



# CAPITAL UNIVERSITY OF SCIENCE & TECHNOLOGY ISLAMABAD

Expressway, Kahuta Road, Zone-V, Islamabad  
Phone: +92-51-111-555-666 Fax: +92-51-4486705  
Email: [info@cust.edu.pk](mailto:info@cust.edu.pk) Website: <https://www.cust.edu.pk>

## PhD Comprehensive Examination – Spring 2020 Faculty of Engineering

Following is the department wise list of the subjects from which the comprehensive examination question papers will be prepared. All engineering students are required to select three (3) courses from the respective list for preparation of the question papers. The selected list is to be sent/ handed over to Graduate Studies Office at the time of registration for comprehensive examination.

### Electrical Engineering

<b><u>Control Systems:</u></b>		
1	EE5813	Linear System Theory
2	EE5823	Nonlinear Control Systems
3	EE5843	Control Systems Design
4	EE6893	Sliding Mode Control
<b><u>Signal Processing:</u></b>		
1	EE5613	Advanced Digital Signal Processing
2	EE5623	Advanced Digital Image Processing
3	EE6633	Adaptive Signal Processing
4	EE6643	Pattern Recognition
<b><u>Telecommunications and Networks</u></b>		
1	EE5413	Stochastic Processes
2	EE5713	Advanced Digital Communication
3	EE6733	Cellular and Mobile Communication
4	EE6713	Advanced Computer Networks
5	EE6763	Mobile and Wireless Networks
<b><u>Microelectronics and Microwave</u></b>		
1	EE5233	Solid State Electronics
2	EE6213	Analog Integrated Electronic Circuits
3	EE6523	Advanced Antenna Theory & Design
4	EE6533	Advanced Microwave Engineering

### Computer Engineering

<b><u>Computer Architecture</u></b>		
1	ECE6313	Advanced Computer Architecture
2	ECE6333	Advanced ASIC Design and FPGA
3	ECE6343	Embedded System Design

<b><u>Computer Networks</u></b>		
1	ECE6713	Advanced Computer Networks
2	ECE6763	Mobile and Wireless Networks
3	ECE6773	Multimedia Services Over IP Networks
4	ECE5733	Network Security
<b><u>Communications</u></b>		
1	ECE5413	Stochastic Processes
2	ECE5713	Advanced Digital Communication
3	ECE5723	Information and Coding Theory
4	ECE6733	Cellular and Mobile Communication
<b><u>Computer Vision</u></b>		
1	ECE5623	Advanced Digital Image Processing
2	ECE6643	Pattern Recognition
3	ECE6653	Computer Vision
4	ECE6683	Machine Learning

## **Mechanical Engineering**

<b><u>Core Courses</u></b>		
1	ME5703	Research Methodologies
2	ME5713	Optimization Methods
3	ME5723	Experimental Methods
<b><u>Thermal Sciences</u></b>		
1	ME5113	Internal Combustion Engines
2	ME5123	Thermal Power Generation
3	ME5133	Gas Dynamics
4	ME5153	Combustion
5	ME5513	Computational Fluid Dynamics
6	ME5533	Transport Phenomena
<b><u>Manufacturing</u></b>		
1	ME5643	Digital Manufacture and Rapid Manufacture
2	ME5653	Manufacturing System Design & Analysis
3	ME5673	Production Planning and Control
4	ME5683	Operation Research
5	ME6643	Nano Fabrication and Manufacturing
<b><u>Mechanical Design</u></b>		
1	ME5053	Finite Element Method of Composites
2	ME5623	Mechanism Design
3	ME6043	Design of Machine Tools

### **Civil Engineering (specialization Courses)**

<b>(a) Specialization Courses</b>			
(i)	Water Resources Engineering & Management	CE 5103	Advanced Open Channel Hydraulics
		CE 5113	Advanced Hydrology
		CE 6123	River Engineering
		CE 6133	Design of Hydraulic Structures
(ii)	Structural Engineering	CE 5303	Dynamics of Structures
		CE 5313	Fiber Reinforced Structures
		CE 6323	Computer Aided Analysis & Design of Structures
		CE 6333	Earthquake Engineering

### **Civil Engineering (Elective Courses)**

<b>(b) Elective Courses</b>		
(i)	CE 5023	Research Methods in Civil Engineering
(ii)	CE 5803	Advanced Construction Management
(iii)	CE 5903	Advanced Geo-informatics
(iv)	CE 5913	Disaster Risk Assessment & Evaluation
(v)	CE 5813	Project Planning and Control
(vi)	CE 5903	Advanced Geo-informatics
(vii)	CE 5913	Disaster Risk Assessment & Evaluation
(viii)	CE 5153	Drainage & Irrigation Engineering