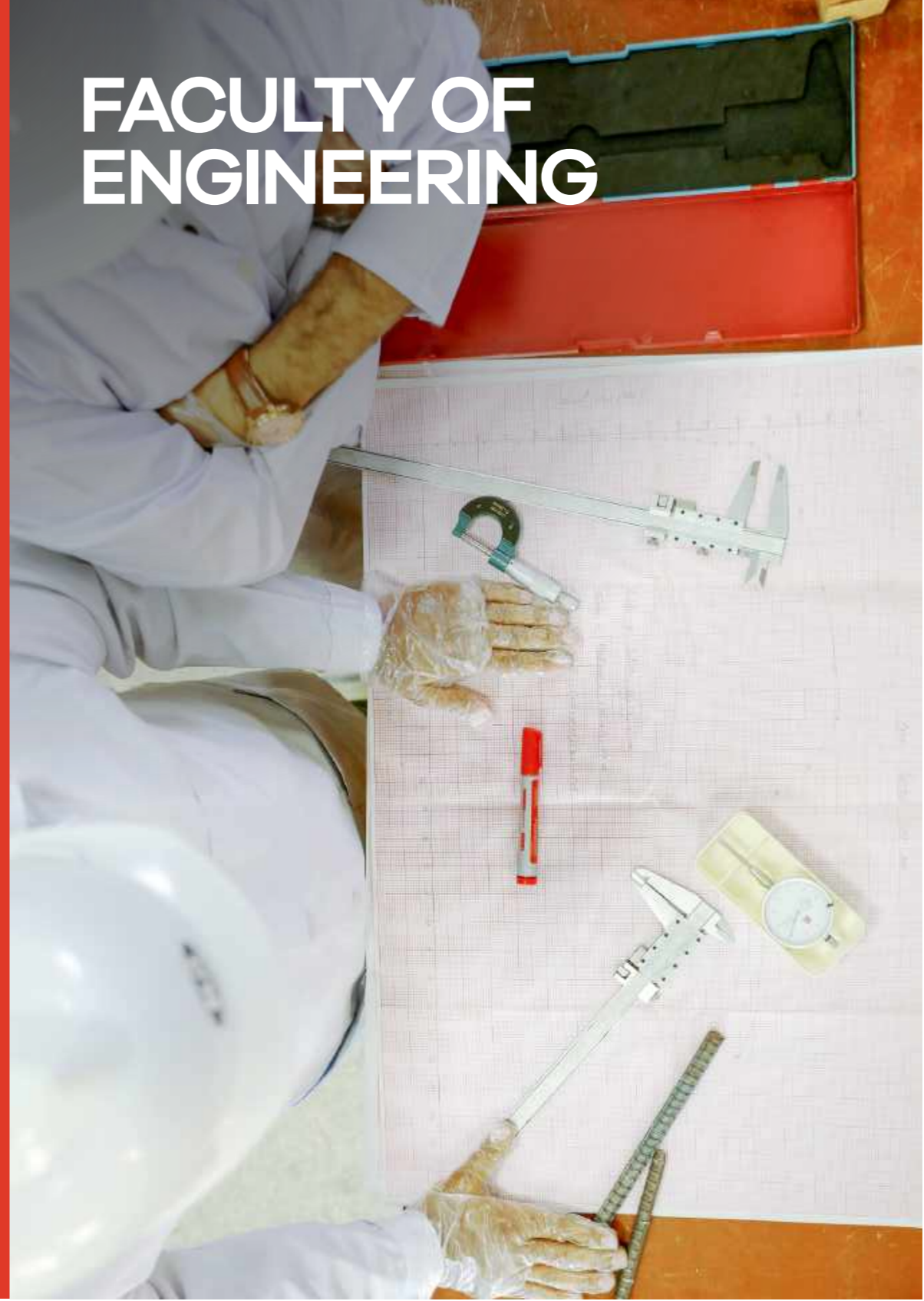
