

## Chairman

Dr. Laiq Hasan Ph.D. (The Netherlands)

## Assistant Professors

Dr. Nasir Ahmad Ph.D. (UK)  
 Dr. Nasru Minallah Ph.D. (UK)  
 Dr. Hamad Alizai Ph.D. (Germany)  
 Dr. Aftab Khan Ph.D. (UK)  
 Engr. Zahid Wadood Mufti M.Sc. (Pak)  
 Engr. Ihsan Ul Haq M.Sc. (Pak)  
 Engr. Arbab Masood M.Sc. (Pak)  
 Engr. M. Athar Javed Sethi M.Sc. (Pak)

## Lecturers

Dr. Safdar Nawaz Marwat Ph.D. (Germany)  
 Engr. Salim Ullah M.Sc. (Pak)  
 Engr. Sumayyeh Salahuddin M.Sc. (Pak)  
 Engr. Madiha Sher M.Sc. (Pak)  
 Engr. Muniba Ashfaq M.Sc. (Pak)  
 Engr. Tariq Afridi M.Sc. (Germany)  
 Engr. Irfan Ahmad M.Sc. (Pak)  
 Engr. Asif Ali Khan M.Sc. (Pak)  
 Engr. Rehmat Ullah M.Sc. (Pak)

## Lab Engineers

Engr. Shakir Ullah M.Sc. (Pak)  
 Engr. Amaad Khalil M.Sc. (Pak)  
 Engr. Sidra Gul M.Sc. (Pak)  
 Engr. Jebran Khan B.Sc. (Pak)  
 Engr. Atif Sardar B.Sc. (Pak)

# Department of Computer Systems Engineering

Computer Systems Engineering is a unique blend of selected fields from electrical engineering, computer science and mathematics required to design and develop computer systems. This branch of engineering provides the computational apparatus for technological growth in almost all fields of science and technology and has a huge impact on the economic development around the world. Once a blooming technology, it has now taken deep roots in every field of life.

The Department of Computer Systems Engineering (DCSE) strives to impart skills such as digital systems design, computer programming, software engineering, digital signal processing, control systems and microprocessor based systems design and development. Such skills are required in a broad range of technological fields such as consumer and medical electronics, custom electronic design, digital communications systems, computer networks, transport systems, factory automation and digital computer graphics.

The Computer Systems Engineering degree program is a combination of computer hardware and software engineering with a good foundation in electrical and electronics engineering. The degree Programme provides a combination of basic fundamental knowledge in computer systems, practical skills in hardware and software design, general problem solving skills required in designing and building systems, verbal and written communications, final year project work, exposure to a variety of existing and leading edge electronics hardware and software technologies. The course work is organized around key areas of Computer Systems Engineering and in quite a few cases; successful completion of basic course is a pre-requisite for registration in an advanced course in a particular area.

## Academic Programmes

- B.Sc. Computer Systems Engineering
- M.Sc. Computer Systems Engineering
- Ph.D. Computer Systems Engineering

## Laboratories

The Department boasts the following well-equipped laboratories, enabling students to get a strong practical grasp of the theoretical knowledge gained in the classroom:

- Electronics Laboratory
- Microprocessor and Digital Electronics Laboratory
- Digital Signal Processing & Digital Design Laboratory
- Final Year Project Laboratory
- Communication Laboratory
- Control System Laboratory
- Three general-purpose Computing Laboratories

## Internships & Field Visits

Students are required to complete 800 hours of internship as part of the B.Sc. degree programme, which gives them a chance to explore and get hands-on training in their respective fields of interest.

Visit to various industries and research organizations are a part of education training of engineers. Both long and short visits are arranged for students, providing them an opportunity to experience practical "engineering at work".

## Research

The department has a well-qualified faculty, which actively participates in the university's academic and research activities. Research activities are carried out in a variety of fields such as Networks, Communications, Digital Signal Processing, Control Systems, Artificial Intelligence & Expert Systems, Advanced Digital Design and Computer Architecture, Pattern recognition and bioinformatics, digital image processing and fault-tolerant computing.



