate the person to preside the proposal defense

9. Modification/Change of Research Topic

9.1 A candidate may within one calendar year can modify/change the topic of his/her research with the approval of the Advanced Studies and Research Board by submitting an application duly supported by the Supervisor, the Chairperson/Director, the concerned Dean and recommended by the Scrutiny Committee.

9.2 The final title of the thesis shall be approved by the Advanced Studies and Research Board not less than six months before the submission of thesis.

10. Change of Research Supervisor/Co-supervisor

In case the candidate desires to change his/her supervisor/guide, s/he shall have to apply through Director/Chairperson of department/institute/Centre and the Dean concerned. The written consent from the previous and new supervisor/s is essential to be attached with the application.

11. Final Defense

11.1 After completion of research, the Ph.D. scholar will submit thesis and conduct final defense.

11.2 The vice Chancellor shall appoint one Local Expert (within from Pakistan) for final defense
11.3 Date of the final public defense will be issued from the concerned Dean of faculty
11.4 Ph.D. final defense committee may comprise of:
   - The Supervisor/ Co-supervisor/s
   - Dean
   - Local Expert

12. Thesis Evaluation and Examination
12.1 All the requirements of Ph.D. including course work and thesis should be completed within stipulated time i.e. minimum 3 years and maximum five years
12.2 Ph.D. candidate will submit thesis along with two research papers published in any HEC recognized journals (Category W,X,Y) from thesis. Candidate must be the first author of the research paper with names of supervisor/s as co-author.
12.3 Eight copies of thesis with spiral binding along with softcopy on CD shall be submitted to the Controller of examination (Annual) through the office of director graduate research studies
12.4 A plagiarism test report of thesis is necessary and must be submitted along with the submission of thesis.
12.5 A panel of examiners consisting of 12 names (6 names from the technologically advanced countries and six from inland) in the relevant field.
12.6 The names will be selected from the list approved by the Board of Advanced Studies and Research.
12.7 A The Vice Chancellor will approve four names of examiners (two from abroad and two from inland) to examine the thesis
12.7B The thesis shall be sent for evaluation to 02 External Examiner and 02 Internal Examiners by the controller of examination (annual).
12.8 In case of the adverse remarks by the External Examiners, the thesis will be sent (after making necessary corrections and suggestions) to other Examiners whose evaluation will be considered as final.
12.9 Viva will be arranged only when all reports from the external and internal examiners are positive
12.10 Controller of Examination shall write to supervisor and co-supervisor/s for fixation of the date for the Ph.D. viva voce
12.11 Viva voce committee may comprise of:
   (a) The Supervisor/ Co-supervisor/s
   (b) External examiner/expert

13. Award of Degree
13.1 The Controller of Examinations shall submit the evaluation reports of the examiners and the viva-voce to the Advanced Studies and Research Board.
13.2 For approval of award of Ph.D. Degree both evaluation reports (external and internal) of the thesis must be Positive
13.3 Subject test score is required to be submitted with the thesis evaluation reports for further process in Advanced Studies and Research Board
13.4 Subject Test conducted by any one of the following
   • International GRE (Graduate Record Examination) subject test. Qualifying score for International GRE subject test will be minimum 50% cumulative score
     OR
   • NTS (National Testing Service) subject test GAT. Qualifying score for NTS subject test will be minimum 60% cumulative score
     OR
   • University Committee consisting of at least 3 Ph.D. faculty members in the subject area and approved by the HEC will conduct the Test at par with GRE Subject Test and qualifying score for this will be 70% score.
13.5 On the basis of submitted reports and confirmation of score obtained by Ph.D. candidate in subject test, the Advanced Studies and Research Board will decide whether or not the Ph.D. Degree be awarded to the candidate.
13.6 Four hard bound copies of final thesis (after incorporating all changes), along with the softcopy on CD shall be submitted to the controller of examination (Annual) through the office of director graduate and research studies


• The language of the thesis in case of disciplines under the Faculties of Natural Sciences, Arts, Education, Commerce and Business Administration, Social Sciences and Law shall be English language only. In case of Islamic Studies and Languages, the thesis may however be written in a language approved by the Advanced Studies and Research Board.

• In case of Natural Sciences, the final Ph.D. thesis should not be more than 80,000 words (excluding Appendix) whereas, in case of Social Sciences and Humanities, the thesis should not be more than 100,000 words

• The thesis which is submitted in a language other than English, e.g. in Islamic Culture and Religion etc., must have a summary of the thesis written in English also.

15. Structure of Ph.D. Thesis:

• Title page
• Second Page (Intellectual Property and Publication Statements)
• Acknowledgement
• List of Tables
• Chapters
• Abstract
• List of Figures
• References
• Table of Contents
• Abbreviations
• Appendices

• APA (American Psychologists Association): For social science and business
• IEEE (Institute of Electronics and Electrical Engineers): For Engineering, Science and IT.

• Formatting:

Page Margins:
• The page with 1.5" margin on the left and 1" margin on the other three sides

Page Numbers:
• Page numbers must appear on each page preferably at the center of the bottom of the page

Maximum three heading levels:
• Main Heading 1 should be 16 in size and Bold, Main Heading 2 should be 14 in size and bold and Main Heading 3 should be 12 in size and bold

Paragraphs:
• Time new roman, size 12 with 1.5-line spacing

Figures:
• Should be aligned in the center with caption below the figure of Time new roman, size 12.

Example: Figure 1. Map of Indus valley

Tables:
• Should be aligned in the center with label on above the table with Time new roman, size 12.

Example: Table 1. Comparison of Technologies

FEES STRUCTURE

M.S. / M.Phil. PROGRAM - 2018

A. For Local Students
   i. Registration Fee Rs. 8000.00
   ii. Tuition Fee for Coursework Rs. 28000.00
   iii. Supervision Fee Rs. 15000.00
   iv. Utilities Charges Rs. 7000.00
   (Computer, Lab, Library)
v. Thesis evaluation fee Rs. 12000.00

Total amount: Rs. 70,000.00

Note: Rs. 35,000 per year Package for 2 years. 2 installments permissible

B. For Foreign Students $2000.00 per year

C. Other Fees for all:
   i. Viva Voce Examination Fee Rs. 15000.00
   ii. For improvement of GPA (per appearance) Rs. 2000.00
   iii. Transfer to Ph.D. Rs. 2000.00
   iv. Re-registration Fee Rs. 5000.00
   v. Transfer from Sindh University Rs. 5000.00

Note: i. The Fee package above is for two years (04-semester) study. Where the study is not completed within prescribed duration, additional supervision fee will have to be paid @ Rs. 4000/- per semester. Foreign students will have to pay US $ 300/- per semester under this category.
   ii. In case of Re-registration, the Re-registration fee of Rs. 5000/- along with 2-semester supervision fee as specified in (a) above, will have to be paid.
   iii. In case of Re-enrolment, the candidate have to pay new existent fee.

Office of the Director, Research & Graduate Studies will receive Registration Fee, Thesis Evaluation Fee and Examination Fee from the Scholars of National Centre of Excellence in Analytical Chemistry and Far East East Asia Area Study Center

A. For Local Students
   i. Registration Fee Rs. 20000.00

FACULTY INTRODUCTION AND COURSE DESCRIPTIONS
M.S./M.Phil. and Ph.D. PROGRAMS

FACULTY OF ARTS

The Faculty of Arts was the first Faculty established in the University in 1951. It then comprised all disciplines including Commerce, Education, Islamic Studies, Humanities, Law and Social Sciences which were later on raised to independent Faculty status.
The present faculty comprises Institutes of Languages (Arabic & Persian), Art & Design, English Languages & Literature and departments of Philosophy, Sindhi and Urdu. The M.S. / M.Phil & Ph.D. programs are presently offered in to Arabic, Sindhi & Urdu only, due to faculty limitation. The Faculty has been publishing research journal "International Research Journal of Arts" (IRJA) that has been approved by the HEC Pakistan.

PROF. DR. SYED JAWED IQBAL
Dean
M.A. 1987, M.Phil 1995, Ph.D. 2002 (SU)

INSTITUTE OF LANGUAGES
Institute of Languages was founded in 1970, merging the departments of Arabic and Persian established in 1952. In addition to regular Bachelor, Master, M.Phil and Ph.D. degree programs in Arabic and Persian languages, the Institute also offers Diploma Certificate courses in Arabic, Persian, Sindhi, Urdu, Japanese, Chinese, Russian, German, French, Turkish. It has produced 18 Ph.D.s. and presently 80 candidates are enrolled for M.Phil leading to Ph.D. Over the years, the faculty of the Institute has published a large number of research articles and books in various Annual/ Bi-Annual and Quarterly Research Journals/ Magazines, etc.
The faculty comprises:-

SHAIKH HAFIZ ABDUL GHANI, Professor & Director

CHANNA HAFIZ SHABIR AHMED, Assistant Professor
M.A.(Arabic) 1984, Ph.D.1993 (S.U)

SODHAR HAFIZ ZAIN-UL-ABDIN, Assistant Professor
M.Phil. in Arabic: 4-Semester Program (40)

Pre-requisite: Master / 4 Years Graduation in relevant field ; Pre-Admission Test.

1ST Semester
AR 800 Research and Research Methods (4)
AR 801 History of Pre-Islamic and Islamic Arabic Literature (from 5th Century to 661 A.D) (4)
AR 802 History of Arabic Prose (from 661 A.D to 1798 A.D) (4)

2ND Semester
AR 803 History of Arabic Poetry (from 661 A.D to 1798 A.D) (4)

AR 804 History of Modern Arabic Literature (from 1798 A.D to 2002 A.D) (4)
AR 805 Arabic Language in Pakistan (from 644 A.D to 2002 A.D) (4)

3RD to 4TH Semester

AR 800 RESEARCH AND RESEARCH METHODS
The purpose of this course is to familiarize students with modern techniques of research and writing Research Paper / Dissertation. It acquaints students with the meaning-purpose and scope of the Research, various research methods, art of research paper writing, besides writing of Quotations-Footnotes and reference/bibliography.

AR 801 HISTORY OF PRE-ISLAMIC AND ISLAMIC ARABIC LITERATURE (FROM 5TH CENTURY TO 661 A.D)
This course is designed to impart knowledge about the services rendered by the classical prose and poetry writers of Arabic Language and Literature in Pre-Islamic and Islamic Period. Pre – Islamic Arab Prose-Al-Eyyadi, Al-Zubaidi Poetry-Seven Hanging Poetries-Islamic Literature produced by Khulafa-e-Rashden their Khutabat, Qaseeda Banat Suaad.

AR 802 HISTORY OF ARABIC PROSE
(FROM 661 A.D TO 1798 A.D)
The Course aims to familiarize students with the Arabic Prose produced in Umayyads (661 A.D to 750 A.D), Abbasids (750 A.D to 1258 A.D), Spanish (710 A.D to 1492 A.D) and Turkish Periods (1258 A.D to 1798 A.D).

AR 803 HISTORY OF ARABIC POETRY
(FROM 661 A.D TO 1798 A.D)
To familiarize students with the Arabic Poetry produced in Umayyads (661A.D - 750A.D), Abbasids (750 A.D to 1258 A.D), Spanish (710 A.D to 1492) and Turkish (1258 A.D to 1798 A.D) periods.

AR 804 HISTORY OF MODERN ARABIC LITERATURE (FROM 1798 A.D TO 2002 A.D)
The purpose of this course is to familiarize students with the History of Modern Arabic Literature and to acquaint them with the works of Modern Arabic Prose &
Poetry writers, besides Prose & Poetry produced during: Mughal Period (1525 to 1857 A.D), British Period (1857 to 1947 A.D), and Independence of Pakistan.

**AR 805 ARABIC LANGUAGE IN PAKISTAN (FROM 644 A.D TO 2002 A.D)**
The purpose of this course is to acquaint students with the knowledge of history of the Arabic Language & Script in Pakistan. Arab Period (644/712 A.D to 1025 A.D), Ghaznavi Period (998 A.D to 1857 A.D), British Period (1857 A.D to 1947 A.D), After Independence of Pakistan (1947 A.D to 2002 A.D)

Ph.D. in Arabic: 4-Semester Program (18)
Pre-requisite: M.Phil Arabic or equivalent qualification Pre-Admission Test and Valid GRE/GAT (Subject) Test Result.

**Coursework requirement:**

**1ST Semester**
- AR 900 Arabic Media (3)
- AR 901 Introduction to Linguistics (3)
- AR 902 Arabic Literature in the Sub Continent (3) OR
- AR 902 Sources & References of Uloom-al Quraan (3)

**2ND Semester**
- AR 903 Rhetoric and Prosody (3)
- AR 904 Arabic Literature in the Spain (3) OR
- AR 904 References & Sources of Uloom-ul-Hadith (3)
- AR 905 Translation from Arabic into English (Vice Versa) (3) OR
- AR 905 Arabic Language & Computer (3) OR
- AR 905 Foreign Language (3) Spanish, English, Russian, French, German, Turkish, Chinese, Japanese

**OR**

**AR 900 ARABIC MEDIA**
This course is designed to familiarize the students with the knowledge of kinds of communication i.e. Feature, Column, Editorial, News, Newspaper, Journal. Media Communication, Radio, T.V Program etc.

**AR 901 INTRODUCTION TO LINGUISTICS**
This course is designed to familiarize the students with the knowledge of kinds of science of the origin of Languages along with Linguistics. Philology, Phonology and Phonetics etc.

**AR 902 ARABIC LITERATURE IN THE SUB CONTINENT**
This course is designed to familiarize the students with the knowledge of kinds of Arabic Literature with Special study of famous Arabic Prose and Arabic Poetry writers in subcontinent.

**OR**

**AR 902 SOURCES & REFERENCES OF ULOOM AL QURAAN**
This course is designed to familiarize the students with the knowledge of material of references and bibliographies used for Quraanic Sciences from beginning of Hijrah up-to-date with the knowledge of Uloom-Quraan, Tafseer and Mufassireen along with their contributions.

**AR 903 RHETORIC AND PROSODY**
This course is designed to familiarize the students with the knowledge of Hijrah up-to-date with the knowledge of Uloom-Quraan, Tafseer and Mufassireen along with their contributions.

**AR 904 ARABIC LITERATURE IN THE SPAIN**
This course is designed to familiarize the students with the knowledge of Arabic Literature (Prose and Poetry) produced in Spain.

**OR**

**AR 904 REFERENCES & SOURCES OF ULOOM UL-HADITH**
This course is designed to familiarize the students with the knowledge of the material of references and bibliographies used for Hadith Sciences from beginning of Hijrah up-to-date with the knowledge of Uloom-Hadith and Ulama-e-Hadith and their contributions.

**AR 905 TRANSLATION FROM ARABIC INTO ENGLISH (VICE VERSA)**
This course is designed to familiarize the students with the knowledge of the Technique of Translation in various field i.e. Newspapers, Journals, trade Economics, Computers, Official etc.

**OR**

**AR 905 ARABIC LANGUAGE & COMPUTER**
This course is designed to familiarize the students with the knowledge of the Modern Arabic Ulooms and the use of the Computer with Special and Modern Styles / Methods for Propagating the Arabic Language.

**OR**

**AR 905 FOREIGN LANGUAGES**
This course is designed to familiarize the students with new methods of translation: word by word, Explanatory Translation, Translation with marginal notes and Footnotes etc.
The Department of Urdu started functioning in the academic year 1952-53 at the University of Sindh, Elsa Qazi Campus, Hyderabad. Its first Chairman was Professor Qazi Ghulam Murtaza. Later, Prof. Dr. Ghulam Mustafa Khan took over as Chairman. M.Phil & Ph.D Research was started in 1956. The First Annual Journal "SAREER-E-KHAMA" was published in 1960. The other Research Journal "TAHQIQ", that has achieved reputation and outstanding fame as a literary journal, was first published in 1987. The department is proud to mention that 8 volumes of "Sareer-e-Khama" and 21 volumes of "TAHQIQ" have been published to date. The Department has awarded 1 D.Litt. 66 Doctoral and 9 M.Phil Degrees to date. Some of the recipients are noted scholars. Out of 66 Doctoral Degrees, 40 Ph.Ds Scholars were supervised by (Late) Dr. Ghulam Mustafa Khan. This is the second highest number in University of Sindh. At present, research is being carried out on 9 Doctoral and 7 M.Phil studies.

The Department has carried out different literary functions from time to time. There are 2 seminars were organized successfully. In addition to this, a seminar on Dr. Ghulam Mustafa Khan is also arranged regularly every year, while under "Dr. Najam-ul-Islam Lecture Series", eminent scholars from all over the country are invited to deliver their lectures.

The faculty comprises:

**SYED JAVED IQBAL,** Professor & Chairman  
M.A. 1987, M.Phil., Ph.D. 2002 (S.U)

**JILANI ATIQ AHMED,** Asstt. Professor  
M.A. (S.U) 1978

**PATHAN RAFIQUE AHMED,** Asstt. Professor  
M.A. 1991, Ph.D. 2010 (S.U)

01 Assistant Professor & 01 Lecturer
The Faculty of Commerce and Business Administration was established in 1989, with Late Professor Yaqoob Ansari as its first Dean.

The Faculty comprises Institute of Commerce that had been functioning as department under the then Faculty of Arts since 1963, (raised to the status of the Institute in 2000) and the Institute of Business Administration functioning since 1979. The present Faculty comprises Institute of Commerce and Institute of Business Administrations.

PROF. DR. MUNEERDIN SOOMRO
DEAN
M.Com. (S.U) 1994, Ph.D. (HIMS) 2006

INSTITUTE OF COMMERCE

Department of Commerce was established in the year 1963 at University’s Elsa Kazi Campus also known as Old Campus, Hyderabad. The Department was shifted to AllamaI. I. Kazi Campus, Jamshoro in 1970. Since 1999, it has been functioning in its new building close to the Institute of Business Administration (IBA) of the University. More recently, the Department got upgraded as Institute of Commerce.

The Institute offers Two Year M.Phil (40-CH), Two Year MS (40-CH) and Three Year Ph.D. (60-CH) course work & research degree programmes. The Institute has established research laboratory where a large number of research scholars of MS, M.Phil and Ph.D. regularly and punctually carry out research activities. After the arrival of Ph.D qualified faculty there is number of successful researcher who have completed their degrees of M.S./M.Phil & Ph.D.

For research scholars pursuing M.S./M.Phil. or Ph.D. have fully furnished research office. A large number of research scholars are enrolled in M.S./M.Phil. and Ph.D. research degree program. Every student gets separate table, chair, locker, computer and free internet in research office. Research students have easy access to their research supervisor(s) for consultation and discussion on research issues.
They are educated and trained in a way that enables them to carry out their research independently in their future career. There strong culture of organizing research workshop and seminars to introduced to students state of the art research techniques of designing M.Phil/Ph.D. research proposal, data collection, analysis, thesis and research paper write up. At present, several M.S. /M.Phil. research scholars are in the final stage of writing up of their thesis. The Institute has well-equipped Computer Laboratories with latest software to provide training to the students. It has an excellent Seminar Library with over 7500 text and reference books on Management, Marketing, Accounting, Finance, Economics and others courses.

Institute of Commerce is led by experienced faculty with their Ph.D.s from national and international institutes of high repute in the fields of Human Resource Management, Marketing, Entrepreneurship, Business Administration and Finance. Some of the faculty members are master trainers of HEC-LID and they have excellent professional exposure in teaching, research and counseling in the country and abroad. The faculty has been presenting research in national and international conferences, publishing in HEC’s recognized journals nationally and internationally. Also got books/book chapters published.

The Institute has many senior faculty members who are supervising research students with devotion and commitment. Faculty members in collaboration with each other have produced several M.Phil./Ph.D. students in due course of time.

**Overall research interests of the faculty include:**


The faculty comprises:

**KANASRO, HAKIM ALI**, Professor & Director  
M.Com. 1983 (SU), Ph.D (SALU) 2008

**SOOMRO, MUNEERUDDIN**, Professor & Dean  
M.Com. 1984, LL.B.1989 (SU), Ph.D. (HIMS) 2006

**CHANDIO, JAWED AHMED**, Professor  
M.Com. (SU) 1991, M.Phil (SU), 2005, Ph.D (KU) 2012

**JHATIYAL, ASHIQUE ALI**, Professor & Director RGS  
M.Com. (SU) 1998, M.Phil (SU), 2004, Ph.D (UK) 2012

**HALEPOTA, JAMSHEDADIL**, Associate Professor  
M.Com. (SU) 1998, Ph.D (UK) 2012

**MAHESAR, HAKIM ALI**, Assistant Professor  
M.Com. (SU), Ph.D (UK) 2015

**M.S. in Commerce: 4 Semesters Program (40)**

Pre-requisite: BS. Com (Hons) or B.Com (Hons) 4 years 4 Years Graduation in relevant field; Pre-Admission Test.

**1st Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com: 851</td>
<td>Advanced Research Methodology (3)</td>
</tr>
<tr>
<td>Com: 863</td>
<td>Strategic Human Resource Management (3)</td>
</tr>
<tr>
<td>Com: 854</td>
<td>Analysis of Financial Statement (3)</td>
</tr>
<tr>
<td></td>
<td>Elective-I (3)</td>
</tr>
</tbody>
</table>

**2nd Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com: 852</td>
<td>Inferential Statistics (3)</td>
</tr>
<tr>
<td>Com: 862</td>
<td>Corporate Governance (3)</td>
</tr>
<tr>
<td>Com: 864</td>
<td>Data Analysis Tools &amp; Techniques (Software’s) (3)</td>
</tr>
<tr>
<td></td>
<td>Elective-II (3)</td>
</tr>
</tbody>
</table>

The faculty comprises:-

KANASRO, HAKIM ALI, Professor & Director  
M.Com. 1983 (SU), Ph.D (SALU) 2008
3rd & 4th Semester
Dissertation and its defense (16)

M.Phil. in Commerce: 4-Semesters Program (40)
Pre-requisite: BS. Com (Hons.) or B.Com (Hons.) 4 Years / 4 Years Graduation in relevant field; Pre-Admission Test.

1st Semester
Com: 801 Philosophy of Social Sciences (4)
Com: 802 Advanced Research Methodology (4)
Com: 808 Risk Management (4)

2nd Semester
Com: 803 Inferential Statistics (4)
Com: 806 Corporate Governance (4)
Com: 809 Data Analysis Tools & Techniques (Software) (4)

3rd & 4th Semester
Dissertation and its defense (16)

Ph.D. in Commerce: 6 Semester Program:
Pre-requisite: M.S. /M.Phil degree and valid GRE/GAT (Subject) Test result.

1st Semester
Com: 1101 Strategic Marketing Management (3)
Com: 1102 Advanced Research Methodology (3)
Com: 1103 Inferential Statistics (3)

2nd Semester
Com: 1121 Corporate Finance (3)
Com: 1122 Ethics and Corporate Social Responsibility (3)
Com: 1123 Strategic Human Resource Management (3)
Com: 1124 Comprehensive Viva-Voce (Non Credit)

3rd to 6th Semester Thesis & Defense (42)

Note: 1. The Students shall be awarded Ph.D Degree provided he / she passes all courses with at least 3.00 and above C.G.P.A and complete the process of dissertation.
2. Each course shall be of 03 credit hours.

INSTITUTE OF BUSINESS ADMINISTRATION

The Institute of Business Administration (IBA), University of Sindh, Jamshoro, is the second oldest Business School in Pakistan and was established in 1979 under the dynamic leadership of Late Professor Nabi Bakhsh Daudpota. Our graduates are well rewarded. They are employed and are working in key positions in private and public sector organizations within the country and abroad. The total number of students in morning and evening programs in various classes is close to 2000. The IBA has thoroughly updated its curricula under the revised scheme of studies in order to meet emerging challenges of Market.

Our Vision: IBA Jamshoro aspires to be one of the top business institutes in the country and to be recognized nationally and globally as an institute of excellence in teaching, research, entrepreneurship and service to community.

Our Mission: our mission is to remain continuously in the pursuit of excellence in the developing innovative, enlightened and socially responsible leader and managers by offering learning and research environment of international standing at affordable cost.

Facilities:
- Professionally qualified and experienced faculty
- Well-equipped computer lab and seminar library
- Internet facility for students and faculty

The faculty comprises:

KHOSO IMAMUDDIN, Professor & Director,
MBA (S.U) Ph.D. (Japan) 2008, Post Doctorate (Canada) 2011

CHANNA NIZAMUDDIN, Professor, Incharge Elsa Kazi Campus.
SYED ABDUL SATTAR SHAH, Professor,
MBA (SU), Ph.D. (MUSTD) MUET.

SHAH SOBIA, Assistant Professor,
MBA (SU) Ph.D. (London) 2016

PATHAN SAIMA KAMRAN, Assistant Professor
MBA (SU) Ph.D. (London) 2013

SHAH AISHA BASHIR, Assistant Professor
MBA (SU) Ph.D. (London) 2013

LASHARI INTZAR, Assistant Professor
MCS (SU), Ph.D. (Denmark) 2017

SHAIKH MARIA, Assistant Professor
MBA (SU), Ph.D. (SU) 2017

18 Assistant Professors, 08 Lecturers and 06 visiting faculty

M.Phil. in Business Administration: 2-year, 4 Semester program (30)
Pre-requisite: Master / 4 Years Graduation in relevant field; Pre-Admission Test.

