

# **DEPARTMENT OF COMPUTER SCIENCE**

## **UNIVERSITY OF KARACHI**



**2019-20**

**PROSPECTUS**

**MS (Computer Science)**

**Evening Program 2019-20**

## **About Department of Computer Science, University of Karachi**

The University of Karachi holds a unique position in the country's educational system. As a respected research and teaching institution, it is committed to intellectual leadership, and to excellence in both developing knowledge and conveying that knowledge to its students. The University of Karachi meets the commitments to preserve knowledge through its instructional and research programs for higher-level education.

The Department of Computer Science, University of Karachi, was established by a resolution of Academic Council in its meeting, held on November 27, 1984, and it began functioning in the academic year 1985-86 by offering a Degree Program in Master of Computer Science (MCS) and become one of first institutions in Karachi imparting education in Computer Science and Technology. The Department also offers evening program leading to Post Graduate Diploma (PGD) in Computer & Information Sciences. In the year 1995; Department started MCS evening program, on self-finance basis, to cater the growing demand of professionally skilled manpower in the field of Computer Science.

To further strengthen the discipline of Computer Science by producing high quality pro with sound fundamental knowledge. the department has started in the year 1996 and 2001 BS (Computer Science) in the morning and evening, and BS ( Software Engineering) in the morning in 2003 and in the evening 2008, a four year degrees program leading to MS (Computer Science) approved in 2001, a two year program after completing the BS. MS programs leads to PhD (Computer Science) program. The University of Karachi has excellent supporting faculty in the subjects of Mathematics, Statistics, Physics and other allied subjects for teaching these courses at BS (Computer Science) level. The first batch of BS (Computer Science) of the morning program passed in 1999.

The Department of Computer Science offers a wide range of courses at various levels. The purpose of these courses is to provide opportunities for advanced studies and research in the field of Computer Science and Information Technology and related fields, and also to produce highly skilled computer personnel to cater the need of Computer Professionals in the country and abroad. The Department maintains high standard of education through continuous assessment and with periodic tests, quizzes, seminars and field projects. The Department maintains close link with professional organizations at national and international levels, to enhance professional and academic standard of the faculty and as well as of the students.

## **FULL TIME FACULTY MEMBERS**

### **CHAIRMAN**

#### **Dr. Muhammad Sadiq Ali Khan**

Chair IEEE Computer Society Karachi Section  
Member IEEE, PEC, NSP, ISoC

### **ASSOCIATE PROFESSORS**

#### **Dr. Muhammad Sadiq Ali Khan**

Wireless Sensor Networks, Network & Cyber Security, Big Data Analysis, Cloud Computing, IoT, IT in Special Education and Intelligent Health Care Systems.

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PhD (KU), MS (SSUET), BS (SSUET)

#### **Dr. Nadeem Mahmood**

Temporal and Spatial Database Systems, Artificial Intelligence, Health Information Systems, Software Engineering

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Post. Doc. (IIU Malaysia), PhD (KU), MCS (KU)

#### **Dr. Tahseen Ahmed Jilani**

Soft Computing, Data Mining, Fuzzy Set Theory

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PhD (KU), MSc (KU)

### **ASSISTANT PROFESSORS**

#### **Dr. Syed Asim Ali**

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Ph.D (Candid), MCS( KU), BS (Electronics  
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Mr. Mukesh Kumar Rathi Maheshwari

## LECTURERS

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M.Engg. (NEDUET), BS (SSUET)

Ms. Maryam Feroz

MSCS (IBA), MBA (KUBS), BSCS(KU)

## **MS (CS) 2 YEARS Program**

- ✓ All selected students will required to complete 8 courses (3+0 and/or 2+1) of 24 credit hours in two semesters.
- ✓ In each semester there will be 4 courses of 3 credit hours (3+0 and/or 2+1) each.
- ✓ The student has to pass the course work with CGPA 3.00 or more. In case the student fails to get the desired CGPA, he/she will be allowed to improve the grade. Only one chance for improvement will be given.
- ✓ At-least 75% attendance in the course work is compulsory.
- ✓ In case the candidate fails to get the required CGPA 3.00, a P.G.D. in the discipline will be given.

### **SEMESTER I**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
MSCS-701	Theory of Computation and Logic	<b>3+0</b>
MSCS-703	Advanced Database Systems (ADS)	<b>2+1</b>
MSCS-705	Parallel Computing : Hardware Systems (Optional)	<b>2+1</b>
MSCS-707	Machine Learning Systems (Optional)	<b>2+1</b>
MSCS-709	Topics in Computer Graphics and Image Analysis (Optional)	<b>2+1</b>
MSCS-711	Applied Software Project Management (Optional)	<b>2+1</b>
MSCS-713	Thesis (Optional)	<b>3</b>