# Scheme of Studies

Semester 1		Contact hours		Credit hours
No.	Course	Lecture	Lab.	Total
BSI-101	Islamic Studies	2	0	2
BSI-122	Calculus	3	0	3
BSI-131	English Composition & Comprehension	2	0	2
BSI-181	Applied Physics	3	3	4
CSE-101	Computer Fundamentals	3	3	4
ME-106	Engineering Workshop	0	3	1
<b>Total Contact Hours</b>		13	9	
<b>Total Credit Hours</b>		13	3	16

Semester 3		Contact hours		Credit hours
No.	Course	Lecture	Lab.	Total
BSI-111	Linear Algebra	3	0	3
BSI-362	Complex Variables	3	0	3
CSE-202	Digital Logic Design	3	3	4
CSE-203	Circuits & System-II	3	3	4
CSE-208	Object Oriented Programming	3	3	4
<b>Total Contact Hours</b>		15	9	
<b>Total Credit Hours</b>		15	3	18

Semester 5		Contact hours		Credit hours
No.	Course	Lecture	Lab.	Total
CSE-309	Communication Systems	3	0	3
CSE-302	Systems Programming	3	3	4
CSE-402	Digital Signal Processing	3	3	4
CSE-304	Computer Organization & Architecture	3	3	4
CSE-305	Engineering Economics	3	0	3
<b>Total Contact Hours</b>		15	9	
<b>Total Credit Hours</b>		15	3	18

Semester 7		Contact hours		Credit hours
No.	Course	Lecture	Lab.	Total
CSE-401a	Design Project-I	0	9	3
BSI-120	Professional Ethics	2	0	2
CSE-310	Control Systems	3	3	4
CSE-4xx	Technical Elective-I	3	3	4
CSE-4xx	Technical Elective-II	3	0	3
<b>Total Contact Hours</b>		11	15	
<b>Total Credit Hours</b>		11	5	16

Semester 2		Contact hours		Credit hours
No.	Course	Lecture	Lab.	Total
BSI-110	Pakistan Studies	2	0	2
BSI-231	Differential Equation	3	0	3
CSE-102	Computer Programming	3	3	4
CSE-103	Circuit & Systems-I	3	3	4
ME-104	Engineering Drawing & CAD	2	3	3
BSI-141	Communication & Presentation Skills	2	0	2
<b>Total Contact Hours</b>		15	9	
<b>Total Credit Hours</b>		15	3	18

Semester 4		Contact hours		Credit hours
No.	Course	Lecture	Lab.	Total
CSE-204	Operating Systems	3	3	4
CSE-301	Signals & Systems	3	3	4
CSE-206	Electronic Circuits	3	3	4
CSE-209	Probability Methods in Engineering	3	0	3
CSE-210	Data Structures and Algorithms	3	3	4
<b>Total Contact Hours</b>		15	12	
<b>Total Credit Hours</b>		15	4	19

Semester 6		Contact hours		Credit hours
No.	Course	Lecture	Lab.	Total
CSE-303	Data Communication & Networks	3	3	4
CSE-307	Microprocessor Based System Design	3	3	4
CSE-308	Digital System Design	3	3	4
CSE-403	Database Management System	3	3	4
CSE-311	Technical Writing	3	0	3
<b>Total Contact Hours</b>		15	12	
<b>Total Credit Hours</b>		15	4	19

Semester 8		Contact hours		Credit hours
No.	Course	Lecture	Lab.	Total
CSE-401b	Design Project-II	0	9	3
CSE-406	Engineering Project Management	3	0	3
CSE-4xx	Technical Elective-III	3	0	3
CSE-4xx	Technical Elective-IV	3	0	3
<b>Total Contact Hours</b>		9	9	
<b>Total Credit Hours</b>		9	3	12

**Total Credit = 136**

Note: Chairman of the Department is authorized to rearrange the order of courses from the approved courses, depending upon the availability of faculty and market demands.

**\*List of Technical Electives**

(More elective courses could be added and the credit hours can be split according to the requirement of the University)

- |                                  |                                     |                                      |                              |
|----------------------------------|-------------------------------------|--------------------------------------|------------------------------|
| ▶ Embedded Systems               | ▶ Enterpreniership                  | ▶ Computer Graphics                  | ▶ Network Programming        |
| ▶ Advanced Computer Architecture | ▶ Artificial Intelligence           | ▶ Network Modeling & Simulation      | ▶ Optical Networks           |
| ▶ Digital Image Processing       | ▶ Software Engineering              | ▶ Fault Tolerant Computing           | ▶ IP Networks                |
| ▶ Advanced Electronics           | ▶ Modern Programming Languages      | ▶ Artificial Neural Network          | ▶ Human Computer Interaction |
| ▶ Computer Security              | ▶ Digital Communication             | ▶ Parallel and Distributed Computing | ▶ Special Topics             |
| ▶ Robotics                       | ▶ Wireless Communication & Networks | ▶ Discrete Structures                |                              |
| ▶ Web Engineering                | ▶ Multimedia Communication          | ▶ Numerical Analysis                 |                              |