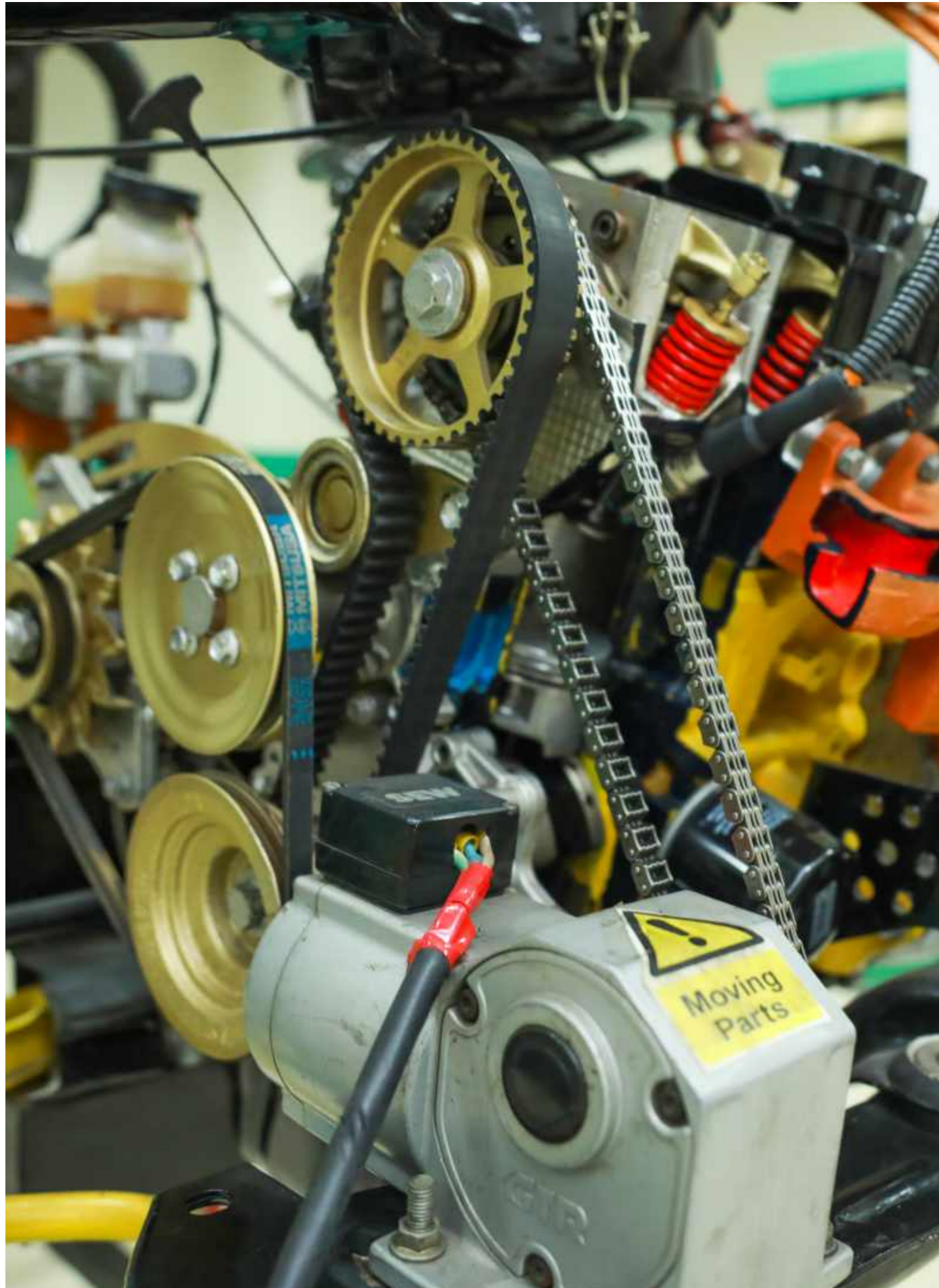