1st Semester
BA 811 Business Research Methods (3)
BA 812 Business Research Methods (3)
BA 813 Applied Econometrics (3)
BA 814 Strategic Business Management (3)

2nd Semester
BA 8XX Elective-I (3) BA 8XX Elective-II (3)

3rd to 4th Semester
BA 898 Research on approved topic. (6)
Thesis/ Dissertation and defense

Note: Details of elective course contents are available in the institute

Ph.D. in Business Administration 4 Semester program (48)
Pre-requisite: MBA/M.S. /M.Phil/ Equivalent degree with minimum 18 years of business education from HEC recognized Institute/University with minimum CGPA 3.0/60% and valid GRE/GAT (Subject) Test result.

The Faculty of Education, University of Sindh, is committed to the highest standards in Teacher Education and research. It has a significant contribution towards the improvement of education in the province of Sindh in partnership with schools, colleges and other educational agencies.

The Faculty has excellent facilities to support teaching and research. The Faculty has a library with one of the best collections of books, besides computer labs and internet facilities. All teaching faculty members are active researchers. Currently, there are 08 Faculty members Ph.D.s and 06 having M.Phil. degree. Recently, The Higher Education Commission (HEC) Islamabad has granted “Y Category” to Research Journal of Faculty of Education.

Mission
The Faculty of Education develops teachers and education managers having professional expertise in the areas of teaching, curriculum development, evaluation, research, educational leadership, and ethical values through formal and distance educational programs.

Vision
The Faculty of Education aims to become a leading teacher education and research institution in the region.

Values
Facility of Education incorporates the values of commitment, transparency, kindness, trust and mutual respect in achieving its mission.
Objectives of the M. Phil. /Ph.D in Education Program:
The M.Phil. /Ph.D. degree in Education is specifically for professional practitioners in education, including those in public or private schools, community or government agencies, professional associations, and other education-related settings. This program includes study and practice of educational research and its application. The program includes intensive core coursework that introduce first semester students to the breadth of educational topics and inquiry, and to quantitative qualitative, and epistemological approaches to educational research.

This program is individualized, interdisciplinary, and experiential. Students, with the guidance of faculty advisers, plan their studies. The success in the program requires a high degree of personal initiative, self-directed learning, and commitment to inquiry.

Areas of Expertise and Research
As part of the M.Phil. /Ph.D. program students carry out a research project. The work of each student is supervised by a faculty member having expertise in the relevant field.

The present faculty have expertise relating to:
- The research and project development,
- The policy and practices of school education,
- The processes of teaching and teacher development,
- Curriculum and pedagogy in most subjects of the school curriculum and in literacy,
- Educational leadership and School Improvement,
- Management, Economics and Education,
- Child Psychology and School counseling,
- Assessment and Evaluation

PROF. DR. KHAN SALEHA PARVEEN
Dean,
Faculty of Education

The faculty comprising each department is listed here under:-

DEPARTMENT OF CURRICULUM DEVELOPMENT & SPECIAL EDUCATION

KHAN SALEHA PARVEEN, Professor and Dean

KAMBOH MOHAMMAD ASLAM, Assistant Professor
M.Ed. 1984 & M.A. Islamic Culture 1985 (S.U), Ph.D 2016 (S.U)

DEPARTMENT OF DISTANCE, CONTINUING AND COMPUTER EDUCATION
KAMBOH MOHAMMAD ASLAM, Asst. Prof. & Incharge Director
M.Ed. 1984 & M.A. Islamic Culture 1985 (S.U), Ph.D 2016 (S.U)

ABBASI MUHAMMAD KAMRAN, Lecturer
B.C.S (Hons) 2005 (S.U), Ph.D 2016 (UK)

DEPARTMENT OF EDUCATION

KHUWAJA MUMTAZ, Asstt. Prof. and Incharge Chairperson
M.Sc. Zoology (SU) and M.Ed. (KU)

DEPARTMENT OF EDUCATIONAL MANAGEMENT & SUPERVISION
ALMANI ABDUL SATTAR, Professor and Chairman

MESSO MUHAMMAD SHAFI, Assistant Professor
M.A (Eco) 1993, M.Ed. 1996, Ph.D (SU) 2012

SIDDIQUI ABIDA, Assistant Professor

DEPARTMENT OF PSYCHOLOGICAL TESTING, GUIDANCE & RESEARCH
MUGHAL FARZANA, Assistant Professor Incharge Chairperson

MUNSHI PARVEEN, Professor

BHATTI TARIQUE, Assistant Professor,

ARAIN AMJAD ALI, Assistant Professor,

DEPARTMENT OF SCIENCE AND TECHNICAL EDUCATION

JAFRI SYED IFTIKHAR HUSSAIN, Associate Professor & Incharge Chairman

M.Phil in Education 4-Semester Program (40):
Pre-requisite: Master/4 Years Graduation in relevant field; Pre-Admission Test.
1st Semester
ED 800  Research Methods – I (4)
ED 801  Research Methods- II (4)
ED 802  Psychological Perspective and Issues in Education (4)
ED 803  Issues in Curriculum (4)

2nd Semester
ED 804  Education in Pakistan: Trends and Issues (4)
ED 805  Educational Management and Leadership (4)

2nd to 4th Semester
ED 804  Education in Pakistan: Trends and Issues (4)
ED 805  Educational Management and Leadership (4)

ED 805 EDUCATIONAL MANAGEMENT AND LEADERSHIP

The course is designed to meet the specific needs of the educational managers, leaders, supervisors in Pakistan and other pursuing post-graduate studies at Ph.D. level in Education. The topic included in this course are Academic Management, Managing People, finance, monitoring and Evaluation.

Ph.D in Education: 6 Semester Program: [48]
Pre-requisite: M.S. /M.Phil degree and valid GRE/GAT (Subject) Test result.

1st Semester
ED-901  Advance Research Methods in Education (4)
ED-902  Teacher Training, School Education and skill based education (4)
ED-903  Quantitative and Qualitative Research
ED-904  Data Analysis (4)

2nd Semester
ED-904  Individual Project and Seminar (3)
ED-906  Elective courses (Selecting any one)
ED-907  Educational Leadership, Supervision and School Organization (3)
ED-908  Behavior, Motivation and Learning Styles (3)
ED-909  Monitoring, Testing and Evaluation (3)
ED-910  Curriculum, Text books and Instructions (3)
ED-911  Educational Technology and Computer Aided Learning (3)

3rd o 6th Semester
ED-911  Trends in Science Education (3)
ED-901  Advance Research Methods in Education

ED-902  Teacher Training, School Education and skill based education

The course aims at imparting an advanced and intensive study of the development of education in its historical perspective with emphasis on various educational policies and plans formulated after independence: significant trends, issues, problems and challenges to the system from primary to tertiary level in the light of global perspective; resources constraints, resource mobilization, population growth, environmental hazards, drugs, and gullet culture.
This course is designed to appraise Teacher Training, School Education and Skill based Education. It deals with the historical perspectives and new trends in teacher training and School education. This course also highlights comparative study of various countries regarding Teacher Training.

**ED-903 Quantitative and Qualitative Research Data Analysis**

This research data analysis course is designed for students enrolled in the Doctorate Program in Education. The doctoral students will become familiar with fundamental assumptions and contemporary best practices in quantitative and qualitative data analysis through a wide range of activities such as interactive lectures, participatory discussion and individual as well as shared reading of topics including process and steps of data analysis, and computer-based data analysis. The course aims to provide students with the necessary theoretical knowledge and analytical skills and techniques to prepare, analyze and interpret quantitative and qualitative data.

**ED-904 Individual Project and Seminar**

**ED-906 Educational Leadership, Supervision and School Organization**

The progress of education largely depends on the efficiency of Educational Management. This course will be a tool of paradigm shifting by Think –Tankers. Their knowledge, attitudes, professional skills and competencies will shape the future Education of Pakistan. This course focuses on conceptual and contextual understanding of education system for the development of managerial and leadership skills and attitudes among Scholars. This course would allow researchers to develop requisite skills and attitudes to execute the ethical behavior and contribute in creating linkages with the learning communities for effective learning organizations.

**ED-907 Behavior, Motivation and Learning Styles**

The purpose of this course is to develop learner’s insight. Its unique approach helps students teachers to understand different psychological concepts by encouraging them to examine their own learning and then showing them how to apply these concepts as teachers. This course concentrates on core concepts and principles. It gives readers an in-depth understanding of the central ideas of educational psychology.

**ED-908 Monitoring, Testing and Evaluation**

Designed to develop an understanding of monitoring, Testing and evaluation concepts and application relevant to the field of Education.

**ED-909 Curriculum, Text books and Instructions**

This course is designed for the Ph.D. Scholars. The main areas of the course are Curriculum, Text book, Instruction, Curriculum and Text book review process. The course deals to have a look upon the educational policies in terms of curriculum, Text book and Instruction. This course also describes Curriculum reforms, Curriculum Theory, Curriculum Structure and Curriculum Models. Process of Text book development in Pakistan has also been discussed in this course. The content highlights the instructional process and its types in Education as well.

**ED-910 Educational Technology and Computer Aided Learning**

This course is designed for the Ph.D. Scholars. The main areas of the course are ICT in Education, communication facilities through Internet, with e-learning & development in ICT, legal & Ethical issues related to internet & Research, instructional system, strategies and models, technology in instructional system. The content highlights the ICT and instructional process and its utilization in Education as well.

**ED-911 Trends in Science Education**

Science has become the soul of the developed world. For any nation science and technology is inescapable. Citizens of any nation live and function within a science environment. Man lives in a society which is extremely concerned about science hence there is a need for the interaction of science, technology and society. Non-science majors need to Survive in a technological world. They need to become aware of happenings in the world around them. They need skills to understand and interpret these happenings and above all they need to change their thinking pattern. There is a crucial need to understand and solve the recent problems regarding science and research in it, so that we may be able to live a better life.
disciplines along with broad-based knowledge in relevant fields, e.g., General Math courses for Biology students or vice versa, etc.

BS 4-yr. degree entitles students to join M.S. (M.Phil.) program being offered in various disciplines where faculty with Ph.D. qualification is available.


CENTRE FOR ENVIRONMENTAL SCIENCE

The Environmental matters are at the center of the political and economic areas and at the top of the developmental agenda of every country in the world. This is the outcome of a rising global concern about the protection of our environment. In last few centuries, the world has witnessed a rapid but uneven economic development. The unsustainable economic development has resulted in disastrous environmental crises such as environmental pollution, climate change and depletion of resources and loss of biodiversity. The world is faced with the challenge of devising innovative development strategies to deal with the complexities of environmental deterioration and economic development. In order to cope with the challenges of increasing population, environmental deterioration and unsustainable economic development, a harmonious collaboration between human development efforts and environment concerns are urgently needed to achieve the ultimate goal of sustainable development. The target of sustainable development can only be achieved through an integrated, comprehensive approach involving social and technological changes in all sectors of human life and its environment.

Environmental Scientists are needed more than ever by industry, government and society. The Environmental Science degree brings together information from a wide range of subjects to explore some of the most important threats facing the world, such as climate change, pollution, conservation, and food security. The Environmental Science degree is broadly based with its roots in biology (giving you an understanding of organisms, their environments and their communities), chemistry (providing an understanding of many natural environmental processes and pollution), earth science (giving you a background in global processes), and land and water resource management. As well as deepening your scientific knowledge, this Environmental Science degree also prepares professional graduates for careers at a time when environmental issues are increasingly central to business and economic decisions.

A combination of such subjects areas, combined with many practical sessions and field trips, creates a degree that is both fascinating and rewarding.

The Aim

The goal of the Bachelor of Science degree (B.S.) in environmental studies is to train students to become proficient in the natural and physical sciences, as well as to be aware of social and cultural influences upon environmental problems facing society today.

The Scope

Being an interdisciplinary field of knowledge, Environmental Science includes programmes with multidisciplinary scope in which the graduates will learn to address the challenges of maintenance of environmental integrity for sustainable development in relation to human activities.

Teaching Objectives

The teaching objectives of the degree programs in Environmental Science are to enable its graduates with following key skills:

- To train leaders, develop new knowledge, and devise solutions that will restore and sustain the health of our planet.
- Learn how to analyze and assess environmental problems
- Carry out independent scientific and technical research on environmental issues
- Propose sustainable solutions for environmental problems.

Learning Objectives

The degree programs are expected to equip the graduates with an ability to understand the linkages between various bio-physical and socio-economic components of environment and with an expertise to:

i. Understand the intricate linkages within and between biophysical and socioeconomic systems, and appreciate the principles and requirements that would facilitate the transition to sustainability within these systems;

ii. Apply theoretical understanding, professional judgment and skills in mitigation of environmental problems

iii. Formulate and implement solutions to problems of sustainable development, through the use of analytical skill and theoretical knowledge

iv. Make meaningful contributions to improving legal and administrative structures and processes relevant to sustainable.

v. Development and environmental management.

Rationale

Finding a sustainable way of life is one of the greatest socially, economically and environmentally challenges facing humanity today. This requires a new frame of mind and new set of values. Education critical for promoting such values and improving people’s capacities to address environmental and developmental issues. Education at all levels especially university education should aim at achieving sustainable development and foster environmentally sound attitudes, skills and behavior patterns, as well as a sense of ethical responsibility. This can be achieved if Environmental Science is made part of the education embracing both the scientific and social aspects of the human life. The discipline of Environmental Science is perceived as the systematic study of the world around us, our proper
place in it and how it can deal with the issues of socio-economic development on the basis of the principles derived from various disciplines of natural sciences. The development of interdisciplinary curriculum is one way of developing capacity in Environmental Science for the achievement of ultimate goals of sustainable development. The degree programs are accepted to equip the graduates with an ability to understand the linkages between various bio-physical and socio-economic components of environment and with an expertise to:

Being an interdisciplinary field of knowledge, Environmental Sciences includes programmes with multidisciplinary scope in which the graduates will learn to address the challenges of maintenance of environmental integrates for sustainable development in relation to human activates. The teaching objectives of the degree programmes in Environmental Sciences are to enable its graduates with following key skill:

- To train leaders, develop new knowledge, and devise solutions than will restore and sustain the health of our planet.
- Learn how to analyze and assess environmental problems
- Carry out independent scientific and technical research on environmental issues
- Purpose sustainable solutions for environmental problems.

The faculty comprises:

ALMANI, KHALIDA FARYAL, Professor and Director
Ph.D Pharmaceutical Sciences (Biotechnology) 2005, UoS

ABBASI, HABIBULLAH, Assistant Professor
Ph.D (Environmental Science) UoS

MAHAR, AMMANULLAH, Assistant Professor
Ph.D (Environmental Science) UoS

M.Phil. in Environmental Sciences: 4-Semester Program (40)

Pre-requisite: M.Sc. in relevant field ; Pre-Admission Test.

1st Semester
ENVI 800 Environmental Science and Impact Assessment (4)
ENVI 801 Research Methodologies
ENVI 802 Fundamentals of Earth Sciences
ENVI 803 Elective-I

Note: Any one from the list as under:
- Environmental Chemistry (3)
- Environmental Health and Safety (3)
- Sustainable Management of Natural Resources (3)
- Environmental Physics (3)
- Population Dynamics and the Environment (3)

2nd Semester
ENVI 804 Environmental Biology (4)
ENVI 805 Elective-II
- Meteorology
- G.I.S. & Remote Sensing
- Water Resource Management
- Environmental Auditing
- Plant systematic & Environment

2nd to 4th Semester

Note: Elective subjects to be offered with minimum 03 students offering the course

Ph.D. in Environmental Science: 6 Semester Program: (18 CH)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
ENVS 800 Advanced Research Methodology (3)
ENVS 801 Project Report and Thesis Writing (3)
ENVS 802 Presentation and Proposed Work (3)
ENVS 804 Elective-I
- Environmental Biogeochemistry
- Advance Environmental Communication
- Advanced Environmental Biotechnology
- Science, Economics & Climate Changes

2nd Semester
ENVS 901 Advance Industrial Ecology Study (3)
ENVS 902 Elective-II
- Coastal Marine Ecosystem Processes Policy & Management (3)
- Nanao Materials in the Environment (3)
- Fate and Transport of Solute in the Environment

Note: 12 CH are selected for 1st Semester (04 Subjects)
06 CH are selected for 2nd Semester(02 Subjects)

CENTRE FOR PHYSICAL EDUCATION, HEALTH & SPORT SCIENCE

Two Years M.S. /M. Phil Degree Program in Physical Education & Sports Science is designed with the objective to provide necessary theoretical and practical research skills in Physical Education, Health & Sports Science.
The M.S. / M.Phil program is of two years (four semester duration), comprising mainly course work. During the first semester the candidate has to select 04 courses total 16 CH and has to secure a minimum score of CGPA-2 for promotion in 2nd Semester. In second semester two courses 8-CH (04 CH-each course) and has to secure CGPA-3. On the success full completion of the Course work the candidate will select the topic for research and present it for approval to the Supervisor and scrutiny committee. After having Approval of Research Topic from Supervisor and scrutiny committee, it will refer to Board of Advance Study & Research (BASR) for Final approval. Then the candidate will carry out his / her Field / Lab research work during 3rd & 4th Semesters and produce his / her work for defense in shape of two seminars in front of the learned council of Professors. On Successful completion of Seminar the written work will be submitted further for Plagiarism and Evaluation. Final Evaluation will be made in shape of Viva-Voce in front of panel of Experts. On successful evaluation of thesis and Viva-Voce examination the candidate will be awarded the degree.

The faculty comprises:-

**ANSARI, MUHAMMAD AKRAM**, Associate Professor & Director

**GHORI, SONIHA ASLAM,(MD)**, Associate Professor
MBBS, & Ph.D. (2014) (SU)

**MUGHAL, MEHMOOD-UL-HASSAN (MD)**, Assistant Professor
MBBS, M.Phil. (S.U) 2009

**GHORI, ASLAM(MD)**, Assistant Professor
MBBS, (LUMHS, Jamshoro)

M.S. / M.Phil. in Physical Education: 4- Semester Program (40)
Pre-requisite: Master / 4 Years Graduation in relevant field ; Pre-Admission Test.

**1st Semester (Compulsory Courses)**
PESS-800 Research Methods & Computer Applications (4)
PESS-802 Administration, Planning & Management (4)

**Optional Courses**
Two courses to be offered amongst the following:
PESS-804 Medicine and Sports Science (4)
PESS-806 Environmental Science (4)
PESS-808 Studies of Health Education (4)

**2nd Semester**
Two courses to be offered amongst the following:
PESS-810 Sports Psychology (4)
PESS-812 Specialization in selected sports outdoor / indoor (4)
PESS-814 Specialization in selected Athletics (Track & Field events) (4)
PESS-816 Specialization in selected Gymnastic (Apparatus / Floor work) (4)

**NOTE:** The course as listed under optional will be offered, subject to the availability of qualified staff and facilities.

**3rd to 4th Semester:**

Ph.D. in Physical Education, Health & Sports Science:

**6 Semester Program: (18 CH)**
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.
- There will be 02 Semester Course Work
- Three (03) Credit Hours for each course.
- (06) Six Courses to be offered, (03) three in each semester.

**1st Semester**
PEHSS-900 Research Methodology and Application of Statistics
PEHSS-902 Test, Measurement & Evaluation in sports (Advance)

**Optional Courses:** One course to be offered from the followings
PEHSS-904 Sports Psychology (Advance)
PEHSS-906 Science of Sports Training

**2nd Semester**
PEHSS-908 Curriculum Design and its Application
PEHSS-910 Studies of Health Education (Advance)

**Optional Courses:** One course to be offered from the followings
PEHSS-912 Cognitive factors in motor skill acquisition
PEHSS-914 Mechanical Principles involved in sports

**Note:** Optional course will be offered, subject to the availability of qualified faculty.

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**CENTRE FOR PURE AND APPLIED GEOLOGY**

The present Centre for Pure and Applied Geology had its beginning as Department of Geology established in 1956 at Elsa Kazi Campus, Hyderabad. That was moved to
Allama I.I. Kazi Campus, in June 1961, where it was temporarily located in the Chemistry Block. In 1971, it was moved to its present premises which has since then been expanded; a new block along with an Auditorium was added in 1992. Four new advanced Research Laboratories with state of the art equipment like XRF, XRD, SEM and Atomic Absorption were established in 2007.

The Department (now Centre for Pure & Applied Geology) has produced a monograph on “Geology of Sindh” in addition to works pertaining to the various regions of Pakistan. It has completed a number of research projects e.g. “China Clay (Nagarparkar)” financed by PSF, “Clay Deposits of Sindh”, “Glass Sand resources of Sindh” and “Resistivity Survey for Ground water in Kohistan Area, district Dadu” sponsored by UNICEF. Recently, hydrogeological studies on two research projects funded by the HEC and PSF have been completed. One research project “Paleoenvironmental study of Lower Goru Formation in the subsurface of Lower Indus Basin, Pakistan”, sponsored and funded by PSF is in progress. Besides, the Centre has recently contracted projects on a feasibility study of granite deposit of District Tharparkar Sindh and Dimension Stone in Dadu, Jamshoro and Thatta. One research project on “Detection of saline intrusions in the right bank sediments of southern Sindh”, sponsored by PSF and “Investigation of Seawater intrusions-left bank sediment of southern Sindh”, sponsored by NDP have been completed in 2006. Presently centre is also working on a collaborative research project Geology and geomorphological studies of the Nagarparkar, District Tharparkar Sindh, sponsored by Pakistan Academy of Sciences.

The Centre has been offering revised M.Phil/ Ph.D programmes in Geology and Petroleum Geology since 2003 session. Presently, twenty four students are working for their M.Phil/ Ph.D studies. Earlier, two candidates earned their Ph.D. degrees and three M.Phil studies were completed during the 2014 besides M.Phil, Ph.D in Geology the Centre also offers M.Phil in Geology & Petroleum Geosciences as spring semester 2014. A coal Research Lab has been established with the Collaboration of Weatherford Oil Tools. M.E Ltd. And a Geophysics chair with the collaboration of PPL is supposed to be established in this year.

The faculty comprises:

SIDDQUI IMDADULLAH, Professor & Director

SOLANGI SARFRAZ HUSSAIN, Professor

LAGHARI AMANULLAH, Professor
M.Sc. (SU) 1988, Ph.D. (Peshawar) 2006

AGHEEM MUHAMMAD HASSAN, Professor

LASHARI RAFIQUE AHMED, Associate Professor

KHAN HUMAIRA NAZ, Associate Professor

HAKRO ASGHAR ALIAS DAHAR, Assistant Professor
MSc. 2002 (S.U) Ph.D. (Karachi) 2013

01 Assistant Professor, 08 Lecturers

M.S/M.Phil. Program in Petroleum Geosciences(40)
Pre-requisite: Master / 4 Years Graduation in relevant field; Pre-Admission Test.

1st semester
GEOL 801 Research Methodology & Report writing (4)
GEOL 802 Geoinformatics (4)
GEOL 803 Sedimentology of Petroleum Systems (4)
GEOL 804 Regional Petroleum Geology (4)

2nd Semester
GEOL 805 Optional Paper I (4)
GEOL 806 Optional Paper II (4)
List of Optional Courses
01. Prospects Evaluation & Petroleum Economics (4)
02. Petroleum Engineering (4)
03. Petroleum Geochemistry(4)
04. Carbonate Sedimentology (4)
05. Basin Analysis (4)
06. Reservoir Geology and Geophysics(4)
07. Advanced Well Logging (4)
08. Biostratigraphy(4)
09. Petroleum Structural Geology(4)

3rd & 4th Semester
Lab work and Thesis

Research projects may be based on analytical desk studies, fieldwork, or a combination of any of these. When appropriate and possible, projects will be matched to previous work experience and may involve collaboration with organizations outside the University. Individual project supervisors will advise on project selection, planning and development. The purpose of the research project is to provide students with an opportunity to apply, in a realistic exercise, knowledge and skills learned in the taught component. Students will be expected to demonstrate a command of appropriate research methods through application to a specific topic area. They will be expected to review and interpret previous relevant work, and present coherent arguments of relevance to their project.

GEOL 801  Research Methodology & Report writing

Selection of research topic. Literature review on the selected topic. Related topics of data collection and laboratory analysis. Concepts of Computer languages and programming . Geosciences softwares, word processing and statistical packages. Seminar/oral presentation on the assigned topic and work plan.

GEOL 802  Geoinformatics

Fundamentals of Maps; map reading, scale, types and sources, map co-ordinate systems and projections (Cylindrical, Conic, Azimuth), Aerial Photographs stereo photographs, height determination, ortho-photographs. Introduction to Remote Sensing (RS), EMR, platforms and sensors, resolution, multispectral, thermal, microwave, hyper spectral, image interpretation, classification), Global Position System; Introduction, concepts, features, data models, spatial data & non-spatial data, integration and analysis. Applications of Remote Sensing and GIS in Geology and environmental studies. Introduction softwares ARCGIS, MAPINFO, SURFER, GOOGLE EARTH, and GLOBALMAPPER.