### **SEMESTER II**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
MSCS-702	Advanced Algorithmic Design and Analysis	<b>2+1</b>
MSCS-704	Advanced Data Communication and Networks	<b>2+1</b>
MSCS-706	Parallel Computing : Software (Optional)	<b>2+1</b>
MSCS-708	Topics in Software Engineering : Formal Methods and Models (Optional)	<b>2+1</b>
MSCS-710	Bayesian Networks and AI (Optional)	<b>2+1</b>
MSCS-712	Data Mining (Optional)	<b>2+1</b>
MSCS-714	Thesis (Optional)	<b>3</b>
MSCS-716	Advanced Topics in AI (Optional)	<b>2+1</b>
MSCS-718	Most Recent Trends and Developments in Software Engineering that are not covered by existing courses. IEEE's Software Engineering Notes, Relevant Periodicals, Journals will be used as course contents. (Optional)	<b>3</b>

- Summer Semester Course may be offered with the approval of DRC, if required number of students are available for the course.
- More Elective courses will be offered as per approval of the Board of Studies and as per the HEC curriculum.

**The specific areas and/or courses are:**

- ✓ Software Engineering,
- ✓ Database,
- ✓ Artificial Intelligence,
- ✓ Multimedia and Graphics,
- ✓ System Engineering,
- ✓ Computer Network and Computer Science education
- ✓ Wireless sensor networks
- ✓ Cloud Computing
- ✓ Network & cyber security
- ✓ Internet of things
- ✓ Usability & Interaction Design
- ✓ Management & Enterprise Systems
- ✓ Bio Informatics
- ✓ Big Data & Parallel Computing
- ✓ Data Warehousing
- ✓ Network Transportation
- ✓ Modeling & Simulation
- ✓ Image Processing & Computer Graphics
- ✓ Bio medical Imaging
- ✓ Computer Vision & Deep Learning

## **ADMISSION TO M.S.(CS) DEGREE PROGRAM**

### **Requirement and Procedure for M.S.(CS)**

#### **A. Eligibility Criteria (M.S.)**

1. At least sixteen years of studies BS(CS), BS(SE), BS(IT), BS(CE) with minimum CGPA 2.7 or MCS with First Division or equivalent qualification with at least first division in the relevant field from an HEC recognized university/institution. There is no requirement to submit Equivalence certificate for the graduates of Public Sector Universities.
2. The admission will be granted on the basis of Test & Interview by the Departmental Research Committee. Guideline for Interview marks are given in Annexure II.
3. If candidate has already qualified the International (subject) GRE/GAT/NTS, he/she will be exempted from the test. The validity of International (subject) GRE/GAT is for 5 years and NTS is for two years. However, interview will be mandatory.

#### **B. Admission Procedure (M.S.)**

1. All candidates will be required to submit the following documents along with the Entrance Test Application Form:
  - i. Photocopy of the consolidated transcript/marks certificate of the last degree examination.
  - ii. Photocopy of Computerized National Identity Card.
  - iii. Two recent passport size photographs.
2. All candidates will be required to appear in the Entrance Test 2019 conducted by the department of Computer Science, University of Karachi. This is mandatory for all the candidates.
3. a) The test shall comprise of the following sections:

<b>Section-I</b>	<b>Subject knowledge</b>	<b>80%</b>
<b>Section-II</b>	<b>English and Communication Skills</b>	<b>20%</b>

b) Candidates will be required to score at least 50% marks in each section to be eligible for consideration for the provisional admission. Note: Qualifying the admission test is no guarantee for admission.
4. All the students who qualify the test will be required to appear in person for an interview to be conducted by the respective Departmental Research Committee (DRC) to finalize the admission procedure.

#### **C. Provisional Admission for M.S.**

1. Applications for provisional admission will be considered on the basis of eligibility, merit, availability of seats and supervisors.
2. Final admission list will be prepared by the DRC according to the following formula:
  - i. The marks obtained in the prerequisite degree examination will be given 50% weightage.
  - ii. The marks secured in the Entrance Test 2019 will be given 30% weightage.

- iii. The marks obtained in the interview will be given 20% weightage. Distribution of interview marks are given in **Annexure II**.

#### **D. Submission of Forms for Admission**

Candidates selected for provisional admission will be required to submit the following documents along with the completed admission forms duly signed by the Chairperson of the Department and the Dean of the Faculty of Science.

1. Two recent passport size photographs, duly attested by the Chairperson of the Department.
2. Photocopies of certificates/ degrees from S.S.C. to Masters or the prerequisite exam.
3. Degree holders of other Universities must submit photocopy of Migration Certificate.
4. Photocopy of Computerized National Identity Card.
5. In case of foreign students, NOC from the Ministry of Education, Economic Affairs Division and Ministry of Foreign Affairs, Government of Pakistan, Islamabad and a copy of valid visa and passport.
6. Certificate from the Equivalence Committee, University of Karachi, in case the accreditation status of the prerequisite degrees is not clear.
7. The Admission & Tuition fee mentioned in **Annexure-I**.  
**(All the Photostat copies should be attested)**

#### **E. Duration of M.S.**

The duration of M.S. will be minimum of two (02) and maximum of four (04) years from the date of provisional admission. No further extension will be possible.