UNIVERSITY OF  
CENTRAL PUNJAB

📍 1 - Khayaban-e-Jinnah  
Road, Johar Town, Lahore.

# FACULTY OF ENGINEERING





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# CAREER PROSPECTS

Engineering is a practical and technical role where you can solve problems and explore how things work. It is a broad field that provides exciting and varied career opportunities. You could be working anywhere from aerospace to construction, using the latest technology to design products, testing your scientific knowledge in the healthcare and food industries, or working on innovative infrastructure projects. Our degrees provide pathways to rewarding careers and our graduates have found employment in a wide range of international industries and organizations. Our research-led teaching ensures that we incorporate the latest advances in innovative engineering research. You will graduate as an engineer who has both practical experience and highly desirable skills to meet the demands of the engineering industry.

## DEAN'S MESSAGE

The Faculty of Engineering (FOE), University of Central Punjab (UCP), welcomes you to join the exciting career path of engineering where you play a vital role in the technological advancement of the country. We take pride in the quality of instructions at both the undergraduate and graduate levels. Our programs have been recognized by Pakistan Engineering Council (PEC) and the Higher Education Commission (HEC), and follow the Washington Accord and the International Engineering Alliance's requirements. We deliver engaging and innovative learning that builds curiosity and leadership skills. Our Outcome-Based Education system (OBE) produces graduate engineers who harness the benefits of innovative engineering with sustainable principles in a framework that promotes sustainable economic development, supports enhanced health and well-being, and delivers low-environmental-impact solutions. The Faculty offers an engaging and supportive environment in which undergraduates will work alongside creative and inspirational people keen to share their experiences.



**PROF. DR. MUHAMMAD AKRAM TAHIR**

We are committed to supporting talented people to develop partnerships with industry, funding bodies, and government agencies. We look forward to you joining our vibrant community, and we are confident that your experience at the Faculty of Engineering will leave its mark on you.

## HEAD OF DEPARTMENT



**DR. ALI NASIR**  
HOD OF ELECTRICAL  
ENGINEERING



**DR. MUHAMMAD RIZWAN SHAD**  
HOD OF MECHANICAL  
ENGINEERING



# OUR FACULTY



OUR FACULTY





## OVERVIEW OF FACULTY OF ENGINEERING (FOE)

The Faculty of Engineering comprises of three departments:

1. Civil Engineering
2. Electrical Engineering
3. Mechanical Engineering

The main objective of the Faculty of Engineering is to produce highly efficient engineers by providing the best possible academic training in a conducive environment. The Faculty has developed its infrastructure following the guidelines of the Pakistan Engineering Council (PEC). The students can fully benefit from state-of-the-art laboratories, well-stocked libraries, and classrooms with modern teaching aids to introduce them to the most recent analytical techniques and technological developments in their respective fields. Students have ample opportunities to associate themselves with highly qualified faculty, which is actively engaged in academic and research activities. Moreover, FOE is accredited by PEC & Washington Accord.

## FOE MISSION STATEMENT

“To produce knowledgeable engineers with technical expertise, ethical values, interpersonal and management skills to meet the current and future challenges of society by providing them with state-of-the-art labs and classrooms along with world-class faculty.”

## FACILITIES

### • Laboratories

The Faculty of Engineering has state-of-the-art, well-equipped laboratories where students are able to equip themselves with hands-on skills and solve complex engineering problems. To cope with the modern-day technological requirements, there are 36 labs fully functional in all three engineering programs.

### • Student Counselling

A very well-organized counselling mechanism exists in the university and is supervised by the respective HOD. To streamline this process of student counselling, batch advisors have been nominated, who guide and help the students in their academic and non-academic matters throughout the program. Furthermore, a minimum of 4 hours per week are dedicated by each faculty member for subject counselling.

### • Departmental Book Bank

The faculty maintains a well-stocked book bank that has more than 500 books to facilitate students' learning by providing them free of cost books during a semester.

### • Campus Management System

The university's CMS is an immediate and efficient source of information. This portal is used by the students to stay informed and updated about their academic activities. CMS has integrated with OBE (Outcome Based Education) module and can provide the following information pertaining to the students and faculty.

- a) Results available on online portal
- b) Attendance status available on online

portal

- c) Class held status
- d) Transcripts
- e) Personal information
- f) Course outlines
- g) Faculty profiles
- h) Notices and news about events

## ACHIEVEMENTS

• Faculty of Engineering has highly qualified, competent, and motivated faculty members comprising of 22 PhD degree holders, out of which 20 are foreign qualified from world-renowned universities, each faculty member for subject counselling.

### • HEC Funded UCP-Biomechatronic Research Laboratory

Biomechatronic is an amalgamation of Mechanics and Electronics Engineering aimed at compensating biological function loss. The research in this lab focuses on the development of robotic devices to help people with limb disabilities. The lab is led by Dr. Zohaib Aftab, a faculty member in the Mechanical Engineering Department. The lab is also part of the National Center of Robotics and Automation (NCRA) Pakistan under the name of Human-Centered Robotics Lab.

The goal of this lab is to make modern assistive devices, such as exoskeletons, accessible to disabled people living in countries with severe financial constraints. By taking an integrated approach that combines the knowledge of engineering, biomechanics, and the power of inexpensive electronics, we can enhance

the performance of existing low-tech assistive devices in use. We have developed several exoskeleton prototypes and tested for polio and spinal cord injury patients.

The lab has maintained close collaboration with the local medical industry for an accelerated path to product development. It has also attracted the most amount of research funding in the University from national and international donors that is equivalent to over PKR 20 million.