GEOL 803  Sedimentology of Petroleum Systems

Introduction to the sediments that form a typical hydrocarbon play (reservoir, source, seal) in clastic and carbonate successions. Discussion about the fundamental sedimentological processes and controls that govern the spatial and temporal variability of reservoir, source, and seal. Porosity and permeability and its relationship to reservoir quality. How these vary spatially and with burial, due to depositional facies variability and diagenetic processes.

GEOL 804  Regional Petroleum Geology

Introduction to Petroleum geology. Geologic and Geographic occurrences and economics of Unconventional oil and gas resources like very viscous oil and gas from low-permeability rocks, coal bed, and hydrates. Petroleum systems overview. Regional petroleum Exploration History and major discoveries. Case studies of significant discoveries of Pakistan, Middle East, Asia, Europe and America. Current and future global exploration strategies.

OPTIONAL COURSES

Prospect Evaluation and Petroleum Economics

Exploration geologists’ role in identifying and developing a play and producing leads and prospects. Petroleum system analysis, and play fairway definition. Mapping techniques and an understanding of the data required to evaluate a lead / prospect. Play fairway analysis. Reserves estimation. Concept of Chance of Success and the quantification of risk. Basic concepts and background for the financial and economic assessment of projects within the petroleum industry.. Case studies of a number of Petroleum Provinces and selected fields.

Petroleum Engineering


Petroleum Geochemistry

Petroleum geochemistry fundamentals with strong emphasis on applications to petroleum exploration and production. geochemical methods and markers. Source rock quality, maturity, and potential, Migration efficiency and direction, Maturation and degradation, Correlation: oil-to-oil, oil-to-source rock, gases. Temperature, time and quantitative modeling of maturity for systems with unconformities, changing gradients, and faulting. Worldwide exploration and production case studies.
Carbonate Sedimentology
Introduction, Classification of Carbonate Rocks According to Depositional Texture, Evolution from Sediment to Rock: Carbonate Sedimentation and Diagenesis, Carbonate Pore Classification, Environmental Controls, Depositional Environments, Modern and ancient examples of various important depositional environments. Facies and Depositional Systems of Carbonates, Sedimentary Facies Patterns, Depositional Models and Nomenclature, Carbonate Stratigraphy of Platform.

Basin Analysis
Basins in their plate-tectonic setting. Lithosphere behavior and the mechanisms of basin formation. Types of extensional, compressional and strike-slip basins. Facies architecture of basins including: (i) tectonics and sedimentation (ii) sequence stratigraphy. The interaction between sea-level change, tectonics, climate and sediment supply in the final development of a basin-fill. Basin analysis: (i) thermal history, fluid generation and migration (ii) compaction history (iii) back stripping and forward and inverse modeling. Case studies including examples from Pakistan and Middle East.

Reservoir Geology and Geophysics
Pore pressure, Causes of normal, high and low pore pressures, Overburden pressure or overburden stress. Porosity and permeability, Fluid saturations, Water and oil contacts, Gas and oil contacts, Reservoir zoning and thickness mapping, reservoir pore spaces configuration, mapping reservoir heterogeneity. Reservoir estimation and calculation of reservoir-volumetric, material balance and production decline curve methods. Appraisal and development of reservoir, basic concepts. Changes in reservoir parameters due to production.

Petrophysics, Formation Evaluation – physical properties and wireline logs properties, core analysis, Image Logs and determination of lithology and porosity, acoustic impedance inversion, Fracture Analysis and seismic anisotropy

Advanced Well Logging
Modern formation evaluation techniques using wireline logs, Mud logs, core data, geological information, 3D seismic data, and physics of fluid-flow in porous media. Description of the static and dynamic behavior of hydrocarbon reservoirs. Several single- and multi-well data sets will be used to illustrate the technical concepts and significance of log data.

Biostratigraphy

Petroleum Structural Geology

M.S. /M.Phil. in Geology 4- Semester Program (40)
Pre-requisite: B.S./M.Sc and Pre-Entry Test, Two semester course work M.S./M.Phil. program (24 credit hours course work) + (16 credit hours for thesis and Defense).

During first semester of teaching in M.S/M.Phil. (Geology) four compulsory courses will be taught and in second semester two optional courses will be taught in the relevant field of specialization from the following list of courses. Scheme was approved by the Board of Advance Studies and the Board of Faculty for two semester course.

1st Semester
GEOL. 800 Research Methodology & Report writing (4)
GEOL. 801 Advance Sedimentology (4)
GEOL. 802 Geology and Geodynamics of Pakistan (4)
GEOL. 803 Carbonate Sedimentology (4)

2nd Semester:
Two courses may be offered from any one of the following field of specialization.

PETROLATUM GEOLOGY
GEOL. 805 Petroleum Exploration
GEOL. 806 Reservoir Geology
GEOL. 807  Sequenced Stratigraphy
GEOL. 808  Basin Analysis
GEOL. 809  Petroleum Geology of Pakistan
GEOL. 810  Well Logging

SEDIMENTOLOGY
GEOL. 811  Applied Sedimentology
GEOL. 812  Sedimentology & Stratigraphy
GEOL. 813  Sequence Stratigraphy
GEOL. 814  Basin Analysis

MARINE GEOLOGY
GEOL. 815  Physical Oceanography
GEOL. 816  Marine Geology
GEOL. 817  Geology of Arabian Sea
GEOL. 818  Coastal Geomorphology
GEOL. 819  Deep Sea Sediments
GEOL. 820  Marine Geophysics

PETROLOGY & MINERALOGY
GEOL. 821  Petrogenesis
GEOL. 822  Igneous Petrology
GEOL. 823  Metamorphic Petrology
GEOL. 824  Mineralogy
GEOL. 825  Geochemistry-I
GEOL. 826  Geochemistry-II

ENVIRONMENTAL GEOLOGY
GEOL. 827  Geo-environment & Geological hazards
GEOL. 828  Geo-Informatics
GEOL. 829  Medical Geology
GEOL. 830  Environmental Impact Assessment
GEOL. 831  Environmental laws and standards

GEOPHYSICS
GEOL. 832  Gravity and Magnetic methods
GEOL. 833  Seismic methods and seismic stratigraphy
GEOL. 834  Radiometric and electrical methods
GEOL. 835  Borehole geophysics

HYDROGEOLOGY
GEOL. 836  Applied Hydrogeology
GEOL. 837  Hydrogeophysics
GEOL. 838  Water quality and groundwater contamination
GEOL. 839  Groundwater development and management

MICROPALEONTOLOGY/BIOSTRATIGRAPHY
GEOL. 840  Bio-stratigraphy
GEOL. 841  Advanced Foraminifera
GEOL. 842  Advanced Ostracodes
GEOL. 843  Palynology

GEOL. 800 RESEARCH METHODOLOGY
Selection of research topic. Literature review on assigned topic related technique of data collection and laboratory analysis. Concepts of computer language & programming, Geoscience software, word processing and statistical packages. Seminar / oral presentation of the plan of assigned topic.

GEOL. 801  ADVANCED SEDIMENTOLOGY
Study of specialized aspects of sedimentary processes and environments, different types of sedimentological information and interpreting sedimentary environments and facies.

GEOL. 802  BIO-STRATIGRAPHY, TECHNIQUES OF CORRELATION & GEOLOGY OF PAKISTAN
Principles of Bio-stratigraphy and techniques of correlation, concept of facies types and significance, tectonic framework of Pakistan and its relation with adjoining basins of the sub-continent. Detailed Geology of Indus basin and northern mountain regions.

GEOL. 803  CARBONATE SEDIMENTOLOGY

Ph.D in Geology: 6 Semester Program: (18 CH Course work)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
GEOL 901 Geoscientific writing and presentation skills (4)
GEOL 902 Geostatistics and Geocomputing (4)
GEOL 903 Advanced Sedimentology (4)

2nd Semester
To be selected from the list optional courses in the facing column.
GEOL 904 Optional Paper I (3)
GEOL 905 Optional Paper II (3)
GEOL 995 Thesis

List of Optional Courses
01. Reservoir Geology (3)
02. Sequence Stratigraphy (3)
03. Basin Analysis (3)
04. Marine Geology (3)
05. Marine Geophysics (3)
06. Petrogenesis (3)
07. Geochemistry (3)
08. Environmental Geosciences (3)
09. GIS & Remote Sensing (3)
10. Seismic Stratigraphy (3)
11. Borehole geophysics (3)
12. Applied Hydrogeology (3)
13. Hydrogeophysics (3)
14. Advanced Foraminifera (3)
15. Advanced Ostracodes (3)
16. Palynology (3)
17. Coal Geology (3)
18. Advanced Geophysics (3)
19. Carbonate Sedimentology (3)
20. Petroleum Structural Geology (3)
21. Regional Petroleum Geology (3)

COMPULSORY/CORE COURSES
GEOL 901 Geoscientific writing and presentation skills (Cr. Hrs. 4)

GEOL 902 Geostatistics and Geocomputing (Cr. Hrs. 4)
Use of computers and statistics in Geosciences. The overview and fundamentals of geostatistics. The application and understanding of statistical concepts and softwares to study Geological processes. Understanding of fundamental statistical softwares used in Geosciences. The use of statistical softwares. Graphing and data visualization and descriptive statistics. Application of GIS and Remote sensing through the use of ARCGIS, Global Mappar and other related softwares. Introduction to industry related Geological and geophysical softwares such as REFLEXW, GEOGRAPHIX, PETREL, and GEOFRAME.

GEOL 903 Advanced Sedimentology (Cr. Hrs. 4)
The study of specialized aspects of sedimentary processes and environments with an emphasis on integrating different types of sedimentological information an interpreting sedimentary environments and Facies.

OPTIONAL COURSES
Reservoir Geology (Cr. Hrs. 3)


Sequence Stratigraphy (Cr. Hrs. 3)
significance, various approaches of sequence stratigraphy. Clastic and carbonate sequence stratigraphy e.g. Galloway, posser, Vail, Haq. Time stratigraphy, genetic sequence stratigraphy, Fluvial sequence stratigraphy, sequence stratigraphy in core and wire-line data sets. Application of sequence stratigraphy in tectonically active basins. Trace fossils in sequence stratigraphy.

**Basin Analysis (Cr. Hrs. 3)**

**Marine Geology (Cr. Hrs. 3)**

**Marine Geophysics (Cr. Hrs. 3)**

**Petrogenesis (Cr. Hrs. 3)**

**Geochemistry (Cr. Hrs. 3)**
Geochemical characteristics of igneous rocks as petrogenesis indicators. Triangular variation diagrams. Geochemical characteristics of primary magmas. Fractional crystallization. Geochemical characteristics of different magama series.


**Environment Geosciences (Cr. Hrs. 3)**
Air Pollution, Groundwater and its contamination, Water Pollution Geology and Environmental Impact of Waste Disposal, Global Warming: Basic Principles ,Mining and The Environment, Fossil Fuels Alternative Energy Sources. Volcanoes:. Magma sources and types, locations of volcanic activity, types of volcanoes, hazards related to volcanoes, and reducing volcanic hazards. Earthquakes: Earthquake hazards and reduction of hazards, and earthquake predictions. The mechanism of an earthquake; the most probable locations of an earthquake; seismic waves. The hazards associated with earthquakes; how to reduce those hazards; what to do before, during and after an earthquake. Mass Movements: Land sliding and its causes Coastal Hazards: Coastal Processes, El Niño and La Niño, Tsunamis

**GIS and Remote Sensing. (Cr. Hrs. 3)**
Fundamentals of Maps; map reading, scale, types and sources, map co-ordinate systems and projections (Cylindrical, Conic, Azimuth), Aerial Photographs stereo photographs, height determination, orthophotographs. Introduction to Remote Sensing (RS), EMR, platforms and sensors, resolution, multispectral, thermal, microwave, hyper spectral, image interpretation, classification), Global Position
System; Introduction, basic concepts, functions, data collection, methods. Geographical Information System; Introduction, concepts, features, data models, spatial data & non-spatial data, integration and analysis. Applications of Remote Sensing and GIS in Geology and environmental studies. Introduction softwares ARCGIS, MAPINFO, SURFER, GOOGLE EARTH, and GLOBALMAPPER.

Seismic Stratigraphy (Cr. Hrs. 3)


Borehole geophysics (Cr. Hrs. 3)

Applied Hydrogeology (Cr. Hrs. 3)

Hydrogeophysics (Cr. Hrs. 3)
Electrical resistivity method for exploration and exploitation of groundwater. 1D, 2D & 3D electrical imaging surveys. Electromagnetic method and geophysical well logging to explore the subsurface and quality of the groundwater.

Practical : Use of Terrameter and LUND imaging system in the discovery of groundwater. Use of computer software(s) in the interpretation and modeling of electrical resistivity data.

Advanced Foraminifera (Cr. Hrs. 3)
A broad survey of main foraminiferal groups. Planktonic, Benthonic and larger foraminifera. Their morphological, biological, and ecological characteristics. Its application, zonation, and correlation Techniques of study of foraminifera.

Advanced Ostrocodes (Cr. Hrs. 3)

Palynology (Cr. Hrs. 3)
Pollen and spores morphology, development of homospores distribution of palynomorphs during various geological periods. Methods of study and techniques of preparation of palynomorphs.

Coal Geology (Cr. Hrs. 3)
Coal origin and formation. Coal constitution – organic and inorganic components, rank and condition. Geology as related to exploration, development and mining of coal; stratigraphy, sedimentation and structure of coal deposits; type of coal basins and their tectonic setting; concepts of cyclical deposition in coal basins; origin of splits and partings in coal seams; relationship of modern environments and ancient coal-forming environments; structural problems relevant to exploration and mining of coal; methods of resource evaluation.

Advanced Geophysics (Cr. Hrs. 3)
2D and 3D Seismic and electrical measurements on the surface. Multiple array measurements. Modeling of Seismic and electrical data and automatic interpretation by inverse methods. Gravity, Magnetic, Electromagnetic, Self...
Potential, Induced Polarization methods. Geophysical Measurements in and around the borehole.

**Carbonate Sedimentology (Cr. Hrs. 3)**

Introduction, Classification of Carbonate Rocks According to Depositional Texture, Evolution from Sediment to Rock: Carbonate Sedimentation and Diagenesis, Carbonate Pore Classification, Environmental Controls, Depositional Environments, Modern and ancient examples of various important depositional environments. Facies and Depositional Systems of Carbonates, Sedimentary Facies Patterns, Depositional Models and Nomenclature, Carbonate Stratigraphy of Platform.

**Petroleum Structural Geology (Cr. Hrs. 3)**


**Regional Petroleum Geology (Cr. Hrs. 3)**

Introduction to Petroleum geology. Geologic and Geographic occurrences and economics of Unconventional oil and gas resources like very viscous oil and gas from low-permeability rocks, coal bed, and hydrates. Petroleum systems overview. Regional petroleum Exploration History and major discoveries. Case studies of significant discoveries of Pakistan, Middle East, Asia, Europe and America. Current and future global exploration strategies.

The faculty comprises:

**DR. GHULAM MURTaza MASTOI, Director**  
*Research Interest: Analytical Method Development*

**DR. ABDUL JABBAR LAGHARI, Associate Professor**  
*Research Interest: Analytical Method Development*

**DR. MUHAMMAD YAR KHUHAWAR, Professor, Emeritus**  
*Research Interest: Analytical Method Development and Polymer Chemistry*

**DR. TAJ MUHAMMAD JAHANGIR, Associate Professor**  
*Research Interest: Analytical Method Development and Water Analysis & Nano Particles Synthesis*

**DR. WAQAS JAMIL, Assistant Professor**  
*Research Interest: Medicinal Synthetic Chemistry*

**MS./MPhil in Chemical Sciences: 4-Semester Program (40)**

Pre-requisite: Master / 4 Years Graduation in relevant field ; Pre-Admission Test.

**1st Semester**

- ARSCS 810 Molecular and Atomic Spectroscopy and its Applications (4)
- ARSCS 811 Advanced Organic Chemistry (4)
- ARSCS 812 Separation Techniques (4)
- ARSCS 813 Research Methodology and Statistics for Chemists (2)
- ARSCS 814 Thermal Methods for Analysis (2)

**2nd Semester**

- ARSCS 815 Automated Methods of Analysis (3)
- ARSCS 816 Recent Development in Inorganic Chemistry (3)
- ARSCS 817 Physical Chemistry of Polymers (2)

**2nd to 4th Semester**

The Institute is specially established in 2009, to promote Research in Chemical Sciences, to supplement facilities available at Dr. Kazi Institute of Chemistry and to maximize utilization of facilities available in the Central Resource Laboratories of the University.
### ARSCS 895 Research on approved topic, Thesis and its Defense (16)

Ph.D. in Chemical Sciences: 6 Semester Program: (18 CH)

Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

#### 1st Semester
- **CHEM -900** Electrochemistry(3)
- **CHEM -901** Advanced Analytical Spectroscopy and its applications(3)
- **CHEM -902** Techniques for the analysis of biomolecules(3)

#### 2nd Semester
- **CHEM -903** Science of water, principles of water and wastewater treatment (3)
- **CHEM -904** Advances in Separation Sciences(3)
- **CHEM -905** Special topics(3)

#### 3rd to 6th Semester

**CHEM: 900** Electrochemistry

Modern techniques and concepts in electrochemistry, equilibrium and dynamic electrochemistry, ion transport and voltammetry, electrochemical systems of increasing importance including chemically modified electrodes, fuel cells and solar energy conversion applications

**CHEM: 901** Advanced Analytical Spectroscopy and its applications

Fundamentals of Photochemistry, Radiative Transitions – Absorption and Emission of Light, Non-radiative Transitions, Various Photophysical Processes, Laser Fundamentals, Some Spectroscopic Techniques; UV-vis spectrophotometer; Fluorescence spectrometer; Absorption, emission and excitation spectra; Applications Theories of Coordination Chemistry, Chelation effect, and application of Coordination Compounds and organo-metallic compounds.

**CHEM: 902** Techniques for the analysis of biomolecules

Biological sample preparation, Solvents and biological buffers, Centrifugation and separation, Biosensors, Chromatography and capillary electrophoresis of Biomolecules, NMR and Mass Spectrometry techniques in analysis of Biomolecules

**CHEM: 903** Science of water, principles of water and wastewater treatment

Properties of water (physical and chemical), Water, sustainability and development, Water, Sustainability and Development, Water quality management, surface and groundwater resource assessment and development, Water Quality, main water quality and pollution characteristics in rivers and lakes, different steps of the monitoring cycle in rivers and lakes, main factors in groundwater pollution and monitoring Introduction to water treatment, Introduction to wastewater treatment, Coagulation, Sedimentation, Floc separation processes, Activated Sludge, Filtration, Biological filtration, Adsorption

**CHEM: 904** Advances in Separation Sciences

Advances in Capillary electrophoresis, Microemulsion electrokinetic Chromatography (MEEC), non-aqueous capillary electrophoresis Instrumentation and advantageous of hyphernated chromatographic techniques, Ultra High Pressure Liquid Chromatography, LC/MS, Innovation in LC packing materials, Sample preparation techniques in Chromatography (GC and HPLC),

**CHEM: 905** Special topics:

Review of literature, Introduction to thesis writing, Introduction to scientific manuscript writing, introduction to plagiarism, types of plagiarism Nature of Chemical Interactions, Soft Materials, Micelles, Vesicles, Liquid crystals, Organogels, Hydrogels, Glasses, Molecular devices. How to synthesize molecules; a brief idea on the principles involved in organic synthesis, purification and characterization.

INSTITUTE OF BIOCHEMISTRY
Biochemistry is a vibrant, dynamic discipline. It is related to almost all the life sciences. Without biochemistry background & knowledge, a thorough understanding of health & well being is not possible. As it has developed into a major field with huge range of applications. Those who acquire a sound knowledge of biochemistry can tackle the central concerns of the biomedical sciences to understand and maintain the health and cure from diseases. Institute of Biochemistry, University of Sindh, was established in August 1999 with the multiple purpose of fulfilling research in the areas of Biochemistry, clinical Biochemistry, Nutrition & Food Technology, Bioanalytical Techniques, Bioinformatics and Molecular Biology. The Biochemistry programs at University of Sindh are also an excellent option for students majoring in Biological Sciences, such as, Physiology, Microbiology, Psychology, etc. opt it as a minor subject. The degree programmes in Nutrition & Food Technology will promote and involves the study of Nutrition, Food and its relation to health.

In the light of increasing nutrition-related problems in the world, it is necessary to find new ways to empower individuals and communities to exercise control over their health issues. Proper nutrition practices hold the key to the prevention and treatment of the chronic degenerative diseases that affect families globally. The integration of preventive and therapeutic nutrition into contemporary health care and food production and service is pivotal to this process.

The Institute is presently offering following degree Programs:-

SECTION – I (BIOCHEMISTRY)
- BS. Degree in Biochemistry (08 Semesters).
- M.Sc. Degree in Biochemistry (04 Semesters).
- M.Phil/MS Degree in Biochemistry (24 Cr. Hrs. Course Work).
- Ph.D. Degree in Biochemistry (18 Cr. Hrs. Course Work).

SECTION – II (NUTRITION & FOOD TECHNOLOGY)
- BS. Degree in Nutrition & Food Technology (08 Semesters).
- M.Phil/MS Degree in Nutrition & Food Technology (24 Cr. Hrs. Course Work).
- Ph.D. Degree in Nutrition & Food Technology (18 Cr. Hrs. Course Work).
- One Year Diploma in Food Analysis (Evening Program).

The Institute has well developed Research Laboratories in the field of Clinical Diagnosis, Nutrition & Food Technology, Molecular Biology, Bioinformatics, Bioanalytical & Toxinology Research. Where techniques like Fourier Transform Infrared Spectrometry (FTIR), Fraction collector, Electrophoresis, Flame Photometry, High Performance Liquid Chromatography (HPLC), Micro-lab, etc are being performed actively. All the faculty members are well-qualified & are fully committed towards creating a driving intellectual curiosity in students. Excellent student teacher ratio provides ample opportunity for students to interact with the faculty. Students find that faculty and staff is not only accessible, but is committed to their progress.

The mission of the Institute includes to teach and prepare undergraduate students for position of leadership in the new biology and to equip them to approach the challenging problems in life science that will continue to develop in the following decades. A degree in Biochemistry / Nutrition & Food Technology will give the tools to succeed in the 21st century.

Institute of Biochemistry has Five (05) Research laboratories.
- Bio-Analytical Research Lab.
- Bioinformatics Research Lab
- Molecular Biology Research Lab
- Nutrition & Food Technology Research Lab.
- Toxinology Research Lab.