#### **F. Course Work**

##### **a) M.S. (with course work “Terminal Degree”)**

1. All selected candidates will be required to complete 10 courses of 30 credit hours (each of 3 credit hours in four semesters) in 2 years.
2. Every candidate will be required to submit details of courses duly endorsed by the course In-Charge and Chairperson of the parent department in the Semester Examination Section on prescribed course selection proforma
3. Candidates are required to attend at least 75% classes of each course.
4. In first year all candidate will be required to complete 8 courses of 24 credit hours (4 courses in each semester). In second year candidate has to pass the 2 courses of 6 credit hours (1 course in each semester) along with non-credit hours independent study (essay writing/project).
5. The candidate must clear the course work of 30 credit hours with minimum CGPA 3.00.
6. **A student who will be declared short of CGPR shall improve it in the next available single chance by appearing in any two courses having less than 70 marks i.e. B-**
7. If the student fails to attain a CGPA of 3.00 or more even after the improvement chance, he/she will be given only a Post Graduate Diploma (PGD) instead of M.S.



degree. Student can improve his/her CGPA in three years. Minimum 2.5CGPA is required for Post Graduate Diploma.

8. Those candidates who have done M.S. (with course work) are not eligible for admission in Ph.D.

**b) M.Phil. (With Course and Research Work)**

1. All selected candidates will be required to complete 8 courses of 24 credit hours in two semesters (each course of 3 credit hours).
2. Candidates are required to attend at least 75% classes of each course.
3. Every candidate will be required to submit details of courses duly endorsed by the course In-Charge and Chairperson of the parent department in the Semester Examination Section on prescribed course selection proforma.
4. The student has to pass the course work with CGPA 3.0 or more.
5. **A student who will be declared short of CGPR shall improve it in the next available single chance by appearing in two courses having less than 70marks i.e. B-**
6. If the student fails to attain a CGPA of 3.00 or more even after improvement chances, after one year or overall within three years, he/she will be given only a Post Graduate Diploma (PGD) instead of M.Phil. Degree. Minimum 2.5 CGPA is required for Post Graduate Diploma.
7. After passing the course work with CGPA 3.0 or more, the student will be required to apply through proper channel for confirmation of admission and approval of research proposal within one year.
8. The student will submit a research proposal according to approved format of the ASRB through proper channel along with a copy of the marks certificate issued by the Semester Examination Section.

# **ADMISSION SCHEDULE**

## **M.S. (Computer Science)**

1	<b>Date of Advertisement</b>	<b>28-July-2019</b>
2	<b>Issuance &amp; submission of admission forms</b>	<b>29-July to 16-Aug-2019</b>
3	<b>List of eligible candidates for KU entrance test, display on website and Departmental notice boards</b>	<b>21-Aug-2019</b>
4	<b>Collection of admit cards by the candidates eligible for entrance test from the office of the Department</b>	<b>22-23-Aug-2019</b>
5	<b>Entrance test</b>	<b>24-Aug-2019</b>
6	<b>Display of list of successful candidates of entrance test on its website.</b>	<b>26-Aug-2019</b>
7	<b>Interview of Successful Candidates</b>	<b>28-Aug-2019</b>
8	<b>Display of final merit list of successful candidates for provisional admission on website</b>	<b>30-Aug-2019</b>
9	<b>Issuance &amp; submission of provisional admission forms &amp; payment of fee documents etc.</b>	<b>2-Sep to 6-Sep-2019</b>
10	<b>Commencement of semester</b>	<b>9-Sep-2019</b>

Annexure-I

## **FEE STRUCTURE-2019-20**

01	<b>Processing/Test Fee</b>	<b>Rs. 4,500</b>
02	<b>Admission Fee</b>	<b>Rs. 20,000</b>
03	<b>Semester Fee (per semester)</b>	<b>Rs. 72,000</b>
04	<b>Departmental Charges (per student per semester)</b>	<b>Rs. 5,500</b>
05	<b>Thesis Evaluation/Viva Examination Fee</b>	<b>Rs. 35,000</b>

**Annexure-II**

**INTERVIEW CRITERIA FOR M.S. (Computer Science)**

	Research Knowledge, Experience and Aptitude			Oral Communication	Proposed Research Plan/Project	Total
	Research Experience (Thesis/project)	Research Dissemination (poster/project)	Publication			
Max Marks	4	2	2	7	5	20
Marks obtained						
<b>Comments</b>						
<b>Total Marks Obtained out of 20 =</b>						

**CUMULATIVE PERCENTAGE**

Name of Student :		
Form No:		
Percentage of last obtained degree ( %)	( )% x 0.5 =	(A)=
Total marks obtained in KU Admission Test 2019 ( %)	( )% x 0.3=	(B)=
Total marks obtained in the interview out of 20 ( )	( )	(C)=
Total	(A+B+C) =	

**Name and Signature of DRC Members**

- |          |          |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |

Name and Signature of Chairperson \_\_\_\_\_