## RESEARCH GRANTS MECHANICAL ENGINEERING

### 1. Research grant from Higher Education Commission, approved in April 2018

For the establishment of Biomechatronics Lab under the umbrella of National Center of Robotics and Automation (NCRA) established by the government of Pakistan.

**Budget:** PKR 20 Million

**Duration:** To be completed in 2022

### 2. Research grant from TWAS-COMSTECH, awarded in Dec. 2017

Project title "Towards affordable exoskeleton systems for paraplegics and polio victims"

**Budget:** USD 11,160 (PKR. 1.3 million)

**Duration:** 18 months

### 3. NGIRI Awards 2020 grant for final year projects, August 2020

## LIST OF ACHIEVEMENTS BY THE ELECTRICAL ENGINEERING DEPARTMENT

1. NGIRI Awards 2020 grant for 6 final year projects, August 2020
2. Won the bronze medal in Innovative FPGA Global Design Contest 2019
3. 2nd Position in Visio Spark Robo Race held in November 2019
4. 2nd Position in NaSCon held in April 2019

## PROGRAM OBJECTIVES

- Technical Expertise
- Ethical Values
- Interpersonal Skills
- Management Skills

## PROGRAMS OFFERED

Faculty of Engineering is offering Undergraduate and Postgraduate programs in all three departments at various levels. Details of programs being offered by all three departments is as under

1. Department of Electrical Engineering
  - BSc Electrical Engineering
  - MSc Electrical Engineering
  - PhD Electrical Engineering

2. Department of Mechanical Engineering
  - BSc Mechanical Engineering
  - MSc Mechanical Engineering
3. Department of Civil Engineering
  - BSc Civil Engineering

## GOALS & OBJECTIVES

The Faculty of Engineering (FOE) is committed to its mission to develop mechanical, electrical, and civil engineering fields. The faculty of engineering is accredited as per Washington accord, thereby bound to upgrade its faculties and bring its academic outlooks to be compatible with international standards. The faculty is among the pioneers in Engineering education in Pakistan to set measurable educational objectives and goals. Dedicated efforts by all pillars of Engineering faculty at UCP have made these goals achievable in a minimum possible time frame. Pakistan Engineering Council has gazetted the achievements by granting accreditation as per the universally accepted Washington Accord.

The faculty has a proven record of imparting technical knowledge and skills to graduate engineers which enable graduates to qualify for work as professional engineers among the

member countries of the Washington Accord, without any local prerequisite in the countries for foreign engineers. The faculty not only fixed goals compatible with international standards for Knowledge, Skills and Attitude (KSA) but also attained acclamation by Pakistan Engineering Council. The faculty is prepared, and bound, to bring its goals in line with changing international standards in the sphere of Outcome-Based Engineering education.

The faculty feels proud to be able to:

1. Impart engineering knowledge in providing sustainable solutions to society with strong skills and leadership
2. Analyze and provide engineering solutions with socio-environment awareness and ethical responsibility
3. Enhance and improve their knowledge and skills through professional growth and development activities





# SAMPLE MODULE



SAMPLE MODULE

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## MECHANICAL ENGINEERING (B.Sc.)

Area	Cr. Hrs.
a) Mechanical Engineering Foundation Courses	25
b) Mechanical Engineering Breadth Courses	39
c) Mechanical Engineering Depth Courses	07
d) Natural Sciences	15
e) Computing Courses	02
f) Inter Departmental Engineering Electives (IDEE)	10
g) Humanities Courses	17
h) Management Sciences	08
i) Mechanical Engineering Elective Courses	06
j) Industrial Internship	00
k) Design Project	06
<b>Total</b>	<b>135</b>

### a) Mechanical Engineering Foundation Courses (25 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Engineering Drawing, Auto CAD & Graphics	ME1212	2
Engineering Mechanics-I	ME1513	3
Workshop Technology	ME1312	2
Mechanics of Machines-I	ME2223	3
Fluid Mechanics-I	ME2713	3
Mechanics of Materials-I	ME2523	3
Applied Thermodynamics-I	ME1413	3
Engineering Materials	ME1613	3
Manufacturing Processes-I	ME2813	3