The faculty comprises:

GHANGHRO ALLAH BUX, Professor & Director
M.Sc. 1988, Ph.D. 1999 (S.U)

CHANNA MS. NASEEM, Professor
M.Sc. 1993 (S.U), Ph.D (SU) 2006

SHAH MS. AFSHEEN, Associate Professor,
M.Sc 2001, Ph.D (S.U)

ANSARI MS. IBTESSAM TAHIR, Assistant Professor,
M.Sc 2003, Ph.D (S.U)

M.S./M.Phil. in Biochemistry 4-Semester Program (40)
Pre-requisite: BS/M.Sc. in Biochemistry in relevant field; Pre-Admission Test.
### Graduate Studies Catalogue 2019

#### 1st Semester (Core Courses)
- BIOC 800: Advanced Research Methodology and Biostatistics (4)
- BIOC 802: Applications of Techniques to Biomolecules (4)
- BIOC 804: Community Nutrition (4)
- BIOC 806: Applied Clinical Biochemistry (4)

#### 2nd Semester
- BIOC 808: Optional - I (4)
- BIOC 810: Optional - II (4)

#### 3rd to 4th Semester
- BIOC 812: Research on approved topic, Thesis & its Defense (16)

**List of optional courses:**
(Students have to option any two (02) of following courses depending upon the expertise available)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>01.</td>
<td>Plant Biochemistry</td>
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</tr>
<tr>
<td>02.</td>
<td>Applied Biochemistry &amp; Microbiology</td>
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</tr>
<tr>
<td>03.</td>
<td>Forensic Biochemistry</td>
<td></td>
</tr>
<tr>
<td>04.</td>
<td>Advanced Nutritional Care</td>
<td></td>
</tr>
<tr>
<td>05.</td>
<td>Interpretive Clinical Biochemistry-I</td>
<td></td>
</tr>
<tr>
<td>06.</td>
<td>Bioinformatics</td>
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</tbody>
</table>

**Ph.D. in Biochemistry: 6 Semester Program: (18 CH Course work)**

**Pre-requisite:** M.S./M.Phil. degree & valid GRE/GAT (Subject) Test result.

#### 1st Semester
- BIOC 900: Advanced Nutrition & Human Metabolism (4)
- BIOC 902: Clinical Toxicology & Hormone disruption (4)
- BIOC 904: Optional-I (4)
- BIOC 906: Optional-II (4)
- BIOC 908: Research on approved topic, Thesis & its Defense (2)

**List of optional courses:**
(Students have to option any two (02) of following courses depending upon the expertise available)

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<tbody>
<tr>
<td>03.</td>
<td>Genetically Modified Food</td>
<td></td>
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<tr>
<td>04.</td>
<td>Food Toxicology &amp; Allergy</td>
<td></td>
</tr>
<tr>
<td>05.</td>
<td>Interpretive Clinical Biochemistry-II</td>
<td></td>
</tr>
<tr>
<td>06.</td>
<td>Isozyme Analysis</td>
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M.S./M.Phil. in Nutrition & Food Technology 4- Semester Program (40)

**Pre-requisite:** Master / 4 Years Graduation in relevant field; Pre-Admission Test.

#### 1st Semester
- NUFT 800: Research Methods & Lab Techniques in Human Nutrition (4)
- NUFT 802: Nutrition Education, Communication & Awareness (4)
- NUFT 804: Advanced Food Microbiology (4)
- NUFT 806: Medical Nutrition Therapy (4)

#### 2nd Semester
- NUFT 8XX: Optional - I (4)
- NUFT 8XX: Optional - II (4)

#### 3rd to 4th Semester
- NUFT 812: Research on approved topic, Thesis and its Defense

**List of optional courses:**
Students have to option any two (02) of following courses depending upon the expertise available

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<td>02.</td>
<td>Applied Biochemistry &amp; Microbiology</td>
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<td>Forensic Biochemistry</td>
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<td>04.</td>
<td>Advanced Nutritional Care</td>
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<tr>
<td>05.</td>
<td>Interpretive Clinical Biochemistry-I</td>
<td></td>
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<td>06.</td>
<td>Bioinformatics</td>
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</table>

**Ph.D. in Nutrition & Food Technology: 6 Semester Program: (18)**

**Pre-requisite:** M.S./M.Phil. degree & valid GRE/GAT (Subject) Test result.

#### 1st Semester
- NUFT 900: Advanced Nutrition & Human Metabolism (4)
- NUFT 902: Functional Foods & Nutraceuticals (4)
- NUFT 904: Optional - I (4)
- NUFT 906: Optional - II (4)
- NUFT 908: Research on approved topic, Thesis & its Defense (4)

**List of optional courses:**
(Students have to option any three (03) of following courses depending upon the expertise available)
The Center for Advanced Studies in Biotechnology, established in January 2002 was upgraded to Institute in April 2003. The setting up of a separate Institute of Biotechnology and Genetic Engineering gave a fresh impetus to the development of the multidisciplinary field of modern biotechnology and Genetics. In present days, the boundaries of Biotechnology and Genetics are expanding with fantastic speed and their topic areas are turning into independent fields of specialization. Biotechnology is broadly defined as a fusion between natural sciences (such as biology, biochemistry and genetics) and technological fields. The necessity of Biotechnology was felt years back and in this regard Enzyme and Fermentation Research Laboratory was established in the Institute of Chemistry in 1989. During this period Sixteen (16) Ph.D. and Thirteen (13) M.Phil degrees were awarded besides completion of fourteen (14) research projects sponsored by National and International funding agencies & two research projects are in progress sponsored by HEC. So far more than three hundred (300) research articles have been published by the faculty in National and International Journals.

The challenges of 21st Century among other things would require advance and applied research activities to promote and contribute to the scientific, technological and economic development of the country.

The newly established Institute in near future will provide research facilities in the areas of Plant Biotechnology, Industrial Biotechnology, Healthcare, Environment Biotechnology and Genetics. The Institute has established International linkage & collaboration with highly reputed research laboratories and institute, e.g., Institute of Biochemistry & Biophysics, University of Tehran, Iran and State Key Laboratory of Bioreactor Engineering, East China University of Science and Technology, Shanghai, China. Institute of organic Chemistry & Biochemistry, University of Bonn and Department of Chemical Engineering, University of Bath, U.K, Shanghai Jiatong University China, Bogor Agriculture University, Indonesia, HEJ Research Institute University of Karachi and Nuclear Institute of TandoJam to overcome its resources constraints. So far the institute has organized five international symposia on biotechnology and two national training courses on biotechnological techniques.

The main goal of the Institute of Biotechnology and Genetic Engineering is teaching and research.
- To train needed scholars and researchers in the field of Biotechnology and Genetic Engineering and provide skilled manpower to the country.
- To promote the Sciences of Biotechnology and Genetics in the country, through organizing symposium, training courses, correspondence, publication of scientific research journal and books and articles.

The Institute is presently offering following degrees programs:-
- BS. in Genetics degree (8 Semesters)
- BS in Biotechnology Degree (8 Semesters)
- M.Sc. in Biotechnology (4 Semesters)
- M.S. / M.Phil. Biotechnology (4 Semesters)
- M.S. / M.Phil. Genetics (4 Semesters)
- Ph.D. degree in Biotechnology / Genetics

Experienced and competent faculty including visiting faculty with expertise and long experience in the area are presently conducting teaching and research programs. Plans are in hand to induct qualified faculty shortly.

Presently M.S. /M.Phil (19) and Ph.D (05) Degree.

The faculty comprises:-

SYED HABIB AHMED NAQVI, Associate Professor and Director  
M.Sc., Ph.D. 2005 (S.U), Post Doct. (China) 2008

MUHAMMAD RAFIQ, Associate Professor  
M.Sc 1999 (BZU), M.Phil. 2002 (PU) Ph.D 2012 (SU)

QURESHI ABDUL SATTAR, Assistant Professor  
M.Sc. 2001, M. Phil. 2008 (S.U), Ph.D. (China) 2015
BHUTTO MUHAMMAD AQEEL, Assistant Professor
M.Sc. 2002, M.Phil. 2009 (S.U), Ph.D (China) 2016

IKRAM-UL-HAQ, Assistant Professor
M.Sc. (UAF) 2000, M.Phil. (NIBGE-UAF) 2002 Ph.D. 2012 (SU)

IMRANA KHUSHK, Lecturer

M.S. M.Phil. in Biotechnology: 4- Semester Program (40)

Pre-requisite: Master / 4 Years Graduation in relevant field; Pre-Admission Test.

1st Semester
BIOT-800-801 Protein Structure, Function and Engineering (3,1)
BIOT-802-803 Hormones and Growth Factors (3, 1)
BIOT-804-805 Blood Chemistry and Diseases (3, 1)
BIOT-806-807 Advance Molecular Genetics (3, 1)

2nd Semester
BIOT-808 Bioprocess Engineering (4)
BIOT-810 Current Issues in Biotechnology (4)

3rd & 4th Semester
BIOT-815 Research Project and Thesis (16)

Ph.D. in Biotechnology: 4- Semester Program (18)

Pre-requisite: M.Phil. degree in relevant field, subjective GRE

The research scholars who enroll in Ph.D. Biotechnology must read two semester courses 18 credit hours including four compulsory of twelve (12) credit hours in first semester and two optional courses of six (06) credit hours in second semester. After course work, research project / thesis work, seminars, thesis submission and defense is mandatory for award of Ph.D. degree.

1st Semester
BIOT-850 Recent Trends in Biotechnology (3)
BIOT-852 advanced Techniques in Cell Culture (3)
BIOT-854 Membrane Topology and Signal Transduction (3)
BIOT-856 Medical Genetics (3)

2nd Semester
BIOT-870 Immunotoxicology (3)

BIOT-872 Recent Trends in Microbial Technology (3)

2nd Semester (Optional)
Bioremediation and Waste Water Treatment Technologies (3)
BIOT-860 Nanobiotechnology (3)
BIOT-862 Advanced Downstream Processing (3)
BIOT-864 Biosensors: Design and Application (3)
BIOT-866 Metabolic Engineering (3)
BIOT-868 Clinical Biotechnology (3)

3rd & 4th Semester
BIOT-874 Research Project & Thesis

M.S. / M.Phil. in Genetics: 4- Semester Program (40)

Pre-requisite: Master / 4 Years Graduation in relevant field; Pre-Admission Test.

1st Semester
GENT-800-801 Molecular Immunology and Virology (3,1)
GENT-802-803 Hormonal Genetics (3,1)
GENT-804-805 Clinical genetics (3,1)
GENT-806-807 Advance Molecular Genetics (3,1)

2nd Semester
GENT-808 Biosafety and Bioethics (4)
GENT-810 Instruments and Techniques in Genetics (4)

3rd - 4th Semester
GENT-813 Research Project and Thesis (16)

Ph.D. in Genetics: 4- Semester Program (18)

Pre-requisite: M.Phil degree in relevant field, subjective GRE

The research scholars who enroll in Ph.D. Genetics must read two semester courses 18 credit hours including four compulsory of twelve (12) credit hours in first semester and two optional courses of six (06) credit hours in second semester. After course work, research project / thesis work, seminars, thesis submission and defense is mandatory for award of Ph.D. degree.

1st Semester
GENT-850 Advances in Recombinant DNA Technology (3)
GENT-852 DNA Techniques and Clinical Applications (3)
GENT-854 Current trends in Cell Culture Technology (3)
GENT-856 Epigenetics (3)
Department of Chemistry, founded in 1953 has the distinction of being the very first department under the then Faculty of Science established at the Elsa Kazi Campus of the University in Hyderabad. The department was shifted to Allama I.I. Kazi Campus, Jamshoro in 1961. The status of the department was raised to that of the Institute of Chemistry in 1967. The Institute was named as Dr. M.A. Kazi Institute of Chemistry in 1999 after the name of its founder Chairman & Director (Late) Professor Dr. Mumtaz Ali Kazi.

The Institute has been offering undergraduate, graduate and doctoral research programs in Analytical, Organic, Inorganic, Physical Chemistry. Since its inception the Institute has catered to the human resources requirements of the country in general and the region in particular. The graduates of this Institute are holding key posts in the country as well as abroad.

The Institute has 24 spacious and equipped laboratories with highly qualified faculty. The Institute has to date awarded 53 Ph.D. degrees in addition to a number of M.Phils., since the introduction of doctoral research program in 1961.

The Institute also has the distinction of two of its graduates (i) Late Prof. Dr. Zafar Hassan Zaidi and (ii) Prof. Dr. M.Y. Khuhawar, been admitted to the degrees of Doctor of Science (D.Sc.) by the University of Leeds and the University of Birmingham, U.K. respectively, for their outstanding contributions towards research in their fields of specialization.

The Institute presently offers 4-yr., B.S. Chemistry, 2-yr. M.Sc. (Pass) program both in the Morning as well as Evening, besides M.S. / M.Phil and Ph.D. programs.

The present faculty comprises:

RIND MEHBOOB ALI, Professor & Director
M.Sc.1988, Ph.D. 2004 (S.U)

MASTOI GHULAM MURTADA, Professor
M.Sc.1991, Ph.D. 2003 (S.U)

MUGHAL MOINA AKHTAR, Professor
M.Sc. 1995, M.Phil. 2003 (S.U), Ph.D (S.U) 2013

MALLAH ARFANA BEGUM, Assoc. Professor

MEMON SAIMA QAYOOM, Assoc. Professor
M.Sc. (S.U) 2000, Ph.D (S.U) 2005

ABBASI KULSOOM, Assoc. Professor
M.Sc. 197y, M.Phil. (S.U) 2001, Ph.D (S.U) 2009

SYED AMBREEN SHAH, Assoc. Professor

KHAN HUMERA ASAD, Assoc. Professor

LAGHARI ABDUL JABBAR, Assoc. Professor

MEMON GHULAM ZOHRA, Assoc. Professor

MEMON NUSRAT NAEEM, Assoc. Professor
M.Sc. (SAL) 2001, Ph.D 2011

MEMON JAMIL-UR-REHMAN, Assistant Professor
M.Sc 2001 (S.U), Ph.D 2009 (S.U)

PANHWAR QADEER KHAN, Assistant Professor
M.Sc. 2004 (SU), Ph.D (SU)

IBUPOTO ZAFFAR HUSSAIN, Assistant Professor
M.Sc. (SALU) 2001, Ph.D (Sweden) 2014
### GRADUATE STUDIES CATALOGUE 2018

**SAMEJO MUHAMMAD QASIM**, Assistant Professor
M.Sc. (S.U) 2004, Ph.D (S.U) 2013

**SIYAL ALI NAWAZ**, Lecturer
M.Sc. (QAU) 2008, Ph.D (S.U) 2014

**SABA NAZ SHAIKH**, Lecturer
BS (SU) 2006, Ph.D (S.U) 2015

**SOLANGI IMAM BUX**, Lecturer
Ph.D (S.U) 2011

**KHUHAWAR MUHAMMAD YAR**, Professor (Emeritus)

**M.Phil/ M.S. in Analytical Chemistry: 4- Semester Program (40)**

Pre-requisite: Master / 4 Years Graduation in relevant field ; Pre-Admission Test.

#### 1st Semester
- **CHEM 800** Laser and Emission Spectroscopy (3,1)
- **CHEM 802** Radioanalytical Methods (3,1)
- **CHEM 804** Environmental Analysis (3,1)
- **CHEM 806** Electroanalytical Analysis (3,1)

#### 2nd Semester
- **CHEM 808** Chromatographic Techniques/Thermal methods (3,1)
- **CHEM 810** Quality Assurance, Automated (3,1)

#### 3rd to 4th Semester

**M.S. /M.Phil in Organic Chemistry 4- Semester Program (40)**

Pre-requisite: Master / 4 Years Graduation in relevant field ; Pre-Admission Test.

#### 1st Semester
- **CHEM 822** Modern Trends in Organic Synthesis (3,1)
- **CHEM 824** Advanced Stereochemistry (3,1)
- **CHEM 826** Advanced Natural Products (3,1)
- **CHEM 828** Advanced Spectroscopy (3,1)

#### 2nd Semester
- **CHEM 830** Organic Polymer Chemistry (3,1)
- **CHEM 832** Organic Photochemistry (3,1)

#### 3rd to 4th Semester
- **CHEM 895** Research study on approved topic. Thesis Dissertation and defense (16)

**M.S./ M.Phil in Physical Chemistry 4- Semester Program (40)**

Pre-requisite: Master / 4 Years Graduation in relevant field ; Pre-Admission Test.

#### 1st Semester
- **CHEM 834** Physical Chemistry of high polymers (3,1)
- **CHEM 836** Quantum Chemistry (3,1)
- **CHEM 838** Advanced Chemical Kinetics (3,1)
- **CHEM 840** Photochemistry (3,1)

#### 2nd Semester
- **CHEM 842** Surface Chemistry (3,1)
- **CHEM 844** Nuclear and Radiochemistry (3,1)

#### 3rd to 4th semester
- **CHEM 895** Research study on approved topic, Thesis/ Dissertation and defense (16)

**Ph.D. in Analytical Chemistry: 6 Semester Program: (18 CH Course work)**
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
CHEM 900 Classical Methods of Analytical Chemistry (3)
CHEM 902 Sampling and Preparation of Analysis Samples (3)
CHEM 904 Spectrophotometric, Electroanalytical Techniques (3)

2nd Semester
CHEM 906 Separation Techniques and their Applications in Analytical Chemistry (3)
CHEM 908 Automated and Discrete Methods of Analysis, Auto Sample, Flow Injection Analysis, Thermogravimetric Analysis (3)
CHEM 910 Applications of different Spectroscopic Techniques in Organic and Inorganic (3)

Ph.D. in Inorganic Chemistry: 6 Semester Program: (18 CH Course work)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
CHEM 920 Bonding in Metal Complexes. Inorganic Reaction Mechanism (3)
CHEM 922 Organometallic Chemistry (3)
CHEM 924 Nuclear Chemistry. Bio-Inorganic Chemistry (3)

2nd Semester
CHEM 926 Physical Methods in Inorganic Chemistry (3)
CHEM 928 Chemical Crystallography. Solid State Chemistry (3)
CHEM 930 Nanotechnology (3)

Ph.D in Organic Chemistry: 6 Semester Program: (18 CH Course work)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
CHEM 940 Advanced Organic Polymer Chemistry (3)
CHEM 942 Organometallic Compounds in Organic Chemistry (3)
CHEM 944 Principles and Practice of Spectrophotometric Methods used in Drug Analysis (3)

2nd Semester
CHEM 946 Nuclear Magnetic Resonance in Organic Chemistry (3)
CHEM 948 Design of Organic Synthesis (3)
CHEM 950 Biosynthesis of Natural Products (3)

Ph.D in Physical Chemistry 4-Semester Program: (18 CH Coursework)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
CHEM 960 Advance Electrochemistry (3)
CHEM 962 Thermodynamics of Biochemical Reactions (3)
CHEM 964 Group Theory-I (Fundamental Concepts) (3)

2nd Semester
CHEM 966 Solid State Chemistry (3)
CHEM 968 Group Theory-II (Applications to Physical Chemistry) (3)
CHEM 970 Gas Kinetics (3)

INSTITUTE OF INFORMATION AND COMMUNICATION TECHNOLOGY

In 1998, phenomenal and rapid development of technology led the University of Sindh to establish an independent Institute of Information Technology (IIT), bifurcating the former Institute of Physics and Technology working since 1979, to extend its scope as a beacon for Information Technology education at national and international levels. In 2008, IIT was re-designated as Institute of Information and Communication Technology (IICT). The IICT imparts cutting-edge education with outstanding quality through its highly qualified faculty at graduate and postgraduate levels to produce top-notch professionals in core ICT related disciplines.

Programs are run jointly by the four component disciplines of Electronics, Telecommunications, Information Technology and Software Engineering. The IICT offers 8-semester undergraduate programs, BS in Information Technology, BS in Telecommunications, BS in Electronics and BS in Software Engineering. In addition, the institute also offers 8-semester undergraduate programs in evening shifts, BS in Information Technology and BS in Software Engineering.

The IICT aims to produce graduates with learning outcomes necessary to design hardware and software systems, apply the technologies effectively for diverse environments, adopt analytical and logical approach, and foster independent judgment and ability to work cooperatively with others.
In addition to its undergraduate programs, the IICT also offers M.S. / M.Phil. programs in disciplines of Electronics, Telecommunications, Information Technology and Software Engineering, and Ph.D. degree program in Information Technology. Over 160 students are enrolled in all M.S. / M.Phil. and Ph.D. programs. The IICT currently has 10 (Ten) Ph.D. faculty members and all of them have earned their degrees from international universities of high repute, and many other faculty members are currently pursuing their Ph.D. studies in various international universities and are expected to complete their Ph.D. studies soon. In recent years, the faculty has produced a large number of publications in different journals of national and international repute.

The Institute is well-equipped with all required infrastructure of excellent learning including state-of-art computer, electronics and communication laboratories connected to information cyberspace via PERN link of 48MB bandwidth, digital library access including IEEE, ACM, Springer Link subscription, spacious class rooms with multimedia facilities, computerized internal library with abundant and latest editions of books, journals and magazines. The institute also provides facilities for indoor and outdoor co-curricular and extra co-curricular activities of students.

The present faculty comprises:

**ISMAILI IMDAD ALI, Meritorious Professor & Director**
MSc Electronics (SU) 1985, DIC & Ph.D. (Imperial College, UK) 1996

**KHOUMBATI KHALIL-UR-REHMAN, Professor**
MSc Computer Technology (S.U) 1990, Ph.D. (Brunel University, UK) 2005

**DHOMEJA LACHHMAN DAS, Professor**
MSc Computer Technology (S.U) 1991, Ph.D. (University of Sussex, UK) 2011

**SHAH AZHAR ALI, Associate Professor**
MSc Electronics (S.U) 1998, M.Phil. (S.U) 2004, Ph.D. (Nottingham University, UK) 2011

**MEMON SHAHZAD AHMED, Associate Professor**
MSc Electronics (S.U) 1999, Ph.D. (Brunel University, UK) 2013

**PATHAN KAMRAN TAJ, Associate Professor**
MSc Computer Technology (S.U) 1999, Ph.D. (University of Leicester, UK) 2013

**ARIJO NIAZ HUSSAIN, Associate Professor**
BCIT (S.U) 2002, Ph.D. (University of Leicester, UK) 2011

**HAKRO DIL NAWAZ, Assistant Professor**
BCIT (Hons) (S.U) 2002, M.Phil. (IT) (S.U) 2012, Ph.D. (University Science Malaysia, Malaysia) 2015

**BHAHTI ZEESHAN, Assistant Professor**
BCS (Hons) (S.U) 2004, M.Phil. (IT) (S.U), 2011, Ph.D. (IIUM, Malaysia) 2015

**MAHESAR ABDUL WAHEED, Assistant Professor**
BCS (S.U) 2004, Ph.D. (International Islamic University Malaysia (IIUM), Malaysia) 2016

**MS./M.Phil. in Information Technology: 2-yr, 4-Semester Program (40)**
Pre-requisite: Master / 4 Year Graduation in Information Technology or relevant discipline, Pre-entry Test and Interview

**1st Semester**
- ITEC-800 Pervasive Systems (4)
- ITEC-802 Research Methods and Communication Skills (4)
- ITEC-804 Elective-I (4)
- ITEC-806 Elective-II(4)

**2nd Semester**
- ITEC-808 Elective-III (4)
- ITEC-810 Elective – IV (4)

**3rd to 4th Semester**

**Note:**
Having passed 1st semester course work with CGPA 3.0 or above, M.S. / M.Phil student is eligible to start research while the 2nd semester coursework is in progress.

**Electives:** Two of the following have to be offered in 1st semester and two in the 2nd semester

- Information Technology Architecture
- Data Mining
- IT Project Management
- Health Informatics Modeling
- Computer Vision
- Distributed Computing
- Distributed Databases
- Human Computer Interaction
- Software Designing &
- Management Information Systems & Applications
- Advanced Networking
- Advanced Multimedia Systems
- Operating systems for Smart Devices
- Wireless Sensor Networks
- Biometric Systems

**MS./ M.Phil. Software Engineering: 4- Semester Program (40)**

Pre-requisite: Master / 4 Years Graduation in Software Engineering or relevant field; Pre-Admission Test and Interview.

**1st Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENG-800</td>
<td>Designing and Modeling of Software systems</td>
<td>(4)</td>
</tr>
<tr>
<td>SENG-802</td>
<td>Research Methods &amp; Communication Skills</td>
<td>(4)</td>
</tr>
<tr>
<td>SENG-804</td>
<td>Elective-I</td>
<td>(4)</td>
</tr>
<tr>
<td>SENG-806</td>
<td>Elective-II</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**2nd Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENG-808</td>
<td>Elective-I</td>
<td>(4)</td>
</tr>
<tr>
<td>SENG-810</td>
<td>Elective-II</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**3rd to 4th Semester**


**Electives:** Two of the following have to be offered in 1st semester and two in the 2nd semester.

- Human Computer Interaction (HCI)
- Requirement Engineering Architecture
- Software Engineering Management
- Formal Methods in Software Engineering
- Pervasive Computing
- Software Costing and Estimation
- Advanced Relational Database Management System
- Web Engineering Computing
- Performance Modeling and Analysis of Software Systems
- Health Informatics
- Software
- Software Quality
- Social Computing
- Distributed

**MS./ M.Phil. Telecommunication: 4- Semester Program (40)**

Pre-requisite: Master / 4 Year Graduation in Telecommunication or relevant field; Pre-Admission Test and Interview.

**1st Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELE-800</td>
<td>Advanced DSP and Filters</td>
<td>(4)</td>
</tr>
<tr>
<td>TELE-802</td>
<td>Research Methods &amp; Communication Skills</td>
<td>(4)</td>
</tr>
<tr>
<td>TELE-804</td>
<td>Elective-I</td>
<td>(4)</td>
</tr>
<tr>
<td>TELE-806</td>
<td>Elective-II</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**2nd Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELE-808</td>
<td>Elective-III</td>
<td>(4)</td>
</tr>
<tr>
<td>TELE-810</td>
<td>Elective-IV</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**3rd to 4th Semester**


**Note:** Having passed 1st semester course work with CGPA 3.0 or above, M.S. / M.Phil student is eligible to start research while the 2nd semester coursework is in progress.

**Electives:** Two of the following have to be offered in 1st semester and two in the 2nd semester.

- Information Theory and Coding
- Advanced Network Security
- Telecom Networks Management
- Software Tools and Technics in Telecommunication
- Telecommunication Network Design
- Telecom Policies Standards Regulation
- IP Based System
- Statistical Communication
- Advanced Digital Communication
- Multi Protocols layer Switching
- Advanced Mobile & Wireless Communication
- Advanced Microwave Communication
- Modern Trends in Telecom and Information Superhighways
- Advanced Neural Networks and Fuzzy logic
- Telecom operating systems
• Mobile AdhocNetworks
• Advanced telecom Switching Systems
• Advanced Data Communication

MS / M.Phil. Electronics: 4- Semester Program (40)
Pre-requisite: Master / 4 Year Graduation in Electronics or relevant field ; Pre-Admission Test and Interview.

