DEPARTMENT OF COMPUTER SCIENCE

Dean
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Lecturers
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Mr. Samyan Qayyum Wahla
Ms. Abqa Javed
Ms. Maida Shahid
Mr. Nazeef Ul Haq
Mr. Muhammad Laeeq uz Zaman Khan Niazi
Mr. Syed Tehseen ul Hasan Shah
Mr. Waqas Ali
Mr. Muhammad Irzam Liaqat
Mr. Numan Shafi

Introduction

The Department of Computer Science is one of the prominent and oldest centers of computer education in the country. Its history dates back to 1968 when UET Lahore established a Computer Center under the supervision of Department of Mathematics. The center was equipped with a contemporary IBM-1130 third generation batch processing computing system that was equipped with a disk drive, monitor and printer. The center was responsible for teaching of courses in Computer Science and Numerical Analysis, which formed an integral part of the curricula for all disciplines of B.Sc. Engineering degrees offered by UET. The

center also offered short term computer courses for private and public sector organizations. A Bachelor degree program in Computer Science was started in 1976. The course was upgraded to M.Sc. Computer Science in 1978, that was the first graduate program of the country in computer science. The computer center became an independent Department of Computer Science in 1991. A four years degree program, B.Sc. (Hons.) Computer Science, was introduced by the Department in 1999. Since September 2003 the department renamed the degree as B.Sc. Computer Science. The department also offers graduate degree of M.S. Computer Science since 2003, whereas Ph.D. Computer Science program was launched in 2002. (The details about these programs are available in graduate prospectus of UET.)The Department holds an endowment chair given by Sultan of Oman, His Majesty Sultan Qaboos Bin Said-Al-Said.

Mission

To impart high quality computing education to the students, in order to develop critical thinking, analytical skills and abilities to solve real-world problems; for the technological and socio-economic development.

Degree Program

The department is offering 4 years B.Sc. Computer Science program where students can opt for general CS electives or do specialization in Data Science, Artificial Intelligence, or Cyber Security. The B.Sc. Computer Science program is accredited by National Computing Education Accreditation Council (NCEAC). A minimum of 135 credit hours are required for the completion of the program.

Program Educational Objectives (PEOs)

PEO-01: Graduates demonstrate theoretical and practical knowledge and skills of computer science, to solve real-world complex problems.

PEO-02: Graduates demonstrate professionalism, leadership qualities and engage in continuous learning of new developments in diverse fields of computing.

PEO-03: Graduates communicate effectively, work in a multidisciplinary team environment and exhibit an awareness of the professional and social responsibility, by making an impact on the society in an ethical manner.

Facilities

With expansion in academic programs, there are four computer laboratories in the Department. These laboratories are equipped with 160 latest fully networked computers with state-of-the-art servers. In addition, the Department has a FYP Lab. Computer to student ratio is 1:1. The Department is proud of its no-piracy policy, all the operating systems installed are either licensed or open-source.

Department's computing facilities are linked with UET Research Center, Main Library and other teaching departments through a fiber optic backbone. Multimedia projectors are installed in the class rooms and high speed internet facility is available in all laboratories. Department's class rooms are located in a purposely-built adjacent building known as New Lecture Theaters.

B.Sc. Computer Science

Year 1

Semester 1

Course No	Subject (Pre-requisites)	Credit Hours	
		Th	Prt
CS-161	Programming Fundamentals	3	1
CS-102	Introduction to Computing	3	1
HU-102	Functional English	3	0
MA-123	Calculus	3	0
PHY-111	Applied Physics	2	1
ME-100L	Workshop Practice	0	1

Semester 2

Course No	Subject (Pre-requisites)	Credit Hours	
		Th	Prt
CS-162	Object Oriented Programming (CS-161)	3	1
CMPE-222	Digital Logic Design (PHY-111)	3	1
HU-240	Psychology	3	0
HU-111	Communication Skills (Lab)	0	1
MA-224	Multivariaite Calculus (MA-123)	3	0
MA-343	Applied Probability & Statistics	3	0
QT-101	Translation of the Holy Quran	1	0

Year 2

Semester 3

Course No	Subject (Pre-requisites)	Credit Hours	
		Th	Prt
CS-261	Data Structures and Algorithms (CS-162)	3	1
HU-221	Technical writing and Presentation Skills	3	0
CS-271	Computer Organization and Assembly Language (CMPE-222, CS-161)	3	1
MA-234	Linear Algebra	3	0
CS-270	Discrete Mathematics	3	0

Semester 4

Course No	Subject (Pre-requisites)	Credit Hours	
		Th	Prt
CS-262	Database Systems (CS-261)	3	1
CS-263	Operating Systems (CS-261)	3	1
MA-228	Differential Equations (MA-224)	3	0
CS-272	Design and Analysis of Algorithms (CS-261)	3	0
CS-273	Theory of Automata (CS-270)	3	0
QT-201	Translation of the Holy Quran	1	0