### b) Mechanical Engineering Breadth Courses (39 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Engineering Mechanics-II	ME2533	3
Engineering Mechanics-II Lab	ME2331	1
Mechanics of Machines-II	ME2233	3
Mechanics of Machines-II Lab	ME2231	1
Machine Design-I	ME2243	3
Mechanics of Materials-II	ME2543	3
Mechanics of Materials-II Lab	ME2541	1
Machine Design-II	ME3253	3
Machine Design-II Lab	ME3251	1
Finite Element Analysis	ME3263	3
Finite Element Analysis Lab	ME3261	1
Manufacturing Processes-II	ME3823	3
Manufacturing Processes-II Lab	ME3821	1
Applied Thermodynamics-II	ME2423	3
Applied Thermodynamics-II Lab	ME2421	1
Fluid Mechanics-II	ME3723	3
Fluid Mechanics-II Lab	ME3721	1
Heat & Mass Transfer	ME3433	3
Heat & Mass Transfer Lab	ME3431	1

### c) Mechanical Engineering Depth Courses (07 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
IC Engines	ME3443	3
IC Engines Lab	ME3441	1
Power Plants	ME3453	3

### d) Natural Sciences Courses (15 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Applied Mathematics I	MEMT1013	3
Applied Physics	ME1113	3
Applied Mathematics II	MEMT1023	3
Applied Mathematics III	MEMT2043	3
Numerical Analysis	MEMT3053	3

### e) Computing Courses (02 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Computer System and Programming	MECS1012	2

### Electives (10 Cr. Hrs.)

### f) Inter Departmental Engineering

Course Title	Code	Cr. Hrs.
Basic Electrical Engineering	MEEE1012	2
Basic Electrical Engineering Lab	MEEE1011	1
Industrial Electronics	MEEE3022	2
Industrial Electronics Lab	MEEE3021	1
Instrumentation & Control	MEEE4033	3
Instrumentation & Control Lab	MEEE4031	1

### g) Humanities Courses (17 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
English I	MEHU1013	3
English II	MEHU1023	3
Islamic Studies	MEHU1053	3
Pakistan Studies	MEHU1043	3
English III	MEHU3033	3
Health, Safety & Environment	MEHU4042	2

### h) Management Sciences (08 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Industrial Management & Economics	MEMG4012	2
Entrepreneurship	MEMG4023	3

Metrology and Quality Assurance	MEMG4072	2
Metrology and Quality Assurance Lab	MEMG4071	1
Operational Management	MEMG4033	3
Total Quality Control	MEMG4043	3
Operation Research	MEMG4053	3
Engineering Law	MEMG4063	3

### i) Elective Courses (06 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Refrigeration & Air Conditioning	ME3462	2
Refrigeration & Air Conditioning Lab	ME3461	1
Renewable Energy Technology	ME3473	3
Gas Dynamics	ME3733	3
Aerodynamics	ME3743	3
Mechanical Vibrations	ME4552	2
Mechanical Vibrations Lab	ME4551	1
Maintenance Engineering	ME4xx3	3
Introduction to Mechatronics	ME4623	3
Automation and Robotics	ME4633	3
Computational Fluid Dynamics	ME4753	3

### j) Industrial Internship (ME4000)

All students shall be required to undergo accumulated industrial internship of 6 weeks in the 3rd/4th year of studies.

### k) Design Project (06 Cr. Hrs.)

After completing 6 semesters of studies, the student will demonstrate their practical skills in the field of mechanical engineering by undertaking a Final Year Project (FYP). The project stands at 6 credit hours and will be completed in 4th year, i.e. 7th and 8th semesters.