1st Semester
ELE-800 Advanced FPGA based Design (4)
ELE-802 Research Methods & Communication Skills (4)
ELE-804 Elective-I (4)
ELE-806 Elective-II (4)

2nd Semester
ELE-808 Elective-I (4)
ELE-810 Elective-II (4)

3rd to 4th Semester

Note: Having passed 1st semester course work with CGPA 3.0 or above, M.S. / M.Phil student is eligible to start research while the 2nd semester coursework is in progress.

Electives: Two of the following have to be offered in 1st semester and two in the 2nd semester.
• Introduction to MEMS Design and Micromachining
• Microprocessor based System Design
• Fiber Optics and Integrated optics
• Digital Signal Processing
• Mobile ad hoc networks
• Nanotechnology
• System on Chip (SoC)
• Power electronics for renewable energy systems
• Autonomous Robotics Engineering

Ph.D. Information Technology 6- Semester Program 18 CH
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
ITEC-900 Advanced Research methodology and Communication Skills (3)
ITEC-902 Elective-I (4)
ITEC-904 Elective-II (4)

2nd Semester
ITEC-906 Elective-III (4)
ITEC-908 Independent Study (3)

3rd to 6th Semester

Electives: Two of the following have to be offered in 1st semester and one in the 2nd semester.
• Advanced Operating System
• Dynamic Software Architectures
• Service-oriented Architectures
• Software Designing & Modeling Analysis
• Simulation and Modeling
• Advanced Information Systems
• Advanced Multi-media Systems
• Distributed Computing
• Smart Energy Systems and Management
• Health Informatics
• Advanced Mobile and Wireless Communication

The Institute of Mathematics and Computer Science was established in 1986 by upgrading the Department of Mathematics founded in 1953. At present its major components are: Mathematics and Computer Science and Bioinformatics. The
Institute developed its research programs for M.S./M.Phil. and Ph.D. (Math) degrees in 1991 and has been enrolling students since then. This is in addition to the undergraduate and M.S./M.Phil., Computer Science program in the year 2013. Till to-date thirty four (34) scholars of M.Phil and three (3) scholars of Ph.D. have completed their respective degrees at the Institute of Mathematics and Computer Sciences.

The pre-requisite for undergraduate Program in Computer Sciences has been extended to include *Pre-Engineering, Pre-Medical, General Science and Commerce groups of H.S.C.* The Institute also offers B.S. Computer Science program in the Evening, besides Diploma and short courses in Computer Science, developing Computer awareness among academic and administrative staff, students and masses.

The curricula listed here have been recently updated under the revised scheme; the 4-yr Bachelor degrees have been designated as Bachelor of Studies (Mathematics) OR Bachelor of Science Computer Science B.S. (CS). However, 3- year B.C.S. (Pass) degree can also be availed by conversion after passing four semester examination with CGPA 2.0 or above.

The faculty comprises:

**CHANDIO MUHAMMAD SALEEM**, Professor & Director  
M.Sc. (S.U) 1986, Ph.D. (Wales, UK) 2002

**MEMON RIAZ AHMED**, Professor  
M.Sc. (S.U) 1986, Ph.D. (Shanghai) 1993

**SOOMRO ABDUL SATTAR**, Professor  
M.Sc. (S.U) 1986, Ph.D. (China) 1994

**SHAFAQ ABDUL WASSIM**, Professor  
M.Sc. (S.U) 1990, Ph.D. (China) 2006

**MEMON ABDUL GHAFOOR**, Professor  

**KEERIO AYAZ**, Professor  
M.Sc. (S.U), Ph.D. (Sussex, UK) 2011

**KOHYRO ZAINUL ABDIN**, Professor  
M.Sc. (S.U) 1999, Ph.D (Essex, UK) 2011

**BALOCH MUJEEB-U-REHMAN MAREE**, Professor  
M.Sc. (S.U) 1988, Ph.D (Canada) 2012

**MEMON FARHAT NOUREEN**, Associate Professor  
M.Sc. (S.U) 1999, Ph.D (Essex, UK) 2012

**NIZAMANI QURAT-UL-AIN**, Associate Professor  
M.Sc. (S.U) 2000, Ph.D (UK) 2012

**NIZAMANI HYDER ALI**, Associate Professor  
M.Sc. (S.U), M.Phil. (SZABIST), Ph.D (UK) 2012

**CHANDIO FIDA HUSSAIN**, Associate Professor  
M.Sc. (S.U), Ph.D (UK) 2012

**HUSSAINI NAZISH NAWAZ**, Assistant Professor  
M.Sc. (SU), M.Phil (SU)

**MEMON ABDUL GHAFOR**, Professor  

**KEERIO AYAZ**, Professor  
M.Sc. (S.U), Ph.D(Sussex, UK) 2011

**KHUHRO ZAINUL ABDIN**, Professor  
M.Sc. (S.U) 1999, Ph.D (Essex, UK) 2011

**BALOCH MUJEEB-U-REHMAN MAREE**, Professor  
M.Sc. (S.U) 1988, Ph.D (Canada) 2012

**MEMON FARHAT NOUREEN**, Associate Professor  
M.Sc. (S.U) 1999, Ph.D (Essex, UK) 2012

**NIZAMANI QURAT-UL-AIN**, Associate Professor  
M.Sc. (S.U) 2000, Ph.D (UK) 2012

**NIZAMANI HYDER ALI**, Associate Professor  
M.Sc. (S.U), M.Phil. (SZABIST), Ph.D (UK) 2012

**CHANDIO FIDA HUSSAIN**, Associate Professor  
M.Sc. (S.U), Ph.D (UK) 2012

**HUSSAINI NAZISH NAWAZ**, Assistant Professor  
M.Sc. (SU), M.Phil (SU)

**MEMON ABDUL GHAFOR**, Professor  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATHS 800</td>
<td>Research Methodology</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 801</td>
<td>Mathematical Analysis Real, Complex, Functional</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 802</td>
<td>Elective-I</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 803</td>
<td>Elective-II</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 804</td>
<td>Advanced Numerical Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 805</td>
<td>Elective-I</td>
<td>4</td>
</tr>
</tbody>
</table>

**M.Phil. / MS. in Mathematics 4- Semester Program (40)**

Pre-requisite: Master / 4 Years Graduation in relevant field; Pre-Admission Test.

**1st Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATHS 800</td>
<td>Research Methodology</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 801</td>
<td>Mathematical Analysis Real, Complex, Functional</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 802</td>
<td>Elective-I</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 803</td>
<td>Elective-II</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 804</td>
<td>Advanced Numerical Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MATHS 805</td>
<td>Elective-I</td>
<td>4</td>
</tr>
</tbody>
</table>
2nd to 4th Semester

**Elective courses**

Two Elective Courses from the list available with the Director are to be offered in 1st Semester and one in 2nd Semester, subject to availability of faculty; minimum 3 students are to offer the course.

Ph.D. in Mathematics: 3-yr, 6- Semester program (18)

Pre-requisite:

- M.S. /M.Phil or equivalent degree (18 years education) in Mathematics from any HEC recognized University/Institute with minimum 3.0 CGPA out of 4.0
- GRE/GAT (subject) Test cleared. OR
- A candidate studying in M.S. /M.Phil degree in Mathematics, subject to qualifying M.S. /M.Phil 24 credit hours course work with minimum CGPA 3 is also eligible for transfer of his/her M.S. /M.Phil. to Ph.D program, provided (a) Candidate have successfully defended the first M.S. /M.Phil. seminar (b) GRE/GAT (Subject) Test has been cleared.
- The registration of the candidate enrolled for M.S. /M.Phil shall be transferred for Ph.D degree on the recommendation of the supervisor and the scrutiny committee with the condition that he/she will have to submit fresh synopsis specifying additional research to be carried out. Synopsis should not be more than one thousand (1000) words.

**Objective of the Program**

- Well-trained teaching faculty.
- Motivated researchers who can work in different areas of Mathematics.

**Structure of the Program**

The Ph.D. degree is earned in six semesters through 42 CH coursework (24CH of M.S. / M.Phil. + 18 CH of Ph.D.) and thesis on the topic duly approved by the Advanced Studies and Research Board.

- The candidate who has qualified 24CH M.S. /M.Phil. coursework (or 18-year of schooling) will have to study and qualify 18CH coursework of Ph.D.; otherwise the candidate will complete 42 CH coursework.
- A written comprehensive examination of courses,
- On completion of thesis work, an ‘Open Seminar’ is delivered before submitting the thesis. The thesis should be a piece of work embodying either a discovery of new facts or fresh interpretation of facts or theories, in either case the work show the candidate’s capacity for synthesis of data, its critical examination and judgment.
- Finally a candidate has to appear in an oral examination.

**Semester-I**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH 8XX</td>
<td>Core-I (3 CH)</td>
</tr>
<tr>
<td>MTH 8XX</td>
<td>Elective-I (3 CH)</td>
</tr>
</tbody>
</table>

**Semester-II**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH 8XX</td>
<td>Core-II (3 CH)</td>
</tr>
<tr>
<td>MTH 8XX</td>
<td>Elective-III (3 CH)</td>
</tr>
<tr>
<td>MTH 8XX</td>
<td>Elective-IV (3 CH)</td>
</tr>
<tr>
<td>TH 8XX</td>
<td>Research Thesis Viva Voce</td>
</tr>
</tbody>
</table>

**Compulsory Courses:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH-800</td>
<td>Advanced Abstract Algebra</td>
</tr>
<tr>
<td>MTH-801</td>
<td>Advanced Mathematical Analysis</td>
</tr>
<tr>
<td>MTH-802</td>
<td>Analysis of Differential Equations</td>
</tr>
</tbody>
</table>

**Elective Courses:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH-811</td>
<td>Finite Elements Method</td>
</tr>
<tr>
<td>MTH-812</td>
<td>Cryptography</td>
</tr>
<tr>
<td>MTH-813</td>
<td>Advanced Topics in Operations Research</td>
</tr>
<tr>
<td>MTH-814</td>
<td>Advanced Topics in Optimization Theory</td>
</tr>
<tr>
<td>MTH-816</td>
<td>Applicable Mathematical Physics</td>
</tr>
<tr>
<td>MTH-817</td>
<td>Graph Theory</td>
</tr>
<tr>
<td>MTH-818</td>
<td>Mathematical Biology</td>
</tr>
</tbody>
</table>
Note: Detail outlines can be obtained from the Office of IMCS

Computer Science Programs

M.S./ M.Phil. in Computer Science: 4- Semester Program (40)
Pre-requisite: BS/M.Sc. in Computer Science; Pre-Admission Test.

1st Semester
COM 815  Research Methodology (4)
COM 821  Theory of Computation (4)
COM 823  Advanced Computer Operating system (4)
COM 824  Elective-I

2nd Semester
COM  Elective-II
COM  Elective-III

Elective courses: One Elective to be offered in 1st Semester and Two in 2nd Semester. List of elective courses available with director; minimum 3 students are to offer the course, subject to availability of faculty.

2nd to 4th Semester
COM 895  Research on approved topic, Thesis and its Defense (16)

Note: Detail outlines can be obtained from the Office of IMCS

Ph.D. in Computer Science in 6 Semester Program: 18 CH Course
Pre-requisite:
• M.S. /M.Phil or equivalent degree (18 years education) in Computer Science from any HEC recognized University/Institute with minimum 3CGPA.
• GRE/GAT (subject) Test cleared

OR
• A candidate studying in M.S. /M.Phil degree in computer science, subject to qualifying M.S. /M.Phil 24 credit hours course work with minimum CGPA 3 is also eligible for transfer of his/her M.S. /M.Phil. to Ph.D program, provided (a) Candidate have successfully defended the first M.S. /M.Phil. seminar (b) GRE/GAT (Subject) Test has been cleared. The registration of the candidate enrolled for M.S. /M.Phil shall be transferred for Ph.D degree on the recommendation of the supervisor and the scrutiny committee with the condition that he/she will have to submit fresh synopsis specifying additional research to be carried out. Synopsis should not be more than one thousand (1000) words.

Objective of the Program
• To produce well-trained teaching faculty and researchers in the areas related to Computer Science.

Structure of the Program
The Ph.D degree can be earned in six semesters through:
• 18 credit hours Ph.D. course work during first year (in two semesters).
• Thesis on the topic duly approved by the Advanced Studies and Research Board.
• On completion of thesis work, an ‘Open Seminar’ is delivered before submitting the thesis. The thesis should be a piece of work embodying either a discovery of new facts or fresh interpretation of facts or theories, in either case the work show the candidate’s capability for synthesis of data, its critical examination and judgment.
• Finally a candidate has to appear in an oral examination to defend his thesis.

1st Semester
COMP-801 or 802  Research Methodology or Advanced Statistical Research Methods (3)
COMP-          Specialization Core-1 (3)
COMP-          Specialization Core-2 (3)

2nd Semester
COMP-  Elective-I (3 CH)
COMP-  Elective-II (3 CH)
COMP-  Elective-III (3 CH)

List of Specialization Core Courses
COMP -803  Advanced Database Management Systems (3 CH)
COMP -804  Advanced Software Engineering (3 CH)
COMP -805  Pervasive Computing (3 CH)
COMP -806  Mobile Ad Hoc Networks (3 CH)
COMP -807  Advanced Wireless Networks (3 CH)
COMP -808  Advanced Analysis of Algorithms (3 CH)
COMP - 809  Advanced Networking (3 CH)
COMP - 810  Advanced Artificial Intelligence (3 CH)
COMP - 811  Advanced Digital Signal Processing (3 CH)
COMP - 812  Formal Methods (3 CH)
COMP - 813  Advanced Human Computer Interaction (3 CH)
COMP - 814  Advanced Information Systems (3 CH)
COMP - 815  Information Security (3 CH)
COMP - 816  Agile Software Development (3 CH)
COMP - 817  Bioinformatics (3 CH)
COMP - 818  Evolutionary Computing (3 CH)
COMP - 819  Advanced Operating System (3 CH)

List of Elective Courses
COMP - 851  Distributed Databases (3 CH)
COMP - 852  Advanced Topics in Databases (3 CH)
COMP - 853  Network Performance Evaluation (3 CH)
COMP - 854  Advanced Data Mining (3 CH)
COMP - 855  Advanced Data Warehousing (3 CH)
COMP - 856  Software Project Management (3 CH)
COMP - 857  Software Architectures (3 CH)
COMP - 858  Advanced Parallel and Distributed Computing (3 CH)
COMP - 859  Advanced Topics in Computer Networks (3 CH)
COMP - 860  Wireless Sensor Networks (3 CH)
COMP - 861  Theory of Programming Languages (3 CH)
COMP - 862  Data and Network Security (3 CH)
COMP - 863  Software Requirement Engineering (3 CH)
COMP - 864  Information System Audit and Evaluation (3 CH)
COMP - 865  Business Process Automation (3 CH)
COMP - 866  Design Patterns (3 CH)
COMP - 867  Software Testing (3 CH)
COMP - 868  Web Systems and Technologies (3 CH)
COMP - 869  Bio-Statistics (3 CH)
COMP - 870  Special Topics in Bioinformatics (3 CH)
COMP - 871  Computer Vision (3 CH)
COMP - 872  Multimedia Databases (3 CH)

COMP - 873  Grid and Cluster Computing (3 CH)
COMP - 874  Special Topics in Pervasive Computing (3 CH)
COMP - 875  Special Topics in Evolutionary Computing (3 CH)
COMP - 876  Speech Recognition and Synthesis (3 CH)
COMP - 877  Software Reliability (3 CH)

Note: Detail outlines can be obtained from the Office of IMCS Bioinformatics Program

Candidates with a minimum of 16 years of schooling, possessing at least second class Master's degree or 4 year Bachelor degree of the University of Sindh / Universities / Institute recognized by the Higher Education commission of Pakistan in the subjects in Science / Engineering/ Technology/ Agriculture/ Medicine/ Veterinary Science/ Pharmacy and qualifying pre-admission test may be allowed to seek enrolment for Research Studies which may lead to the degree of M.S./M.Phil. in Bioinformatics.

The M.S./M.Phil. program will be of a minimum of two years (4 semesters) duration comprising mainly course work of 16 Credit Hour (CH) courses during first semester and 8 CH courses during the 2nd semester, besides thesis research on the topic duly approved by the Advanced Studies and Research Board, on the recommendations of the supervisor and Scrutiny Committee. Further regulations, terms and conditions of University of Sindh for Registration to Research Studies leading to M.S/M.Phil degree are being followed for Bioinformatics program.

M.S./M.Phil. in Bioinformatics: 4- Semester Program (40)
Pre-requisite: BS/M.Sc. in relevant field; Pre-Admission Test.

1st Semester
MBI 800 – 801  Introduction to Bioinformatics (3,1)
Elective  Course-I (3,1)
Elective  Course-II (3,1)
Elective  Course-III (3,1)

2nd Semester
MBI 802-803  DBMS with reference to Biological Data (3,1)
MBI 804-805  Genomics and Gene Networks (3,1)
3rd & 4th Semester

MBI 840 Research on approved topic, Thesis & its Defense
MBI 842 Viva Voce

Elective courses:
MBI-830 Fundamentals of Molecular Biology (Theory)
MBI-831 Fundamentals of Molecular Biology (Practical)
MBI-832 Fundamentals of Biochemistry (Theory)
MBI-833 Fundamentals of Biochemistry (Practical)
MBI-834 BioStatistics (Theory)
MBI-835 BioStatistics (Practical)
MBI-836 Essential Mathematics (Theory)
MBI-837 Essential Mathematics (Practical)
MBI-838 Introduction to Programming (Theory)
MBI-839 Introduction to Programming (Practical)

Note: i. Students having background in Biology will study the following courses:
   MBI-834 - 835, MBI-836 - 837 and MBI-838 - 839
   ii. Students having background in Mathematics will study the following courses:
   MBI-830 - 831 and MBI-832 - 833
   One course from MBI-834 - 835, or MBI-836 - 837, or MBI-838 - 839

MBI 830 - 831 FUNDAMENTALS OF MOLECULAR BIOLOGY
To understand the basic structures and their functions. To understand the folding concepts of different structures. To understand the laws of thermodynamics and its applications.

MBI 832 - 833 FUNDAMENTALS OF BIOCHEMISTRY
This course will provide fundamental concepts in biochemistry, which focuses upon the major macromolecules and chemical properties of living systems. Primary topics include the structure, properties, and functions of amino acids, proteins, carbohydrates, lipids and nucleic acids.

MBI 834-835 BIOSTATISTICS
The course provides an elementary statistics and probability with applications. The course also provides a broad treatment of statistics, concentrating on specific statistical techniques used in science and industry such as confidence intervals, and hypothesis testing.

MBI 836 – 837 ESSENTIAL MATHEMATICS
A course of mathematics for students who have studied math in their high schools is intended to be self-contained. It is possible to follow, without any background in math. It covers all the essential material that is a traditional course.

MBI 838-839 INTRODUCTION TO PROGRAMMING
This Course is aimed at students with little or no knowledge experience. The course aims to help students in understanding basic concepts and role of computation can play in solving problems using computer programs. In this course a programming language will be used.

MBI 800-801 INTRODUCTION TO BIOINFORMATICS
The interdisciplinary course will provide hands-on approach to students in the topics of bioinformatics. Learning basics of Bioinformatics. Learning genes and genomes. Understanding the alignment concepts. Learning methods of similarity searching.

MBI 802- 801 DBMS with reference to Biological data
The course is designed to provide the foundations of database systems basis such as the relational algebra and data model, query optimization, query processing, and transactions. Understanding the role of DBMS in Bioinformatics. Understanding some well-known sequence data bases.
MBI 804 – 805 GENOMICS AND GENE NETWORKS

Understanding the organization and structure of genome. Learning the Human Genome Project. Understanding the single nucleotide polymorphisms. Understanding DNA sequencing strategies. Learning the use of Web based servers.

INSTITUTE OF PHYSICS

Institute of Physics (formerly Department of Physics) is one of the oldest departments (established in 1955) of University of Sindh at Jamshoro. It was upgraded and named as Institute of Physics and Technology in 1979. In 1998 Physics and Technology disciplines were separated and given independent status as Department of Physics and Institute of Information Technology. Department of Physics was again upgraded to the present status of Institute of Physics in 2005.

Institute of Physics offers M.S. /M.Phil and Ph.D degree programs in the following areas:

- Experimental High Energy Physics
- LASER Spectroscopy
- Neuro Physics
- Condensed Matter and Material Physics
- Semiconductor Physics
- Ion Trapping

Recently, 18 C.H course for Ph.D degree program has been introduced as per criteria approved by the HEC, which provides an excellent forum for students to develop and enhance their specialist and other more general theoretical and research skills. The Institute of Physics welcomes post-graduate applications from prospective students in this program. Successful applicants after completing 18 C.H course can pursue their research as full-time students leading to Ph.D.

Beside that institute produced 03 Ph.D students and more than 20 research papers published in international repute journals last year.

The faculty comprises:

- KALHORO, MUHAMMAD SIDDIQUE, Meritorious Professor &
  M.Sc. (S.U), Ph.D. (London), 1999 Pro Vice-Chancellor (Badin Campus)
- MOGHAL, AKHTAR HUSSAIN, Professor & Dean
- SHAIKH, NEK MUHAMMAD, Professor & Director
  M.Sc. (QAU) 1993, Ph.D. (QAU, Islamabad), 2007
- MEMON, IRFAN ALI, Professor
  M.Sc. (QAU), 1993, Ph.D (London) 2008
- MARI, RIAZ HUSSAIN, Associate Professor
  M.Sc. (SU) 1999, Ph.D (Nottingham, UK) 2012
- NIZAMANI, ALTAF HUSSAIN, Associate Professor
  M.Sc. (SU), 1996, Ph.D (Sussex, UK) 2011
- ABBASI, MAZHAR ALI, Associate Professor
  M.Sc. (SU), Ph.D (Linkoping, Sweden) 2014
- SOOMRO, MUHAMMAD YOUSUF, Assistant Professor
  M.Sc. (SU) 2003, Ph.D (Linkoping, Sweden) 2014
- BHUTTO, WAASEEM AHMED, Assistant Professor
  M.Sc. (SU) 2004, Ph.D (Xiamen, China) 2015
- SOOMRO, ABDUL MAJID, Assistant Professor
  M.Sc. (SU) 2005, Ph.D (Xiamen, China) 2016
- KHASKHELI, MURAD ALI, Lecturer
  M.Sc. (SU) 2004, Ph.D (Beijing, China) 2013

M.S. / M.Phil in Physics: 2-yr, 4-Semester program (40)
Pre-requisite: Minimum good second class BS/M.Sc. degree in relevant field; Pre-Admission Test.

1st Semester
PHY 800 Modern Experimental Techniques (4)
PHY 802  Counting Statistics and Error Prediction (4)
PHY 804  Frontiers in Physics (4)
PHY 806  Advance Computational Techniques (4)

2nd Semester
PHY 808  Elective-I (4)
PHY 810  Elective - II (4)

2nd to 4th Semester
PHY 895  Research on approved topic, Dissertation Defense (16)

List of Elective - I (PHY 808) Courses
01. Gaseous Detectors
02. Basic Course in Neuro Physics
03. Condensed Matter and Materials Physics
04. Atomic and Molecular Spectroscopy
05. Ion Trapping
06. Semiconductor Physics and Devices-I

List of Elective - II (PHY 810) Courses
01. Detection Systems
02. Basic Signal Processing in Physics
03. Techniques in Materials Science
04. LASER Induced Breakdown Spectroscopy
05. Light-Atom Interaction and LASER Cooling
06. Semiconductor Physics and Devices-II

Note: Students have to opt One (01) course from the list of Elective-I and one (01) course from the list of Elective-II with consultation from his/her supervisor.

Ph.D in Physics 6 Semester Program: 18 CH Course:
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
PHY 900  Experimental Techniques (3)
PHY 902  Data and Error Analysis (3)
*Optional Courses | One Course needs to be selected
PHY 904  High Energy Physics(3)
PHY 906  LASER Spectroscopy (3)

2nd Semester
PHY 908  Neuro Physics (3)
PHY 910  Condensed Matter Physics (3)
PHY 912  Trapping and Cooling of Ions (3)
PHY 914  Semiconductor Materials (3)

2nd Semester
PHY 916  Experimental Physics(3)
*Optional Courses
PHY 918  Modern Experimental High Energy Physics (3)
PHY 920  Modern Particle Physics(3)
PHY 922  Quantum Computation (3)
PHY 924  Modeling and Simulations of ion traps (3)
PHY 926  Computational Techniques in Neuro-Physics (3)
PHY 928  Signal Processing Methods in Physics (3)
PHY 930  LASER Physics (3)
PHY 932  LASER Ablation (3)
PHY 934  Semiconductor device fabrication (3)
PHY 936  Semiconductor device characterization Techniques (3)

* Two (02) Course needs to be selected

INSTITUTE OF PLANT SCIENCES

University of Sindh is the second oldest University of Pakistan. Botany and Mathematics were the first the science subjects in which the postgraduate teaching was started in the University of Sindh in 1954. Mr. S.W.S. Qadri, the then Professor of Botany at the Government College Hyderabad was commissioned by the University to do the teaching. Only 4 students took admission. By the grace of Allah now more than 400 students are studying at the Institute of Botany which is upgraded as Institute of Plant Sciences, since 2008. The faculty includes 01 Emeritus Professor, 01 Professor, 01 Associate Professor, 06 Assistant Professors, 07 Lecturers and 01 Curator-Cum-Lecturer. The Institute has well equipped Laboratories, Herbarium, Arboretum and two small Botanical Gardens.