Year 3

Semester 5

Course No	Subject (Pre-requisites)	Credit Hours	
		Th	Prt
CS-364	Information Security (CS-270)	3	0
CS-371	Artificial Intelligence (CS-261)	3	1
CS-301	Professional Practices in Software Development	3	0
CS-39x	Computer Science Elective-1	3	0
CS-165	Software Engineering	3	1

Semester 6

Course No	Subject (Pre-requisites)	Credit Hours	
		Th	Prt
CS-373	Computer Networks (CS-263)	3	1
CS-39x	Computer Science Elective-2	3	0
CS-39x	Computer Science Elective-3	3	0
CS-380	Graph Theory (CS-270)	3	0
CS-372	Parallel and Distributed Computing (CS-263)	3	0
QT-301	Translation of the Holy Quran	1	0

Year 4

Semester 7

Course No	Subject (Pre-requisites)	Credit Hours	
		Th	Prt
CS-465	Final Year Project-I	0	3
CS-471	Compiler Construction (CS-261, CS-273)	3	1
CS-49x	Computer Science Elective-4	3	0
IS-101	Islamic & Pakistan Studies-I	3	0
CS-49x	Computer Science Elective-5	3	0

Semester 8

Course No	Subject (Pre-requisites)	Credit Hours	
		Th	Prt
CS-466	Final Year Project-II (CS-465)	0	3
MGT-414	Entrepreneurship & Business Management	3	0
IS-201	Islamic & Pakistan Studies-II	3	0
HU-xxx	International Language	0	0
MGT-424	Leadership Strategies	3	0
QT-401	Translation of the Holy Quran	1	0

Elective Cources (3-0, Cr Hrs, if not specified)	
Course No	Subject(Stream, Pre-requisite)
CS-351	Computer Graphics
CS-353	Management Information Systems
CS-381	Computer Architecture
CS-382	Operations Research
CS-383	Simulation and Modelling
CS-386	Database Administration
CS-387	Database Performance & Optimization
CS-388	Database Backup & Recovery
CS-389	Distributed Databases
CS-390	System Programming
CS-391	Web Technologies
CS-392	Game Development
CS-393	Open Source Software Development
CS-394	Mobile Application Development
CS-396	Object Oriented Analysis and Design
CS-397	Design Patterns
CS-445	Programming Languages
CS-481	Real Time Systems
CS-487	Ethical Hacking
CS-488	Information Retrieval
CS-491	Wireless Networks
CS-492	Internetworking with Unix TCP/IP
CS-493	Enterprise Application Development
CS-494	E-Commerce
CS-495	Software Design & Architecture
CS-496	Linux Kernel Implementation
CS-497	Intro to Program Analysis
CS-498	Formal Methods
CS-581	Graph Databases
CS-582	Web semantics
CS-583	Leading Software Teams
CS-584	Habits of Highly Effective Software Engineer
CS-585	Personal, Team and Executive Software Processes
CS-586	Logical Paradigms of Computing
SWE-211	Software Requirements Engineering
SWE-221	Human Computer Interaction
SWE-325	UX/UI Design
SWE-331	Software Quality Engineering
SWE-332	Software Measurement & Metrics
SWE-441	Software Project Management
SWE-442	Software Re-Engineering
CS-360	Fundamentals of Cyber Security (Cyber Security Elective) (CS-102)
CS-361	Network Security (Cyber Security Elective) (CS-373)
CS-362	Digital Forensics (Cyber Security Elective)) (CS-373)
CS-363	Information Assurance (Cyber Security Elective) (CS-102, CS-262)
CS-365	Malware Analysis and Development (Cyber Security Elective) (CS-162)
CS-366	Penetration Testing (Cyber Security Elective)) (CS-373, CS-162)
CS-367	Secure Software Design and Development (Cyber Security Elective) (CS-165)
CS-368	Vulnerability Assessment and Reverse Engineering (Cyber Security Elective) (CS-165, CS-364)
CS-384	Introduction to Data Science (Data Science Elective)
CS-385	Internet of Things (Data Science Elective)
CS-399	Statistics for Data Science (Data Science Elective) (MA-343)
CS-482	Big Data Analytics (Data Science Elective) (CS-384)
CS-483	Cloud Computing (Data Science Elective)
CS-484	Data Warehousing and Business Intelligence (Data Science Elective)
CS-496	Data Visualization (Data Science Elective) (CS-384)
CS-354	Natural Language Processing (AI Elective) (CS-371)
CS-355	Data Mining (2-1) (Data Science Elective, AI Elective) (MA-343)
CS-356	Programming for AI (2-1) (AI Elective) (CS-371)
CS-357	Knowledge Representation and Reasoning (AI Elective) (CS-270)
CS-358	Philosophical Foundations of AI (AI Elective)
CS-450	Agent Based Modeling (AI Elective)(CS-371)
CS-451	Introduction to Bioinformatics (2-1) (AI Elective)
CS-452	Introduction to Deep Learning (AI Elective) (CS-371)
CS-485	Computer Vision and Image Processing (2-1) (AI Elective) (CS-371)
CS-489	Machine Learning (2-1) (AI Elective)
CS-490	Soft Computing (AI Elective) (CS-272)