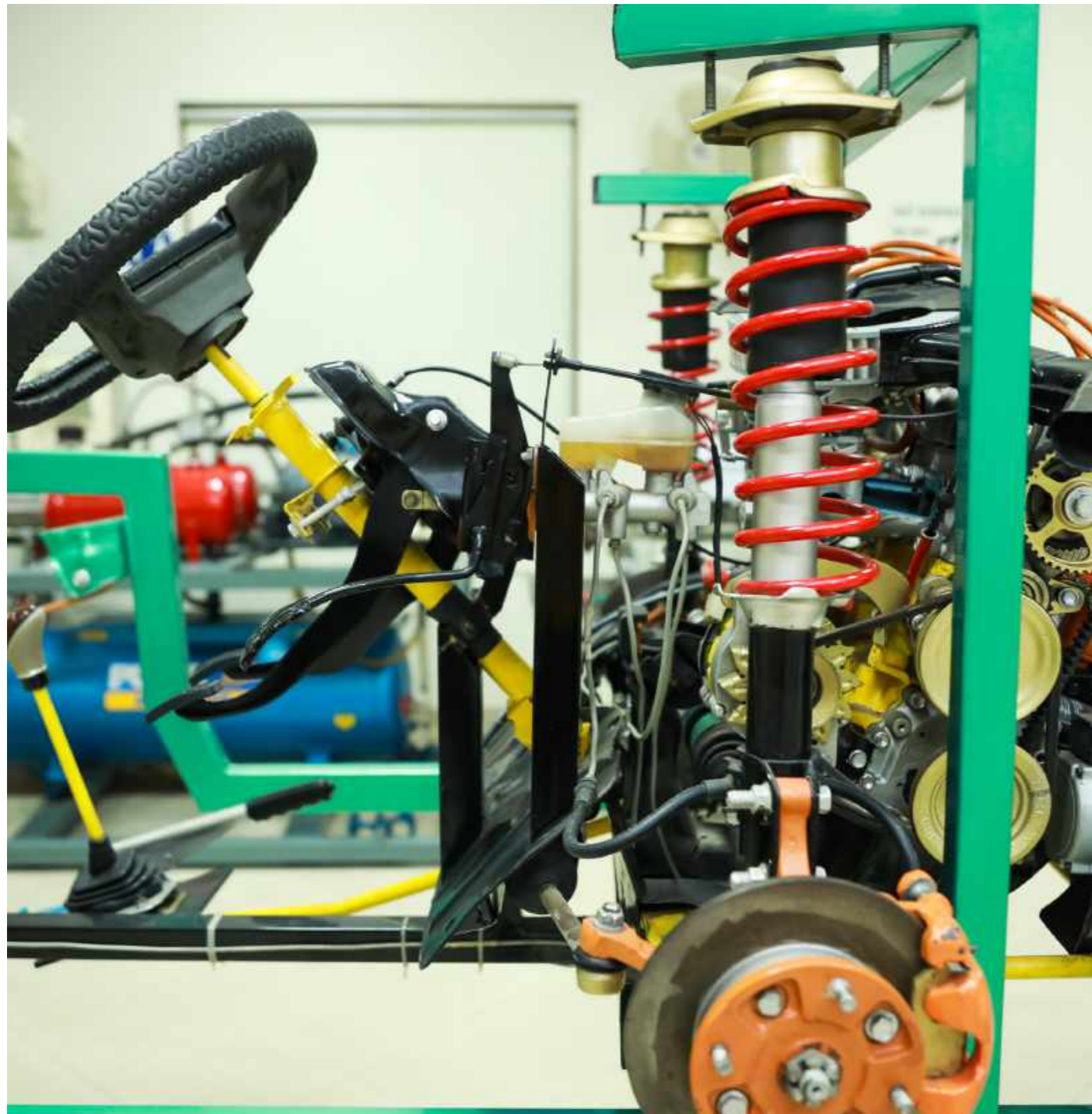
Course Title	Code	Cr. Hrs.
Final Year Project-I	ME4912	2
Final Year Project-II	ME4924	4

#### 4.5 Community Work (ME3000)

All students shall be compulsorily rendering 65 hours of voluntary social work during the course of studies, which is a pre-requisite for award of degree.

#### 4.6 Program Duration

The program is a 4-year Bachelors with two semesters per academic year. Fall Semester shall be usually commencing in September/October each year whereas Spring Semester shall be starting in February/March.



## SCHEME OF STUDIES (B.SC.) IN MECHANICAL ENGINEERING

### Semester-I (18 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
MEHU1013	English I	Humanities	3
MEMT1013	Applied Mathematics I	Natural Sciences	3
ME1113	Applied Physics	Natural Sciences	3
MEHU1053	Islamic Studies	Humanities	3
MECS1012	Computer System and Programming	Computing	2
ME1212	Engineering Drawing, Auto CAD & Graphics	Foundation	2
ME1312	Workshop Technology	Foundation	2

### Semester-II (18 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
ME1413	Applied Thermodynamics-I	Foundation	3
MEMT1023	Applied Mathematics II	Natural Sciences	3
MEEE1012	Basic Electrical Engineering	IDEE	2
MEEE1011	Basic Electrical Engineering Lab	IDEE	1
ME1613	Engineering Materials	Foundation	3
ME1513	Engineering Mechanics-I	Foundation	3
MEHU1023	English II	Humanities	3

### Semester-III (17 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
ME2223	Mechanics of Machines-I	Foundation	3
ME2813	Manufacturing Processes-I	Foundation	3
ME2423	Applied Thermodynamics-II	Breadth	3
ME2421	Applied Thermodynamics-II Lab	Breadth	1
ME2523	Mechanics of Materials-I	Foundation	3
ME2533	Engineering Mechanics-II	Breadth	3
ME2531	Engineering Mechanics-II Lab	Breadth	1