The institute has introduced M.Phil. /Ph.D. program since 1965. After the Chemistry, Botany is second awarding M.Phil. and Ph.D.degrees in Science Faculty. So far many scholars have obtained their M.Phil. and Ph.D. degrees in Botany. More than 300 research articles have been published in the National and International Journals by the faculty members and they have also produced more than 20 Ph.D.
and 40 M.S. /M.Phil. Scholars in the field of Botany. The institute is committed to provide advance knowledge about plants to the society and students at large.

The Institute of Plant Sciences offers program leading to the Bachelor of Science / Master of Science and Masters of Philosophy and the Doctor of Philosophy degree in a variety of special areas including Plant Taxonomy, Physiology, Phycology, Mycology and Plant Pathology, Genetics, Paleobotany, Ecology & Environmental Studies. 4-yr Forestry degree is being introduced as evening program from 2010 session in addition to Postgraduate Diploma in Medicinal Plants.

Students are urged to take courses which provide a broad background in Botany as well as in the Natural Science in addition to the training in special areas.

The Faculty comprises:

**MEMON RABIA ASMA**, Associate Professor & Director  
M.Sc. (SALU), Ph.D. (SALU) 2005

**PIRZADA ABDUL JABBAR**, Professor  
M.Sc. (SALU), M.Phil. 2003, Ph.D. (S.U) 2008

**MEMON MAHJABEEN**, Assistant Professor,  
M.Sc. (S.U), M.Phil. (S-U)

**QURESI SADAF TABASUM**, Assistant Professor,  
M.Sc. (S.U), M.Phil. (QUA), Ph.D. (QUA) 2010

**ABRO SAEED AKHTAR**, Assistant Professor  
M.Sc. (SALU), M.Phil. (SALU) 2005

**BOZDAR HADI BUX**, Assistant Professor (on Study Leave)  
M.Sc. (QUA), Ph.D. (QUA) 2011

**KHANZADA AMINA KABIR**, Assistant Professor  
M.Sc. (SALU), Ph.D. (SU) 2011

**KHANZADA SAMINA KABIR**, Lecturer  
M.Sc. (SALU), Ph.D. (S-U)

**ARBANI SHAHNAWAZ**, Professor Emeritus  
M.Sc. (S.U), Ph.D. (Moscow State)

**HASSENY SYEDA SALEHA**, Visiting Professor  

**ARAIN BASIR AHMED**, Visiting Professor  
M.Sc. 1975, M.Phil. 1987, Ph.D. (S.U)1996

**SHAIKH WAZIR**, Visiting Professor  
M.Sc. (S.U) 1972, Ph.D. (Kar.) 1990

M.S. /M.Phil. in Botany 4-Semester Program (30 CH)  
Pre-requisite: Minimum good 2nd class BS/M.Sc. degree in Botany, Pre-Admission Test.

Two semester course work of M.S. /M.Phil. Program (24 CH), thesis and its defence (06 CH).

**1st Semester: Optional Subjects (40):**  
(Students have to opt any six of the following courses depending upon the expertise available and at least five students must be in each course)

- BOTN 701 Research Methodology (3)
- BOTN 702 Experimental design and analysis (3)
- BOTN 703 Recombinant DNA Technology (3)
- BOTN 704 Techniques in Molecular Biology (3)
- BOTN 705 Methods in Plant cell, Tissue and organ culture (3)
- BOTN 706 Plant Breeding and Horticulture (3)
- BOTN 707 Proteomics and Genomics (3)
- BOTN 708 Seed Production Technology (3)
- BOTN 709 Applied Ethnobotany (3)
- BOTN 710 Advanced Biotechnology (3)
- BOTN 711 Research techniques and instrumentation (3)
- BOTN 712 Advance Plant Physiology (3)
- BOTN 713 Aquatic Botany (3)
- BOTN 714 Phytogeography (3)
- BOTN 715 Allelopathy (3)
- BOTN 716 Advances in Environmental Biology (3)
- BOTN 717 Plant Enzymology (3)
- BOTN 718 Biodiversity and Conservation (3)
- BOTN 719 Invasive plant species (3)
- BOTN 720 Dendrochronology (3)
- BOTN 721 Advanced Physcology (3)
- BOTN 722 Advanced Phytosociology (3)
- BOTN 723 Advance plant Anatomy (3)
- BOTN 724 Soil fertility and Plant analysis (3)
- BOTN 725 Soil Microbiology (3)
BOTN 726 Soil Plant relationship (3)
BOTN 727 Soil and Water conservation (3)
BOTN 728 Advanced biometrical techniques (3)
BOTN 729 Palynology (3)
BOTN 730 Ecophysiology (3)
BOTN 731 Advances in Plant Taxonomy (3)
BOTN 732 Forensic Botany (3)
BOTN 733 Fungal Biotechnology (3)
BOTN 734 Microbial Biotechnology (3)
BOTN 735 Plant Growth and development (3)
BOTN 736 Plant Systematics (3)
BOTN 737 Phytoremediation (3)
BOTN 738 Biofuel technology (3)
BOTN 739 Plant Microbe Interaction (3)
BOTN 740 Medicinal and aromatic plants (3)

**2nd Semester: Optional Subjects (8):**

(Students have to opt any two of the following courses depending upon the expertise available and at least five students must be in each course)

BOTN 741 Taxonomy of Gymnosperms (3)
BOTN 742 Agrostology (3)
BOTN 743 Plant Taxonomy (3)
BOTN 744 Advanced Genetics (3)
BOTN 745 Plant Physiology (3)
BOTN 746 Paleobotany (3)
BOTN 747 Phycology (3)
BOTN 748 Mycology and Environment (3)
BOTN 749 Palynology (3)
BOTN 750 Applied Plant Anatomy (3)
BOTN 751 Plant Pathology (3)
BOTN 752 Soil and Plant Analysis (3)
BOTN 753 Advanced Phytotechnology (3)
BOTN 754 Plant Biodiversity & Conservation (3)
BOTN 755 Weed Biology/Ecology and management (3)

**2nd to 4th Semester**

Research on approved topic, thesis and its defense (06)

**Note:** Course outlines of M.S. /M.Phil. Program are available in the Institute.

**Ph.D. in Botany 6-Semester Program (18 CH Coursework, One Semester)**

Pre-requisite: M.S. /M.Phil. degree in Botany and valid GRE/GAT (Subject) Test result.

**Core course**

BOTN 917 Seminar (2)

**Optional courses**

(Students have to opt any four of the following courses depending upon the expertise available)

BOTN 900 Taxonomy of Angiosperm & Ethnobotany (4)
BOTN 901 Flowering Plant Systematics (4)
BOTN 902 Taxonomy, Ethnobotany & Plant Resources (4)
BOTN 903 Palynology (4)
BOTN 904 Applied Ecology (4)
BOTN 905 Integrative Plant Anatomy (4)
BOTN 906 Integrative Paleobotany (4)
BOTN 907 Evolutionary Paleobotany (4)
BOTN 908 Medicinal Plants (4)
BOTN 909 Advances in Molecular Genetics (4)
BOTN 910 Conservation of Plant Biodiversity (4)
BOTN 911 Weed Management (4)
BOTN 912 Physiology (4)
BOTN 913 Physiology (Freshwater Algae) (4)
BOTN 914 Micromorphology (4)
BOTN915 Advanced Techniques in Plant Sciences (4)
BOTN916 Advances in Mycology & Plant Pathology (4)

**BOTN 917 Seminar**

The research scholars will choose a subject/area with the consultation of his/her supervisor to prepare a presentation. The subject deal with the research project of the scholar to be carried in Ph.D. project. The presentation will be delivered by the research scholar through multimedia. Students and researchers will be invited to attend the seminar. The course teacher will assess the knowledge of the student on the subject, presentation skill, confidence and the way the presenter answers to the questions.

**BOTN.900 TAXONOMY OF ANGIOSPERM & ETHNOBOTANY**

Scope and application of Plant Taxonomy, Species Concept, Plant classification of its historical background, Current systems of classification. Botanical Nomenclature, Principles of ICBN, Typification kinds of type. Author citation, effective and valid

**BOTN.901 FLOWERING PLANT SYSTEMATICS**

**BOTN.902 TAXONOMY, ETHNOBOTANY & PLANT RESOURCES**
Introduction, Aims and objectives of Paleobotany, Geological timescale, Taphonomy, Necrology, Biostratonomy & Diagenesis, Necessary conditions for fossilization, Levels of preservation, Types of fossils, Index fossils & use of radio isotope for geological dating, Paleobotany, Paleogeography, Paleoclimatology, Energy resources and organic geochemistry, Evolutionary mechanics.

**BON.903 PALYNOLOGY**

**BOTN.904 APPLIED ECOLOGY**

**BOTN.905 INTEGRATIVE PLANT ANATOMY**

**BOTN.906 INTEGRATIVE PALEOBOTANY**

**BOTN.907 EVOLUTIONARY PALEOBOTANY**
Methods of age dating and the geologic timescale. Origin of the earth and life. The origin of Multicellularity and Multicellular protists. The cambrain explosion and extinctions. The Ordovician world and mass extinction. The Silurian world, early vascular plants & psilophytes. The lycophytes, the sphenophytes, the ferns, the progymnosperms, the seed ferns and the Devonian extinction. Coal swamps and glaciers, the carboniferous extinction. The great Permian extinction. The Triassic extinction. Cycadeoids, Ginkgophytes and other gymnosperms, the Jurassic extinctions. The creataceous world, the great cretaceous mass extinction.

**BOTN.908 MEDICINAL PLANTS**
horticulture plants. Division of horticulture. Importance of hedges and climbing plants to protect the herbs medicinal plants. Tissue culture. Transplantation. Preparation of extract from different part of medicinal plants.

**BOTN.909 ADVANCES IN MOLECULAR GENETICS**


**BOTN.910 CONSERVATION OF PLANT BIODIVERSITY**


**BOTN.911 WEED MANAGEMENT**


**BOTN.912 PHYCOLOGY**


**BOTN.913 PHYCOLOGY (FRESHWATER ALGAE)**


**BOTN.914  MICROMORPHOLOGY**


**BOTN.915  Advanced Techniques in Plant Sciences**


**BOTN.916  ADVANCES IN MYCOLOGY AND PLANT PATHOLOGY**

Fungal uses in modern industry, Mushrooms, Fungi as biocontrol agent, Modern molecular studies in fungi, The concept of disease in plants, Types of plant diseases, Concept of resistance/defense in plants, Defense in plants controlled by genes, Pre-existing structural and chemical defenses, Defense through lack of essential factors, Induced structural and biochemical defenses, Cytoplasmic defenses reaction, Cell wall defenses structures, Induced biochemical defenses in the hypersensitive responses (R gene) resistance, Partial, quantitative (polycenic, general or horizontal) resistance, Induced biochemical defenses in the hypersensitive response (R gene) resistance Detoxification of pathogen toxins by plants, Immunization of plants against pathogens, Defenses through plantbodies, Systemic acquired resistance, Induction by artificial inoculation with microbes by treatment with chemicals, Defenses through genetically engineering diseases resistance plants, Control of plant diseases, Novel techniques of study of plant diseases.

**DEPARTMENT OF FRESH WATER BIOLOGY AND FISHERIES**

The department was first conceived as a section of the Department of Zoology. Then in 1973, the Department of Fresh Water Biology & Fisheries was established as an independent department at Allama I.I. Kazi Campus, Jamshoro.

Initially, sharing accommodation with Department of Botany, the department shifted to its new building in January 1993. Since then, it has further expanded with addition of new labs, and classrooms.

The Department conducts B.S, (4-year program), M.Sc. (2-year program) and M.Phil. and Ph.D. degree programs by course and research. It has produced seventeen M.Phil. and five Ph.D. scholars since its inception and at present the number of registered M.Phil scholars is more than forty five twenty Ph.D. scholars respectively.

The mission of department is to provide well qualified personnel to the market related to fisheries and fish farming in Government and Private Sectors.

The faculty comprises:-

**ABBASI, ABDUL RASOOL**, Professor

**BALOCH, WAZIR ALI**, Professor & Chairman
M.Sc. (S.U) 1987, MS (Japan) 1995 & Ph.D (Kagoshima, Japan) 1998

**NAREJO, NAEEM TARIQ**, Professor
M.Sc. (S.U) 1987, M.Phil. (S.U) 1997, Ph.D (Bangladesh) 2003

**MAHAR, MUKHTAR AHMED**, Professor

**LASHARI, KHALID HUSSAIN**, Professor

SOOMRO, ANILA NAZ, Associate Professor
M.Sc. (S.U) 1998, MS (Japan) 2007, Ph.D. (Kagoshima, Japan) 2010

LAGHARI, MUHAMMAD YOUNIS, Associate Professor
M.Sc. (S.U), M.Phil. (S.U) 2008, Ph.D. (Beijing, China) 2014

LASHARI, PUNHAL KHAN, Associate Professor
M.Sc (S.U), M.Phil. (S.U) 2008, Ph.D. (Beijing, China) 2014

BARADI, WARYANI, Associate Professor
M.Sc (SU), M.Phil. (K.U) 2008, Ph.D. (Beijing, China) 2014

M.Phil/ MS. in Freshwater Biology & Fisheries: 4- Semester Program (40)
Pre-requisite: BS/ M.Sc. in Freshwater Biology & Fisheries, BS/M.Sc. in Zoology with specialization in fisheries, Pre-Entry Test

1st semester
FWBF 800 Advanced Aquaculture-I (4)
FWBF 802 Ecotoxicology (4)
FWBF 804 Advanced Phytoplanktonology (4)
FWBF 806 Lake Management (4)

2nd semester
FWBF 808 Advanced Aquaculture-II (4)
FWBF 810 Research Methodology (4)

2nd to 4th Semester
FWBF 895 Research Study on approved topic, Thesis and its Defense (16)

Note: Course outlines are available in the department

Ph.D. in Freshwater Biology & Fisheries: 6- Semester Program (18 CH)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.
FWBF 900 Fisheries Management Techniques (4)
FWBF 901 Crustacean and Shellfish Culture (4)
FWBF 902 Fisheries Population Dynamics (4)

FWBF 903 Biotechnology in Aquaculture (4)
Comprehensive Viva – Voce (2)
Research Study on Approved topic, Thesis and its Defense

Note: Course outlines are available in the department

INSTITUTE OF MICROBIOLOGY

The Institute of Microbiology was established in 1995-96 to develop indigenous manpower experts in the field of Microbiology and to increase the employability in the field of clinical, industrial, environmental and molecular biology. It offers BS four years program, MS / M.Phil. program and Ph.D. program with the aims to have graduates high knowledge and research abilities and to promote them in private sectors, government organizations in order to develop the manpower with high technology, to organize interdisciplinary discussions, developing research networks and to facilitate the latest technical information pertaining to the emergence of infectious diseases, laboratory bio-safety and the self preventive measures from the hazardous agents.

Microbiology is an exceptionally broad discipline encompassing a number of specialties. This institute has four laboratories for the BS students and two research laboratories for postgraduate program. All equipment and facilities are available to students and researchers. Having a huge space, it possesses six class rooms where 120 students in each can be accommodated, one air-conditioned computer laboratory, two multimedia rooms and a large auditorium and a seminar library. The learning process at the institute comprises a blend of lectures and practical demonstrations, presentations, assignments, group discussions, research projects, study tours, internships in various pathological laboratories, industries etc. independent studies in the institutional seminar library and the use of computer lab. The efforts have been made by the Institute of Microbiology for collaborative research with the co-guidance of various professors and scientists of different universities and research institutions for MS / M.Phil. and Ph.D. program in Microbiology to bridge the gap between the other institutes of region throughout Pakistan in the field of clinical, industrial, molecular biology, genetics and biotechnology.

The principal areas of research are:

b- Screening of the clinical isolates for the production of protease enzymes and their role as virulence factors.

c- Molecular characterization of antibiotic resistant genes and mechanism of resistance development.

d- Microbial spoilage of commercially available fruits.

e- Antibacterial activity of Ginger (Zingiber officinale Roscoe) and Garlic (Allium sativum L) extracts on *Staphylococcus aureus* and *Salmonella typhi*.

f- Antibacterial effect of hot drinks (Green tea, black tea, and coffee) on *Staphylococcus aureus* isolated from nasal secretions of healthy individuals.

g- Microbial spoilage of commercially available fruits.

h- Characterization of biofilm making Gram-positive and Gram-negative bacteria.

i- Production of bioethanol, biodiesel and other organic solvents and probiotics.

j- Biodegradation of oil and other compounds e.g. pesticides.

k- Molecular identification of the clinical isolaes.

l- Vacomycin resistant MRSA and its molecular characterization.

The faculty comprises:

MAKA, GHULAM ASGHER, Professor & Director
B.Sc. (Hons.), M.Sc. (SU), M.Phil. (QAU), Ph.D. (Russia)

PATHAN AGHA ASAD NOOR, Professor
B.Sc. (Hons.), M.Sc. (SU), M.Phil. (QAU), Ph.D. (SU)

TUNIO SARFRAZ ALI, Associate Professor
B.Sc. (Hons.), M.Sc. (SU), Ph.D. (UK)

PATOLI ATIF AHMED, Assistant Professor
B.Sc. (Hons.), M.Sc. (SU), Ph.D. (UK)

MEMON SHAISTA BANO, Associate Professor
B.Sc. (Hons.), M.Sc. (SU), Ph.D. (UK)

PATOLI BUSHRA BANO, Assistant Professor
B.Sc. (Hons.), M.Sc. (S.U.), Ph.D. (UK)

FAROUQUI MUNNAZZA SHARIF, Assistant Professor
B.Sc. (Hons.), M.Sc. (SU), M.Phil. (QAU)

M.Phil in Microbiology: 4-Semester Program (40)
Pre-requisite: BS/M.Sc in relevant discipline & Pre-Entry Test

1st Semester: Core Courses

MICB 700 Advanced Biostatistics

Optional:

MICB 701 Advances in Food & Fermentation Technology
MICB 702 Advances in Clinical Microbiology
MICB 703 Infectious Disease Epidemiology
MICB 704 Microbial Biotechnology
MICB 705 Biological Disease Epidemiology
MICB 706 Immunohaematology and Parasitology
MICB 707 Plant Microbiology
MICB 708 Fresh Water Biology

2nd Semester

MICB 711 Advanced Biostatistics & Computing
MICB 712 Molecular Mechanism of Antimicrobial Drugs
MICB 713 Instrumentation Technology
MICB 714 Probiotics: Th Live Therapies
MICB 715 Application of Molecular Biotechnology
MICB 716 Environmental biotechnology
MICB 717 Techniques in Biological Research
MICB 718 Clinical Laboratory Technology
MICB 719 Agrobiology

3rd & 4th Semester

Research Project & Thesis (16)

Ph.D in Microbiology (06) Semester Program (18)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.
MICB 800  Research Planning & Report Writing  
MICB 801  Bacteriocin and Bacteriophages  
MICB 802  Genomics and Bioinformatics  
MICB 803  Environmental Science and Management  
MICB 804  Advances in Immunotherapeutics  
MICB 805  Applied Biotechnology  
MICB 807  Molecular Basis of Mycotic Infections  
MICB 809  Molecular Genetics  
MICB 810  Infectious Diseases, Management and Safe Practices  
MICB 811  Departmental Seminar

**Note:** Course outlines of M.Phil. and Ph.D. program are available in the department.

### DEPARTMENT OF PHYSIOLOGY

Physiology Department was established by University of Sindh in 1974. Prof. Dr. Abdul Qadir Ansari, was the founder chairman of the department. This department has very significant role in the advances of applied biological and health sciences. Physiology Department University of Sindh Jamshoro is the second one outside medical colleges/universities in Pakistan. This is serving the nation by teaching and research programs in basic, experimental and applied physiology, at undergraduate and graduate levels. Healthy atmosphere, committed working, highly qualified teaching faculty, well equipped computer added experimental/research laboratories and seminar library with digital library system are main symbols of entity of the Physiology department. This department is objectively playing active role in the advancement of physiological sciences, with a variety of vigorous research programs supporting undergraduate physiology education and graduate studies in the relevant fields. Since years the Alumni of Physiology department having degree of B.Sc. (Hon), B.Sc. (Pass), M.Sc., BS (4Years) and Ph.D. are in the stream line services inside country and abroad.

Presently we offer BS-Physiology, BS-Medical Laboratory Technology (MLT), and M.Sc., at undergraduate level and M.S. /M. Phil & Ph.D. programs at graduate level with special interests in the fields of Endocrinology, Reproductive Physiology, Histology & Patho-Physiology, Neuro-Physiology, Haematology, Pharmacology, Toxicology, Molecular Biology and Gene expression.

**Mission:** The department mission is to continue the pursuit of excellence in the emerging, creative and scientifically responsible leadership through learning input and developed research environment of international standards.

**Vision:** Department desires to be one of the top physiology institutes in the country and to be recognized national and global as ‘The institute of excellence in teaching, research, patents and services to human health’.

The faculty comprises:-

**MAHESAR HIDAYATULLAH, Professor & Chairman**  

**SOOMRO, ALI MUHAMMAD, Professor**  

**LAGHARI, ZULFIQAR ALI, Professor**  
M.Sc. Physiology (S.U) 1997 & Ph.D. (Nottingham, UK) 2011

**MEMON, FAHMIDA, Assistant Professor**  

**WARSI, JAMSHED, Assistant Professor**  
M.Sc. Physiology (S.U) 1997 & Ph.D. (Tubingen, Germany) 2015

**MUGHAL, ZAIBUN-NISA, Assistant Professor**  
M.Sc. Physiology (S.U) 2004 & M. Phil (QAU, Islamabad) 2011

**ZAI, JAWED AHMED, Assistant Professor**  
M.Sc. Physiology (S.U) 1999 & M. Phil (QAU, Islamabad) 2011

**M.Phil in Physiology:** 4-Semester Program (40)  
Pre-requisite: BS (4 Year), M.Sc (Pass) in Physiology or equivalent Degree in Most relevant fields & Pre-Entry Test

**1st Semester**  
PHSL-800  Research Methodology (3)
PHSL-802  Bio-Statistics (3)  
Elective  
PHSL-804  Medical Genetics (3)  
PHSL-806  Cardiovascular Physiology (3)  
PHSL-808  Clinical Haematology (3)  
PHSL-810  General Pharmacology (3)  
PHSL-812  Advanced Physiology of Nutrition (3)  
PHSL-814  Exercise Physiology (3)  

2nd Semester  
PHSL-816  Endocrinology and Metabolism (3)  
PHSL-818  Neurophysiology (3)  
PHSL-820  Immunology (3)  
PHSL-822  Cell & Tissue Culture (3)  
PHSL-824  Gene expression (3)  
PHSL-826  Principles of Toxicology (3)  
PHSL-828  Epidemiology (3)  

3rd and 4th Semester  
PHSL-900  Advances in Endocrinology (3)  
PHSL 906  Advances in Neurophysiology (3)  
PHSL 908  Stress Physiology (3)  
PHSL 910  Advances in Environmental Physiology (3)  
PHSL 912  Community Health (3)  
PHSL 914  Bio-informatics (3)  

2nd Semester  
PHSL 916  Advances in Molecular Biology (3)  
PHSL 918  Advances in Biology of Reproduction (3)  
PHSL 920  Advances in Toxicology (3)  
PHSL 922  Developmental Biology (3)  
PHSL 924  Advances in Histopathology (3)  
PHSL 926  Molecular Basis of Inherited Diseases (3)  

3rd and 6th Semester  
PHSL-995  Research on approved topic, Thesis and its Defense (16)  

Note:- Scholars will have to take 03 elective courses each in 1st and 2nd Semesters conditioned to Core Courses.

DEPARTMENT OF STATISTICS

The Department started functioning in 1964 and within three years, it became a full-fledged department. In 1972, it was merged with the Department of Mathematics. In July 1978 it was separated again. Since then, it has been working as an independent department, offering 4-year BS. (Stat), M.Sc. and Diploma programs. The M.Phil/ Ph.D. programs have been introduced from the 2002 session. The department has well equipped Computer Laboratories and senior qualified and trained faculty. The importance of Statistics is growing day by day in every field of life and there is increasing demand for trained and qualified personnel.

There are numerous Public and Private Organizations in Pakistan where qualified manpower in Statistics is needed. The job opportunities are available at Government level in the Statistics Division and its four departments, i.e., Federal
Bureau of Statistics, Population Census Organization, Agricultural Census Organization, Pakistan Institute of Training and Research, Bureau of Statistics and other organizations at provincial level. A number of Research Papers on different Statistical topics have been published by the faculty in National and International Journals. In addition, twenty Five (25) Research Scholar are enrolled for M.Phil program and Seven (07) are pursuing Ph.D. studies in Statistics.