### Semester-IV (17 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
MEMT2043	Applied Mathematics III	Natural Sciences	3
ME2233	Mechanics of Machines-II	Breadth	3
ME2231	Mechanics of Machines-II Lab	Breadth	1
ME2713	Fluid Mechanics-I	Foundation	3
ME2243	Machine Design-I	Breadth	3
ME2543	Mechanics of Materials-II	Breadth	3
ME2541	Mechanics of Materials-II Lab	Breadth	1

### Semester-V (18 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
MEHU3033	English III	Humanities	3
ME3253	Machine Design-II	Breadth	3
ME3251	Machine Design-II Lab	Breadth	1
ME3723	Fluid Mechanics-II	Breadth	3
ME3721	Fluid Mechanics-II Lab	Breadth	1
ME3823	Manufacturing Processes-II	Breadth	3
ME3821	Manufacturing Processes-II Lab	Breadth	1
MEMT3053	Numerical Analysis	Natural Sciences	3

### Semester-VI (18 Cr. Hrs.)

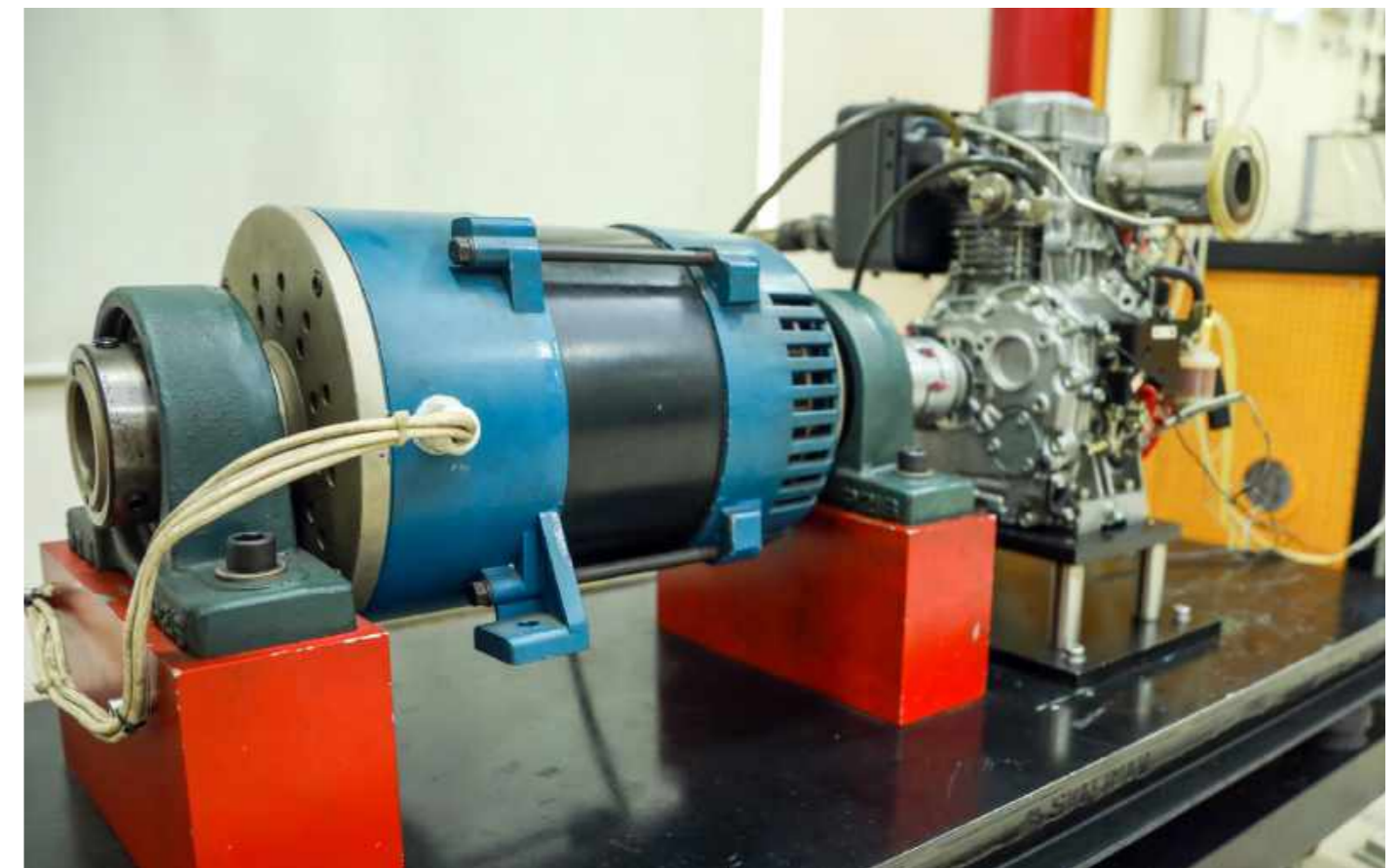
Course Code	Course Title	Category	Cr. Hrs.
MEHU3043	Pakistan Studies	Humanities	3
ME3263	Finite Element Analysis	Breadth	3
ME3261	Finite Element Analysis Lab	Breadth	1
ME3433	Heat & Mass Transfer	Breadth	3
ME3431	Heat & Mass Transfer Lab	Breadth	1
MEEE3022	Industrial Electronics	IDEE	2
MEEE3021	Industrial Electronics Lab	IDEE	1
ME3443	IC Engines	Depth	3
ME3441	IC Engines Lab	Depth	1