The faculty comprises:

TALPUR GHULAM HYDER, Professor & Chairman

GILL NAZIA PARVEEN, Assistant Professor
M.Sc. (S.U) 2001, Ph.D (Netherland) 2015

RAJPUT RAJA MUHAMMAD ILYAS, Visiting Scholar
M.Sc. 1975, LL.B. 1975, Ph.D. 2008 (S.U)

M.Phil. /MS. Program in Statistics: 04-Semester Program (40)
Pre-requisite: BS/M.Sc in relevant discipline & Pre-Entry Test

In M.Phil Program there will be 24 C.H Course Work, 06 Courses of 04 C.H each in Two Semesters. During two semesters of teaching in M.Phil. /MS. Statistics. Two compulsory and two optional courses will be taught in First Semester and two optional in Second Semester from the following list of courses.

1st Semester (Compulsory Courses)
STAT 800 Research Methodology & Computer Applications(4)
STAT 802 Advance Theory of Statistics(4)

Optional Courses Two courses to be offered amongst the followings:-
STAT 804 Applied Demography(4)
STAT 806 Experimental Designs(4)
STAT 808 Topics in Survey Sampling(4)
STAT 810 Advance Econometrics(4)

2nd Semester (Optional Courses) Two courses to be offered amongst the followings:-
STAT 812 Operations Research (4)
STAT 814 Statistical Inference & Decision Analysis (4)

STAT 816 Linear Models & Non Linear Models (4)
STAT 818 Multivariate Analysis (4)

3rd & 4th Semester
STAT 895 Research Thesis & its Defence (16)

Note:- The course as listed under optional will be offered, subject to the availability of qualified staff and facilities.

STAT 800 Research Methodology
This course familiarize with research techniques it trains in preparing questionnaires, collecting data and evaluating implementation and delimitation, focusing on techniques to data collection and analysis other than formal surveys and advantages and limitations of different research method.

Computer Applications:


STAT 802 Advance Theory of Statistics

STAT 804 Applied Demography (Optional)
Introduction: Population without age, The Life Table, Mortality Comparisons: the Male-Female Ratio, Fixed Regime of Mortality and Fertility: The use of stable Theory, Birth and the Intrinsic Rate of Natural increase, Reproductive Value, with Applications to Migration, Contraception, and Zero Population Growth and Understanding Population Characteristics:

STAT 806 Experimental Designs (Optional)
Introduction to experimental design and their analysis: Experiments with a single factor, Latin square designs, Split plot designs. Factorial designs, Confounding, Fractional factorials, Incomplete block designs, the existence and construction of balanced incomplete block designs, Response surfaces.
STAT 808  Topics in Survey Sampling (Optional)
(i) Non-Sampling Error:-

STAT 810  Advanced Econometrics (Optional)
(i) Econometrics:-

STAT 812  Operations Research (Optional)
1. Review of Probability Theory:-

STAT 814  Statistical Inference & Decision Analysis (Optional)

STAT 816  Linear Models & Non Linear Models (Optional)

STAT 818  Multivariate Analysis (Optional)
Multivariate Normal distribution, Hotelling’s T distribution, Hypothesis tests for means and covariance’s, the Wishart distribution, Principal component, Factor Analysis, Cluster Analysis, Canonical Correlation analysis, Discriminant analysis, Multi dimensional scaling, Multivariate Regression Analysis, Multivariate analysis of variance.

Ph.D in Statistics: 6 Semester Program: (18 CH Course work)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
STAT 900  Research Methodology (3)
STAT 902  Statistical Computing by using Statistical Packages (3)

Optional Courses: One course to be offered from the followings:-
STAT 904  Statistical Models and Simulation (3)
STAT 906  Survival Analysis (3)

2nd Semester
STAT 908  Theory of Validity & Reliability (3)

Optional Courses: Two courses to be offered from the followings:-
STAT 910  Applications of Operations Research in Research ProbleM.S. /Projects (3)
STAT 912  The Study of Populations and their Analysis (3)
STAT 914  Advance Theory of Stochastic Process (3)

Note:- Optional course will be offered, subject to the availability of qualified faculty.

STAT 900  Research Methodology
Philosophy and Ethics of Research, Selection of Problem, Formation of Hypothesis and procedure for its Testing, Research Methodology, Interpretation of Results, Components of Scientific Reports and Various Methods of Data Presentation, Preparation of Scientific Reports, Thesis writing, Publication Procedures.

STAT 902  Statistical Computing by Using Statistical Packages
Qualitatively and Quantitative data presentation and analyzing data in Minitab, Introduction of SPSS, data manipulation in SPSS, Analysis using SPSS syntax programming. (Use of SPSSs, Minitab, Mat lab, Statistical is based upon the availability of Software).
**DEPARTMENT OF ZOOLOGY**

The Department was established in 1956, it was shifted at the Allama I.I Kazi Campus, Jamshoro in 1961 and to its present premises in 1965. Two of its new laboratories were constructed in 1993 and were named after the former chairman, Late Prof. S. Ishfaque Hussain Shah who died to heart failure on August 27, 1991.

Since its inception, the department had been imparting instructions for the 3-year B.Sc. (Hons.) courses and one/two year M.Sc. Degree programs. 4-yr BS Program has been introduced since 2003. It has been disseminating specialized knowledge in the five fields of Entomology, Parasitology, Vertebrate Biology, Endocrinology and Genetics. The Department also offers programs leading to M.Phil and Ph. D Degrees in these specialized fields. It has produced 25 Ph.D.s. and 70 M.Phils. since its inception. Present enrolment in the Department is 1000 including M.Phil / Ph.D students.

Currently three research projects are running under the Principal Investigation of Dr. Nasreen Memon, Dr. Saima Naz and Dr. Nadir Ali Birmani

The Department has been progressing steadily and at present it is the second largest department in the Faculty of Natural Sciences, University of Sindh.

The Faculty

Currently the faculty comprises 02 Professor Meritorious, 03 Professors, 07 Assistant Professors, 01 Assistant Professor (TTS) and 03 Lecturers

**JABEEN TAHIRA**, Professor & Chairperson

**GACHAL, GHULAM SARWAR**, Professor Meritorious & Focal Person
M.Sc (S.U) 1989 & Ph.D (U.K) 2002

**MEMON, NASREEN**, Professor Meritorious
M.Sc. (S.U) 1985, Ph.D (Kar.) 2002

**BALOCH, NAHEED**, Professor
M.Sc. 1994 & Ph.D 2002 (S.U)
Ph.D in Zoology: 6 Semester Program: (18 CH Course work)
Pre-requisite: M.S. /M.Phil degree & valid GRE/GAT (Subject) Test result.

1st Semester
- **Zool. 900** Pest Management (4)
- **Zool. 901** Medical Entomology (4)
- **Zool. 902** Physiological Basis of Behavior (4)
- **Zool. 903** Hematology (4)
- **Zool. 904** Seminar (2)

**ZOOL. 900  PEST MANAGEMENT (4)**
Introduction of pest, Methods: study pest populations; damage assessments, Collection, mounting studying and identification of important animal pests. Endo and ecto-parasite of various animals.; Mounting of slides after processing the parasites. Collection, preservation and identification of insects up to families, Identification of damage to crops by different vertebrate pest Disease, carriers and public health importance. Control: Habitat manipulation and ecologically based integrated management, Laboratory and field evaluation of pesticides and bait materials, Evaluation of control. Justification and ecological consideration. Role of insects, helmintes, nematodes, protozoans and other pathogens in disease Biology and ecology of common avian and mammalian pests of Pakistan Concept of economic levels, economic damage and economic boundary, economic injury level and economic threshold. Household pests and their management.

**ZOOL. 901  MEDICAL ENTOMOLOGY (4)**
Introduction to arthropods, Identification and characterization of insects injurious to man; Insects of medical importance: TseTse fly; Mosquito, Bugs etc, Ticks and disease: Relapsing fever, spotted fever, tick typhus, Q fever, Texas fever, control of ticks.


**ZOOL. 902  PHYSIOLOGICAL BASIS OF BEHAVIOR (4)**
Behavioural mechanisms; advancement in the large and small animal behaviours: aggression; feeding; sexual behaviours; motivational behaviours; sensation and perception; Evolution of brain and behaviour; Hormonal influence on behaviour; Sexual behaviours and mating systems; Internal regulation; Biological rhythms; sleep and dreaming; Emotions; aggression and stress; Biological basis of behavioral disorders; Learning and memory; Language and cognition; Perception and actions; Psychopharmacology; motor systems.; Pain and stress; drug abuse.

**ZOOL. 903  HEMATOLOGY (4)**
Blood and its composition; plasmas and serum proteins; study of erythrocytes, leukocytes and platelets at cellular and molecular level. Hematopoesis; Anemias and hemoglobin disorders. Study of Leukemias. Familial blood diseases; Collection and handling of blood; References ranges and normal values; Basic hematological techniques; Preparation and staining of blood films; Blood cell morphology in health and disease; Study of different anemias; Investigation of coagulants, anticoagulants and study of blood platelets; Blood cell antigens and antibodies; Molecular techniques.
Ph.D. students will be assigned topics on respective specializations. The students will write a review paper (based on latest publications) and deliver a comprehensive seminar on the topic.

**FACULTY OF SOCIAL SCIENCES**

The Faculty of Social Sciences was established in 1989, following division of the former Faculty of Arts into present Faculties of Arts, Commerce & Business Administration, Education, Islamic Studies, Law & Social Sciences, with Prof. G.H. Khaskheli as the first Dean of the Faculty. This is the Second largest Faculty of the University. The Faculty has been actively involved in research. The journal of the Faculty of Social Sciences is a regular publication. The 3-yr Honours degree programs offered earlier by the Faculty have been changed to 4-yr Bachelor degree programs, effective by 2006 session. Classes in all disciplines are held in the morning session except Public Administration and Centre for Health & Physical Education where Evening program are also offered.

**SINDH DEVELOPMENT STUDIES CENTRE**

Sindh Development Studies Centre (SDSC) established in July 1985, provides undergraduate and postgraduate teaching in development economics and conducts socio-economic research and training on development-related issues, particularly in Sindh Province. Through collaborative research and training, SDSC maintains close links with several national and international research organizations. From 1991, it availed academic linkage with Wye College, University of London and benefited from exchange of teachers and training of staff. The Centre housed in its purpose-built building is equipped with State-of-Art resource and information unit, conference room, computer and audio-visual facilities. The Centre provides four categories of expert services, which include Graduate and Post-graduate Degree Programs, Academic Research Programs, Applied Research and Information Sharing.

The Centre is offering M. Phil/Ph.D in Development Studies and has recently produced 9 Ph.D scholars. Presently 10 students are enrolled for Ph.D and 12 students in M.Phil Programme. SDSC has produced its first batch of BS four years program in Rural Development in 2009 and the second batch in 2010. This is a unique opportunity for students, interested in acquiring basic knowledge of rural development issues in Pakistan and around the globe. The course mainly emphasizes on basic theoretical and analytical concepts of rural development. The faculty comprises:

- **JARIKO GHULAM ALI**, Professor and Director  

- **MUGHAL SHAHABUDDIN**, Professor  
  M.A Economics (S.U) 1987, Ph.D (University of Sindh). 2014

**M.Phil. in Development Studies: 4-Semester Program (40)**

Pre-requisite: M.A./M.Sc. in relevant discipline e.g. Rural Development, Economics, Sociology, Social work, MBA, Agriculture Economics and Pre-Entry Test.

**1st Semester**

<table>
<thead>
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<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>DS 801</td>
<td>Micro Economics</td>
<td>(4)</td>
</tr>
<tr>
<td>DS 802</td>
<td>Macro Economics</td>
<td>(4)</td>
</tr>
<tr>
<td>DS 803</td>
<td>Rural Development</td>
<td>(4)</td>
</tr>
<tr>
<td>DS 804</td>
<td>Research Methodology</td>
<td>(4)</td>
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</table>

**2nd Semester**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>DS 850</td>
<td>Natural Resource Economics</td>
<td>(4)</td>
</tr>
<tr>
<td>DS 851</td>
<td>Social Development Economics</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**2nd to 4th Semester**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS 895</td>
<td>Research on approved topic, Dissertation and Defense</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**Ph.D in Sindh Development Studies: 6 Semester Program: 18 CH**

Pre-requisite: M.S. /M.Phil degree or 18 years degree (equal to M.Phil) from HEC recognized University in relevant discipline e.g. Rural Development, Economics, Sociology, Social Work, Business Administration, Agriculture Economics and valid GRE/GAT (Subject) Test result.

**1st Semester**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>DS 900</td>
<td>Advanced Research Methodology</td>
<td>(3)</td>
</tr>
<tr>
<td>DS 901</td>
<td>Development Theories and Strategies</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**2nd Semester**

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<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>DS 902</td>
<td>Applied Research Methodology</td>
<td>(3)</td>
</tr>
<tr>
<td>DS 903</td>
<td>Development Theories and Strategies</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**3rd Semester**

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<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>DS 904</td>
<td>Advanced Research Methodology</td>
<td>(3)</td>
</tr>
<tr>
<td>DS 905</td>
<td>Development Theories and Strategies</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**4th Semester**

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<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>DS 906</td>
<td>Advanced Research Methodology</td>
<td>(3)</td>
</tr>
<tr>
<td>DS 907</td>
<td>Development Theories and Strategies</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**5th Semester**

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<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>DS 908</td>
<td>Advanced Research Methodology</td>
<td>(3)</td>
</tr>
<tr>
<td>DS 909</td>
<td>Development Theories and Strategies</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**6th Semester**

<table>
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<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS 910</td>
<td>Advanced Research Methodology</td>
<td>(3)</td>
</tr>
<tr>
<td>DS 911</td>
<td>Development Theories and Strategies</td>
<td>(3)</td>
</tr>
</tbody>
</table>
The Centre has produced twelve Ph.D's and eleven M.Phil. scholars until date. Presently four scholars in Ph.D and sixteen scholars in M.Phil program are enrolled.

The Centre has so far sponsored eleven research projects.

The faculty comprises:

BALOCH FARZANA, Professor & Director
M.A. (SUJ) 1985, Ph.D (Pakistan Studies) 2012 (SU)

MAHESAR, SHUJA AHMED, Associate Professor & HEC approved Supervisor
M.Sc.(QAU) 2001, Ph.D. Pakistan Studies (UK) 2012

M.Phil. in Pakistan Studies: 4-Semester Program (40)

Pre-requisite: Pakistan Studies is multi-disciplinary subject, therefore M.A/M.Sc. in relevant discipline and Pre-Entry Test.

1st Semester

PSC 800 Studies on Quaid-i-Azam Mohammad Ali Jinnah
PSC 801 Political Parties in Pakistan
PSC 802 Pakistan and the World

The 4-Year, 8-Semester BS and 2-Year, 4-Semester M.A.(Pakistan Studies) (Morning Program) offered by Pakistan Study Centre which is multi-disciplinary course. The M.A. curricula listed have been revised and updated duly approved by the Board of Faculty of Social Sciences, University of Sindh, Jamshoro at its 16th meeting held on 12th November 2012. Further, the BS 4 year curricula listed have also been approved by the competent authority vide notification No.AC-I/Syllabus-SS/91 dated 12.04.2017 (Copy enclosed).

The 4-Semester M.Phil and 6-Semester Ph.D in (Pakistan Studies) which is multidisciplinary course offered by the Pakistan Study centre as per policy of the University of Sindh. The curricula listed have been revised and updated duly approved by the Board of Faculty of Social Sciences, University of Sindh, Jamshoro.

The Pakistan Study Centre has been regularly published its Biannual Research Journal Grassroots which is HEC recognized in Z category and besides books [English, Urdu and Sindhi] on relevant topics. Forty six issues of the journal Grassroots and thirty five books [English, Urdu and Sindhi] have been published to date and a number of books are under process of publications.

The number of research papers in different fields published by the faculty of Pakistan Study Centre in national and international journal of repute. 21 articles in the credit of Dr. Farzana Baloch, Professor; 21 articles in the credit of Dr. Shuja Ahmed Mahesar, Assistant Professor; 15 article in the credit of Mr. Mashooq Ali Khawaja, Assistant Professor have been published upto June 2017.

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M.A. (SUJ) 1985, Ph.D (Pakistan Studies) 2012 (SU)

MAHESAR, SHUJA AHMED, Associate Professor & HEC approved Supervisor
M.Sc.(QAU) 2001, Ph.D. Pakistan Studies (UK) 2012

M.Phil. in Pakistan Studies: 4-Semester Program (40)

Pre-requisite: Pakistan Studies is multi-disciplinary subject, therefore M.A/M.Sc. in relevant discipline and Pre-Entry Test.

1st Semester

PSC 800 Studies on Quaid-i-Azam Mohammad Ali Jinnah
PSC 801 Political Parties in Pakistan
PSC 802 Pakistan and the World
Economics is concerned with the way individuals or societies allocate scarce resources and distribute goods and services. Any situation requiring choice among competing alternatives can be viewed as an economic problem. Economics courses enable students to study the way individuals make these choices (microeconomics), the way government make these choices (public choice), and the aggregate consequences of these choices (macroeconomics). In addition, the economics curriculum addresses international trade, money and banking, and economic development of the less developed nations.

The Department of Economics is one of the oldest departments of the University, it was established in the year 1953-54 and recognized nationwide for its importance in the teaching excellence and prospective research activities. The department of Economics is largest one in the Faculty of Social Sciences in terms of students' enrollment which stands close to 600. At present the department consists of 15 faculty members and most of them have to their credit education and training from reputed Universities of Pakistan as well as from abroad.

Teaching & Research
Besides teaching, the department also provides consultancy services and in-service training facilities. Faculty members are actively engaged in research and also provide research guidance to candidates enrolled for the degrees of M. Phil and Ph. D. from 2008. The faculty has also been contributing regularly in the National/International journals of Economics and allied fields. Their publications cover studies in various branches of Economics. They have been participating in Seminars/Workshops at National level also. Department is also engaged in research project such as Social Audit of Governance and Delivery of Public Services in Pakistan funded by UNDP 2011-12. The Department has produced 05 M.Phil and 05 Ph.Ds for last two years.

In-service Training
Short term refresher courses, seminars and lectures on current economic affairs are conducted at regular intervals in various branches of Economics. The faculty members of affiliated colleges generally benefit from training facilities offered by the department. The Department’s Catalogued and air-conditioned Seminar Library with over 8200 books provide access to latest publications and journals on various branches of Economics with seating capacity of 50 students at a time. The courses have been so designed to equippe students with theoretical background and research skills in economics so that the end product becomes capable of learning economics and financial analysis to suit their job requirements.

Seminar Library and Electronic study materials:
All of the printed materials of Economics are available at seminar library, Department of Economics, besides that there is a computer lab where all the resources are available to download related materials, to give you flexibility in how and where you study total number of books of seminar library, Department of Economics are approximately 7000.

The Faculty:
Faculty members in the Department of Economics have research and teaching interest that span a broad range of fields. In addition to strengths in micro theory, macroeconomics, and econometrics, the department has expertise in many applied fields, including economic history, industrial organization, international economics, labor economics, public choice and public finance, transportation economics, and urban economics. Members of the Department maintain close ties with members of the Department of Political Science, The Department of Statistics, and The Business Faculty.

The faculty comprises:

**KHASKHELLY AMBREEN ZEB**, Professor, Chairperson
M.Sc 1999 (S.U), M.A 2002 (S.U), M.Sc (RD) 2003, Ph.D 2013 (SU)

**NANIK RAM**, Professor

**CHANDIO RAFIQUE AHMED**, Professor

**MIRZA, ALBEENA**, Assistant Professor
SHAIKH, NAJMA, Assistant Professor  
GILAL MUHAMMAD AKRAM, Assistant Prof.  
M.Sc (Q.A.U) 2000, Ph.D (Glasgow University, UK) 2012
KHOWAJA IMRAD, Assistant Professor  
M.A 1999 (SU), Ph.D (S.U) 2012
KHOUSHIK, ALI GUL, Assistant Professor  
M.Sc (Q.A.U) 2002, Ph.D (S.U) 2017

M.Phil. in Economics, 4- Semester Program (40)  
Pre-requisite: BS / Master degree in relevant discipline & Pre-Entry Test

1st Semester  
ECON 800 Research Methodology (4)  
ECON 801 Advanced Microeconomics (4)  
ECON 802 Advanced Macroeconomics (4)  
ECON 803 Econometrics

2nd Semester  
ECON 850 Applied Economics and Computer Application (4)  
ECON 851 Issues in Pakistan’s Economy (4)

3rd to 4th Semester  

Ph.D. in Economics: 6 Semester Program: 18 CH  
Pre-requisite: M.S. /M.Phil degree and valid GRE/GAT (Subject) Test result.

Eligibility  
- M.Phil. / MS / MBA equivalent degree with (minimum 18 years of University relevant Economics education from HC recognized University)  
- A minimum CGPA 3.00 (60%) previous related degree from HEC recognized University.  
- Interview will be organized by department of Economics faculty of Social Science Committee.

- No Objection Certificate from the employer is required in case if in service candidates’ scheme.  
- Total 48 Credit hours, course work 18 CH exam will taken after course work 3.00 CGPA qualified thesis and public defense 30 CH

1st Semester  
ECON 900 Advanced Econometrics and application of Computer in Economics (3)  
ECON 901 Financial Economics (3)  
ECON 902 Economics of Natural Resources environment (3)  
ECON 903 Economics of Public Policy (3)

2nd Semester  
ECON 904 Economics of Public Sector (3)  
ECON 905 Optional Course (3)  
i. Environmental Economics  
ii. Urban Economics  
iii. Human Resources Economics

DEPARTMENT OF MEDIA AND COMMUNICATION STUDIES  
This department, founded in 1977 as Department of Journalism, was renamed as Department of Mass Communication in 1985. Keeping the latest market requirement department is renamed as “MEDIA & COMMUNICATION STUDIES” in year 2013. It trains students for career in the fields of communication and journalism offering BS and Masters of Arts (M.A) programme in Media & Communication Studies. The four year BS degree courses have been redesigned to provide professional education with theory-cum-research and practical based approach in everyday life-like situation and meet the needs of market and professional fields i.e., print media, electronic media, journalism, advertising, public relations and development support communication.

Practically, it is the only institution offering courses in Media & Communication Studies to the people of rural and Urban Sindh. The Department has a well-stocked seminar library with a fine collection of more than 3500 latest books and periodicals and also has two well-equipped media laboratories, comprising sufficient number of computers, well established Studio, video cameras, editing processors, tape recorders, multimedia projectors and laser printers etc.
The students are required to write report news stories, columns, articles and features in weekly newspaper 'Roshni' and monthly magazine 'Shaoor' reflecting scholarly and independent thought. Under these programs students are treated as journalists who would one day be called upon to accept responsibilities in administrative or supervisory positions in media organisation.

The faculty comprises:

CHANG RIZWANA, Professor and Chairperson  
M.A. Journalism (UoS) 1982, Ph.D. (Karachi) 2008

SOOMRO BADARUDDIN, Professor  
M.A Journalism (US) 1984, Ph.D. (UoS) 2014

MEMON BASHIR AHMED, Associate Professor  
M.A Mass Communication (US) 2000, Ph.D. (UK) 2011

MAKHJANI HARI BAKHSH, Assistant Professor  
M.A. Journalism (US) 1982, Ph.D. (Karachi) 2014

M.Phil in Media & Communication Studies: 4-Semester Program (40)
Pre-requisite: Master degree in relevant discipline and Pre-Entry Test

The M.Phil degree program in Media and Communication Studies shall be of two years minimum (04 semesters) duration, comprising mainly coursework of 16 CH during the first semester and 08-CH courses during the second semester, besides thesis research on the topic duly approved.

1st Semester
- MC 800 Advance Mass Communication Theories (4)
- MC 801 Advance Research Methods (4)
- MC 802 The study of audiences (4)
- MC 803 International Communication (4)

2nd Semester
- MC 804 Research Applications in Mass Media (4)
- MC 805 Advance Development Communication (4)

2nd to 4th Semester

Note: Course outline are available in the department.

DEPARTMENT OF POLITICAL SCIENCE

The Department was established in 1953 at Elsa Kazi Campus, Hyderabad, with late Dr. Niaz-ul-Haq as its first Chairman. The departments of International Relations and Public Administration are it’s off-shoots, nurtured by the senior teachers of the Department of Political Science. The alumni of the Department have acquired high positions in provincial and federal services and other fields of life.


The faculty comprises:

PARDASI YASMEEN YOUSIF, Professor and Chairperson  

MEMON ASLAM PARVEZ, Professor  

MEMON KIRAN SAMI, Associate Professor  
M.A. (S.U) 1997, Ph.D 2013 (SU)
MAHSSAR GHULAM AKBAR, Assistant Professor
IVLP (USA), Graduation (IFCR-USA), B.A, M.A, M.Phil, Ph.D (SU)
M.Phil. in Political Science: 4- Semester Program (40)
Pre-requisite Master’s degree in the relevant discipline; Pre-Entry Test & Interview

1st Semester
PLSC 800 Research Methodology in the Social Sciences (4)
PLSC 801 Computer Concepts and Application (4)
PLSC 802 Comparative Politics (4)
PLSC 803 Politics and Administration(4)

2nd Semester
PLSC 804 International and Regional Organizations(4)
PLSC 805 Foreign Policies of Pakistan, US, UK, Russia and China (4)

3rd to 4th Semester
PLSC 895 Research Study on approved topic, Dissertation and its Defense.

PL SC - 802 COMPUTER CONCEPTS & APPLICATIONS

Objective:
This course is design to explore the tools and techniques in the conduct of research in Social Sciences in general and in the field of Political Science in particular. It also describes how to assemble analyze and interpret the data. The course will also familiarize the student with a variety of research methods so that the student can choose methods most appropriate for a given area of exploration. The objective of the course is to train students in conducting research on different socio-economic problems.

The course will cover recent developments in the fields of methodology and comparative politics including:

1. Research Methodology: Significance and topology
   i. Concepts.
   ii. Variables.
   iii. Hypotheses.
   iv. Generalization, facts, laws, theories.
2. Scientific Research in Social Sciences,
4. Reviewing literature.
5. Sampling: basis, types, sampling error.
8. Observation Direct/Indirect: Ethical considerations in observation.
   Percentage, Mean, Mode, probability, Standard Deviation, Ratio, Ordinal and Nominal Distribution
10. Measuring Relationship (e.g. Regression analysis) and Testing Hypotheses.
This course will provide a general overview of the major ideologies, political regimes, and socioeconomic institutions that have played a role in the formation of the contemporary world. The course begins with an examination of what are probably the two most influential theorists of the origin and genesis of modern democratic capitalism—Karl Marx and Max Weber. We then survey the major challenges to democratic capitalism in the earlier half of the twentieth century, namely Leninism and Fascism. Next, the course explores political and economic development outside of Western Europe, beginning with Japan. We conclude with an analysis of politics and societies in the less developed world.

**Objective:**
Our chief objective shall be to explain and examine the practices and institutions that govern modern life. We shall do so in a critical way—i.e., not in negative terms, but rather with thoughtful evaluation. This won’t always be easy. First, an evaluation of modern democratic capitalism is often complicated and understanding modernity in a comparative, sophisticated way will require an active effort from students. Second, because both the issues themselves and the theoretical approach advanced here are controversial, students may be forced to question some assumptions, intuitions, or beliefs about the meaning and value of modern life. I do not, however, intend to advocate any particular political position or policy, and the goal of the course is not to change your beliefs. Rather, the purpose is to help everyone develop a deeper understanding of their own (and others’) convictions about the political and socioeconomic institutions that govern the modern world.

**Outline**
Contemporary Theories of Comparative Politics.

**PL SC - 804 Politics and Administration**

**Course Description and Overview**
Politics and administrators are charged with the momentous responsibility for implementing public policies, an increasingly complex task in modern democratic societies. In this course, students will learn the basic principles and theories that guide politics and public administration, some of the skills needed for effective politics and public administration, and a good understanding of the role of politics and public administrators in democratic governance. This course will provide a foundation for those students who want to pursue additional training for vocations in public administration and give all students a better understanding of how our government works.

**Objective:**
This course essentially deals with the dichotomy between politics and administration. Different political and administrative theories are put into operation to enable student to get grasp of state, government, Society and policymaking. The course grasp the different issues related to bureaucracy forms of government, good governance, political culture, military in political administration in developing countries.

**Outline**
Theories of State, Forms of Governments, Political system and institutions, Democracy and dictatorship, Islamic concept of state and government, Good governance, Political culture, Military in political, Administration in developing countries.

**PL SC 805 International and Regional Organizations**

**Objective:**
Pakistan strongly supports the role of the United Nation in peacekeeping. The objective of this course is to equip the student with the ability to understand the basic questions Pertaining to the study of international and regional organizations.

**Outline**

**PL SC 806 Foreign Policies of Major Powers: US. UK. Russia. And China**
Objective:
The main objective of this is to enable the students to understand the philosophy of foreign policy. The emphasis is on a comparative study of foreign policies of U.S.A, U.K, Russia and China. The course offers an opportunity to combine a broad study of contemporary international affairs, diplomatic strategies with detailed research in student’s particular field of interest.

Objective:
Foreign Policy: Meaning of foreign policy, Ideological determinant, Economic determinant, Political determinant, Military determinant, Psychological determinant Objective of Foreign Policy.

Ph.D in Political Science: 6 Semester Program: (18)
Pre-requisite: M.S./M.Phil. degree & valid GRE/GAT (Subject) Test result.

1st Semester
PLSC 901 Research Design (3)
PLSC 902 Politics, State and Society of Pakistan (3)
PLSC 903 Good Governance & Democratization (3)

2nd Semester
PLSC 904 Strategic Issues of Contemporary World Politics (3)
PLSC 905 Media and Politics around the World (3)
PLSC 907 Computer Application (3)

3rd to 4th Semester
PLSC 995 Research Study on approved topic, Dissertation and its Defense.

Pol.Sc-901 – RESEARCH DESIGN:
Course Description: This course focuses on the application of advanced research design as it is applied in Political Science. The course provides an in-depth examination of quantitative and qualitative research approaches and devising methodology for research proposals. The major goal of this course is to prepare students for practical application of the research methodology.

The course attempts practical and theoretical ways to ensure students have the necessary foundation to plan their dissertations.

The course reviews research approaches and designs, distinguish between quantitative and qualitative methods, identify the main research approaches and issues related to each approach, critique published research studies that use various methodologies, understand the relationship between current research studies and future projects, develop research questions, hypotheses, and purpose statements, be able to operationally define variables and constructs, evaluate methodology with respect to internal validity and external validity, be familiar with general topics and issues in qualitative research, recognize ethical, political, and legal issues associated with research, complete the training for the process for obtaining Human Subjects research approval, understand how to structure a research proposal, know the structure of a dissertation and the content of each chapter of a dissertation.

Course Outline:

Pol.Sc-902 – POLITICS, STATE AND SOCIETY OF PAKISTAN
Course Description
The course is designed to deal with the ideology of Pakistan and its significance in the political and constitutional development since 1947, impact of bureaucracy, military, pressure groups (Ulema, Students, Trade Unions) on the political processes, role of political parties, press etc. The course would also discuss economic growth and social changes, and the problems of national integration. The
1973 constitution and its working will be studied in detail with a focus on the problems of federalism.

This course provides understanding of the different purposes of the government, the decisions of its institutions and their organizational functions. It equips students to make informed decisions about organizing and governing their communities, to evaluate domestic and national governments and ensure that the rights of the individuals or communities are protected within these decisions. Moreover, teaching of politics prepares the student for future career path, makes the citizens responsible, participative, action oriented, law abiding, in keeping with their duties are vanguards of our democratic societies towards harnessing their roles as real agents of the state.

Pakistan has had difficulty in establishing stable, effective political institutions. The country has experimented with a variety of political systems, has endured periods of martial law, and has had five constitutions. Its political parties have suffered from regionalism, factionalism, and lack of vision. Power has shifted between the politicians and the civil and military establishments, and regional and ethnic forces have threatened national unity. However, the impulse towards cohesion has been stronger than the impetus toward division, and the process of nation building has continued.

The return to democracy in 1988, and the peaceful, constitutional transfer of power to new governments in 1990 and 1993 testify to Pakistan's progress in the quest for political stability.

Pakistan’s independence was won through a democratic and constitutional struggle. Although the country’s record with parliamentary democracy has been mixed, Pakistan, after lapses, has returned to this form of government.

Course Outline:

PART – I

1. Nature, Scope and Limits of Pakistan Politics -
   Approaches and orientation in the foundation of Pakistan including historical, ideological, institutional and behavioral.
   - Role of ideology and nationalism in the creation of Pakistan.
2. The origins of the Pakistan’s Constitutional System.

PART – II

   - Pre-military hegemonic phase, role of the civil & military elites and the decline of party politics in Pakistan.
   - Search for Political legitimacy, basic democracies, political and economic modernization and its impact on Pakistan’s State and society.

   - Break down of the military hegemonic system.
   - The emergence of PPP: Mass mobilization & Political Change
   - Election and after math: Bangla Desh movement: Nation divides.
   - Bhutto’s political style: Domestic Policies:
     Regional conflicts and Foreign Policy goals.
   - Regime versus political force.

   Political Transition & Institutions
   - Military dominance (militarize and islamize the society beyond the state structure)
   - Cosmetic Islamization
   - Measures for legitimacy, network of political collaboration and power sharing.
   - Foreign Policy, regional and global compulsions, goals and achievements.
   - Post Zia immediate development.

PART – III
   - Benazir’s struggle for party dominance
   - Center province relations.
   - Relations with military, economic mismanagement and foreign policy goal.
   - A chained Prime Minister.

2. Removal of Benazir Bhutto and Election (1990)
   - Interim Govt. 1990 elections and after math

   - Crisis of legitimacy: Karachi factor, relations with military.
   - Foreign Policy and management of economy.


5. Role of Political Parties and Democratization (2008 – to-date)

Pol.Sc-903 – GOOD GOVERNANCE & DEMOCRATIZATION

Course Description:
This course provides understanding of concepts of good governance with special reference to the process of democratization into why democratic governance matters, discusses what performance indicators and analytical benchmarks are available, compares what strategies have commonly been implemented by a range of different agencies, and applies policy recommendations to specific cases. It covers the core principles, analytical theories, practical tools, and applied methods useful for understanding these issues.

The primary aims of the course are policy advocacy, analysis, implementation and evaluation. It will sharpen understanding of the core principles and also develop practical policy recommendations designed to strengthen the institutions and processes of democratic governance. You will consider how best to implement these recommendations and also become familiar with benchmarks and indicators suitable to evaluate the impact of any intervention.

The course will use a broadly comparative methodology incorporating quantitative econometric and survey evidence, combined with qualitative evidence from a wide range of case studies from developing societies, as well as drawing from transitional, consolidated and established democracies.

Course Outlines:

Pol.Sc-904 – STRATEGIC ISSUES OF CONTEMPORARY WORLD POLITICS

This course is designed to acquaint the students with the contemporary geo-political agenda. It mainly focuses the main issues currently discussed in the context of international security.

Course Outline:
The 1st part focuses on the idea of “great powers” and its contemporary relevance: who are the main players of the international system? How can we assess their up-to-date strategic resources? By the end of this part, students shall have an accurate overview of the global balance of power. The 2nd part deals with regional issues, and more particularly with three areas: the African continent, the Middle East and South Asia. These sessions will underline the roots of conflicts (civil wars, disputes over territories, terrorism etc.) and their structural effects (among others: the failed state’s issue in Africa, the internal stability of Pakistan). The 3rd and last part will introduce thematic issues which fuel the contemporary strategic debate among policy experts: some classical topics will be covered like terrorism and deterrence but also an emerging subject such as the strategic consequences of climate change. Then, by the end of the semester, students should be able to get an in-depth strategic knowledge awareness of today’s world.

Pol.Sc-905 – MEDIA AND POLITICS AROUND THE WORLD
The purpose of this course is to explore the role of print and electronic media in politics around the world. In doing so, impact of Media on government, policy making, election campaigning, and political movements will be assessed. Special attention will be paid to the portrayal of political issues, candidates and political themes in popular culture, including film, television, radio, music, the internet, billboards, bumper-stickers, and slogans.

Students will attempt to analyze the relationship between media and politics in general. The course will discuss what media is, what is expected of the media in democratic and authoritarian societies, how the media can be manipulated by political leaders and interest groups. Analyses will be done both on the influence the media has on governance as well as on public opinion among mass publics. Strategies used by governments to influence the media, such as coercion, agents provocateur, timed press releases, leaks and strategic public diplomacy will be analyzed.

Course Outline
Introduction to Media and politics, What is Media? How Media is Made, Sources of Funding, Control of Content, The importance of visuals and narratives, Role of media & World Politics, Media and political Awareness, Responsibilities of media and social transformation, Documentary films and political Ideologies, Media Control: Propaganda and Politics, Role of Media in Global Political World, The Media and Campaign Issues, The media and elections outcome, Frameworks for International Media Governance, Anarchy as the Defining Characteristic of International Politics, International Telecommunication Union, WTO and IMF Regulations, United Nations-related Organizations, Influence of Non-governmental Actors, The Supremacy of State Actors

Pol.Sc-906 – COMPUTER APPLICATIONS

Course Description: This subject provides an overview about the use of computers and its different software and applications. It will enable the students to use the advanced technological skills in research & thesis writing.

Course Outline:
UNIT-I MS Windows: Features of Windows, Getting started with Windows, Managing files and folders, Basic Windows Accessories: Mouse pointer, Control panel, Creating Short Cuts, Shutting down the Computer.


DEPARTMENT OF PSYCHOLOGY

The Department of Psychology was initially combined with the department of Philosophy in 1953, headed by Dr. K.A. Hameed with only a skeleton staff. It emerged as an independent teaching department in 1958 with Dr. Rafia Hassan as its first chairperson. In 1962 B.A.(Hons) classes were introduced. Award of B.Sc. and M.Sc. degree commenced in 1969. The Department introduced courses with stress on Cross Cultural Psychology at Honors and post graduate levels in 1972, with cross cultural comparison of psychological laws and analysis of social and Psychological problems of everyday life and work as the main focus. The department has introduced BS-4 year program from 2006 and M.Phil. program in 2000. The job opportunities for our graduates are available in mental health clinics, hospitals, prisons, National Armed Services, educational institutions, etc.

SHAH IRFANA, Assistant Professor & Incharge Chairperson
M.A. 1987, Ph.D. 2009 (S.U.)

THAHEEM NAGINA PARVEEN, Professor and Dean
M.A. 1987, Ph.D. 1999 (S.U.)

M.Phil in Psychology: 4 Semester Program (40)

The M.Phil. Program involve coursework of 24CH and Dissertation on approved topic (16). Course work requirement are as under:-

1st Semester
PSY 800 Research Methods in Psychology (4)
PSY 801 Issue in Cross-Cultural Psychology (4)
PSY 802 Human Growth & Development (4)
PSY 803 Social Psychology in Use (4)

2nd Semester
PSY 800  RESEARCH METHODS IN PSYCHOLOGY
The course provides a thorough knowledge of current research methods that psychologists use to discover new principles of behavior. It enables students to approach and define research questions, design experiments to address these questions, write effective scientific research reports, and critically evaluate diverse types of research designs and findings. Topics are: Psychological Research, Goals, Research Techniques, Research Problem and Hypotheses and Design, Methods of Data Collection, Survey Research Technique, Questionnaires, Experimental and Quasi-experimental Designs, Reactive and Non-Reactive Research, Application and issues, Qualitative/Quantitative Research in Psychology, Ethical issues in Psychological Research, Psychological Research in Pakistan.

PSY 801  ISSUE IN CROSS-CULTURAL PSYCHOLOGY
The course is designed to explain human behavior as a product of culture in global perspective and the topics are focused on the impact of society on the particular behaviors of concern. Course includes Culture and Psychology, Cross Cultural Research Methods, Indigenous Psychology, Family and Human development across cultures, Culture and Basic Psychological Processes, Ethnocentrism, Prejudice and Stereotypes, Culture and Social Behavior, Culture, Language and Communication.

PSY 802  HUMAN GROWTH & DEVELOPMENT
The course comprehensively examines all aspects of human developmental psychology, with focus on current issues, theories and models for understanding human developmental processes. Such as, key themes in Human Development Theories of Human Development, Stages of Development, Developmental Psychopathology, The family, The Development of Sex Roles, Morality, Altruism & Aggression, Child Counseling and Education and Adulthood and aging.

PSY 803  SOCIAL PSYCHOLOGY IN USE
The course focuses on the applications of social psychological theory and research in various domains of personal, institutional and societal well being. Applications of Social Psychology to Mental and Physical health, Marital Therapy, Social Psychology Applied to Law and Politics and the World of Work, Consumer Behavior, Environment and to communication Technologies are the main topics.

PSY 804  GENDER ISSUES IN PSYCHOLOGY
The course is designed to introduce current concepts in Psychology regarding gender issues. It also opens up new perspectives on gender roles focusing on Women Studies, Theories of Female Development, Femininity, Masculinity and androgyny, Gender Differences in Personality and Behavior, Problems of Adjustment and Psychotherapy, Violence against Women, and Cross Cultural Perspectives on the Gender role and Culture and Gender.

PSY 805  PERSPECTIVES ON PERSONALITY
The course focuses on current research with implication for theories of personality. Methods to study various types of personality and highlights the cross-cultural studies and research on personality. The study of Concept of Personality, important issues in Personality theory, the cultural Psychology of personality, Methods in the study of personality, Perspectives, the Psychodynamic and Phenomenological perspective, learning and the information processing perspective, overlap and integration among perspectives on personality are included in course.

DEPARTMENT OF PUBLIC ADMINISTRATION
The Department of Public Administration was established in 1985 under the faculty of social Sciences, University of Sindh through the concerted efforts of the then (and now the Ex) Vice-chancellor, Mr. Mazharul Haq Siddiqui, and Dr. Mohammad Hassan Shaikh, the department’s first Chairman.

The main objectives of establishing this department were to train and equip the students in the area of administrative science to contribute productively towards the development efforts in Pakistan. The department caters to the needs of students of pursuing a professional career in public or private sector and/or in non-governmental organizations.

The department offers a four-year bachelor degree, and a Master degree with specialization in Marketing Management, Human Resource Management, Finance Management and Management Information System. The 4-years BS degree leads to 4-semester MS Program and Master degree/MPA leads to 4-semester M.Phil, program with course work and thesis.

The faculty comprises:-

BURDEY, MUHAMMAD BUX, Professor and Chairman
Pre-requisite: B.S./M.P.A. degree or equivalent qualification and Pre-Entry Test. The curricula and course outlines are as under:

### 1st Semester
- **PA 800** Research Methods in the Social Sciences (4)
- **PA 801** Information Technology in Business Management (4)
- **PA 802** Issues and Practices in Behavioural Sciences (4)
- **PA 803** Strategic Human Resource Management (4)

### 2nd Semester
- **PA 850** Managing Change and Innovation (4)
- **PA 851** Advanced Marketing Research (4)

### 3rd to 4th Semester
- **PA 895** Research on approved topic, Thesis/ Dissertation and its Defense

#### PA 800 RESEARCH METHOD IN THE SOCIAL SCIENCE
This course is designed to familiarize students with the tools and techniques in the conduct of research in social science in general and in the field of Public Administration in particular, with the objectives to train students in conducting research on different social and economic problems and in writing report. Nature of Social Research, Empirical Research, scientific approach, concepts, hypothesis, variables. The system approach as problem solving methodology in Public Management, Data collection techniques: observation, interview questionnaire, content analysis interpretation of data, index, scale and sampling techniques, statistical analysis, Research Communication.

#### PA 801 INFORMATION TECHNOLOGIES IN BUSINESS MANAGEMENT
This course introduces student to the application of information technology in a Business Management environment. Information Technology Groundwork, Application Software in Business Management, Electronic Communication, Gathering Electronic information, Information Technology and your Future.

#### PA 802 ISSUES AND PRACTICES IN BEHAVIOURAL SCIENCE
This course stresses Public Administration as an interdisciplinary pursuit with particular emphasis on Psychology, Anthropology and Sociology. Approaches to the study of personality, Development of human behavior. Internal and external environment, their impact on behavior, Basic Psychological processes, Social Stratification of societies and Organizations at a various level, Strategies and mechanism of change of various levels of Social Organization.

#### PA 803 STRATEGIC HUMAN RESOURCES MANAGEMENT

**PA 850 MANAGING CHANGE AND INNOVATION**
This course aims to enable the students to understand the importance of managing strategic change in organizations and to enhance the effectiveness of executives in making strategic decision in creative manner. Managing organizational change, Creative approaches to problem solving, Leadership for innovation and Developing the Innovation Organization, Organization Transformations in various sectors and cross-cultural response to change management.

**PA 851 ADVANCED MARKETING RESEARCH**
This course aims to provide students with an overall framework to structure the discipline of marketing research with emphasis on understanding marketing research techniques and the compilation of a marketing research project. Marketing Research, overview of available methodologies, Quantitative, Qualitative Research. Suggestions for research Proposal.

**PA 895 M.PHIL THESIS AND SEMINARS**
The students of M.Phil. must write a thesis in the selected area, which should earn them 16 credits. The students must submit the proposal for approval of topic for the thesis through the proposed Supervisor and the chairman of the department at the commencement of 2nd semester of the program. Student will not be eligible for the award of M.Phil degree without scoring CGPA 3 or above in coursework and submission of M. Phil Thesis.

M.Phil. Leading to Ph.D in Public Administration:

**4-Semester Program (72)**
The primary objectives of the Ph.D (Doctor of Philosophy) in Public Administration are to provide doctoral students with the philosophical, theoretical, and substantive material necessary to acquire advanced understanding the field of Public Administration, to provide opportunities to conduct research in each of the courses offered, to assist doctoral students in acquiring the methodological skills needed to complete a major independent research project, and to develop researchers proficient in understanding major research projects in public and nonprofit sectors. The mission and program objectives are met by delivering a theoretically and intellectually stimulating program in a manner that encourages integration of course materials and promotes reflection on them. A variety of pedagogical methods will be used to challenge the thinking and facilitate the continued development of mid-career students.

**Required courses for Ph.D. (18 CH)**
Pre-requisite: Those students to get admission Ph.D program he/she must qualify Comprehensive Examination of M.Phil (24 Credits) Subjective GRE, one Research Article published in HEC Recognized Journal before submission of final dissertation, then he/she will be promoted for Ph.D.

1st Semester
- PAD 900 Organizational Theory and Research (4)
- PAD 901 Inferential Statistics (4)
- PAD 902 Issues in advanced Research (4)

2nd Semester
- PAD 903 Research Ethics (3)
- PAD 904 Research Project Management (3)

3rd to 4th Semester
- PAD 905 Research on approved topic, Thesis and its Defense

**Note:** Course outlines are available in the department

### DEPARTMENT OF SOCIOLOGY

The Department of Sociology was established at Hyderabad Campus in 1964 with Prof. Shafi Mohammad Memon as its first chairman. The department was shifted to Allama I.I Kazi campus Jamshoro in 1970.

This department has been imparting quality education. Courses have been designed to up knowledge students with professional skills and knowledge relevant to the changing needs of society and many of the graduates of this department are currently holding executive positions in private as well as in government sector. The seminar library is equipped with 3000 books and provides access to latest publications and journals on various topics of Sociology.
Research is the basic hallmark of the department. The department has established links with NGOs and the wider community. The Faculty is well-equipped with up to date research tools and techniques. Students are enrolled in M.Phil program and are working hard on their research dissertation under the guidance of qualified faculty.

Create in students the “Sociological imagination” which signifies the ability to see their lives, concerns, problems and hopes as entwined within the larger social and historical context in which they live which develop in students the skill critically and creatively to make their vision broader to envisage and encompass the existing social framework and enable them to apply their theoretical knowledge to the solution of the social problems around them.

Doctoral Program in Sociology has established throughout its existence the Department of Sociology at University of Sindh has been a major center of research and graduate training in Sociology. Its graduates can be found at senior academic levels throughout Pakistan and around the world. Presently Sociology is offering Graduate, Post-Graduate and Doctoral level programs. BS-IV four years, M.A (Pass) two years, M.Phil. & Ph.D. programmes.

The faculty comprises:-

WASSAN AJAIZ HUSSAIN, Associate Professor and Chairman

SHAIKH SAIMA, Professor

BROHI AHMED ALI, Associate. Professor (on Lien)

PANHWAR GHAZALA, Assistant Professor
M.A. (SU), Ph.D (S.U) 2015

ABRO AMEER ALI, Assistant Professor

M.S. /M.Phil in Sociology: 4 - Semester Program (42)
Pre-requisite: BS/ M.Sc. in Sociology, Pre- Entry Test

1st Semester
SOC 800 Advanced concepts (3)
SOC 801 Research Methodology (3)
SOC 802 Human Rights (3)
SOC 803 Social Problems (3)

2nd Semester
SOC 804 Gender Sociology (3)
SOC 805 Social Statistics (3)

3rd to 4th Semester
SOC 895 Research on approved topic, Thesis & its Defense

Ph.D. in Sociology: 6 Semester Program: (18 CH Course Work)
Pre-requisite: M.S./M.Phil. degree and valid GRE/GAT (Subject) Test result.

1st Semester
SOC 900 Contemporary Perspectives in Sociological Theory (3)
SOC 901 Advanced Research Methodology (3)
SOC 902 Sociology of Terrorism (3)
SOC 903 Future Perspectives in Social Problems (3)

2nd Semester
SOC 904 Gender and Society (3)
SOC 905 Environmental Sociology (3)

3rd to 6th Semester
Thesis and its Defense (24)

Note: Course outlines are available in the department