### Semester-VII (16 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
MEMG4012	Industrial Management and Economics	Management	2
MEEE4033	Instrumentation & Control	IDEE	3
MEEE4031	Instrumentation & Control Lab	IDEE	1
MEMG4023	Entrepreneurship	Management	3
ME4552	Mechanical Vibrations	Elective	2
ME4551	Mechanical Vibrations Lab	Elective	1
MEHU4042	Health, Safety & Environment	Humanities	2
ME4912	Final Year Project	Design Project	2

### Semester-VIII (13 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
MEMG4072	Metrology & Quality Assurance	Manage	2
MEMG4071	Metrology & Quality Assurance Lab	Management	1
ME4462	Refrigeration & Air Conditioning	Depth	2
ME4461	Refrigeration & Air Conditioning Lab	Depth	1
ME4453	Power Plants	Depth	3
ME4924	Final Year Project	Design Project	4





# MASTER OF SCIENCE IN MECHANICAL ENGINEERING

## Admission Requirements

- (i) A minimum of 16 years of education leading to BS / BE / B.Sc. in Mechanical Engineering or equivalent
- (ii) Minimum 2.00/4.00 CGPA or 50% marks
- (iii) Admission Test/HEC Approved Test

## Degree Requirements

A student admitted in M.Sc. Mechanical Engineering will have to complete the degree requirements by following any one of the options given below:

- (i) 24 Cr. Hrs course work with 6 Cr. Hrs Thesis
- (ii) Course work only (10 Courses)

Area	Cr. Hrs.
a) Core Courses	06
b) Specialization Courses	15
c) Elective	03
d) Thesis/Project/Additional Courses	06
<b>Total</b>	<b>30</b>

### a) Core Courses

Course Title	Code	Cr. Hrs.
Research Methodology	ME5013	3
Modeling and Simulation	ME6023	3

### b) Specialization Courses

#### i) Design and Manufacturing

Course Title	Code	Cr. Hrs.
Advanced Manufacturing Processes	ME5813	3
Mechanics of Fracture and Fatigue	ME5213	3

Advanced Mechanical Vibrations	ME6223	3
Welding and Joining Processes	ME6233	3
Robotics and Control	ME6823	3
Advanced Stress Analysis	ME6243	3

#### ii) Thermal

Course Title	Code	Cr. Hrs.
Automotive Power Trains	ME5413	3
Advanced Thermodynamics	ME5423	3
CFD for Engineering Applications	ME6713	3
Renewable Energy Systems	ME6433	3
Aerodynamics	ME6723	3
Gas Dynamics	ME6733	3

#### c) Elective Courses

A student may choose 3 to 9 Cr. Hrs., depending upon the degree completion option, from the given list or any other course offered by the ME department.

Course Title	Code	Cr. Hrs.
Theory of Plates and Shells	ME6253	3
Design of Machine Tools	ME6263	3
Engineering Plasticity	ME6273	3
Mechanics of Composite Materials	ME6283	3
Solar Energy Utilization	ME6443	3
Energy Management	ME6453	3
Advanced Propulsion	ME6463	3
Energy Systems	ME6473	3
Advanced Heat and Mass Transfer	ME6513	3
Boiling and Condensation Heat Transfer	ME6523	3
Industrial Air Conditioning and Refrigeration	ME6533	3

Design of Industrial Boilers and Furnaces	ME6543	3
Fuel Cell Technology	ME6553	3
Turbulent Flow	ME6743	3
Boundary Layer Theory	ME6753	3
Two Phase Flow	ME6763	3
Theory of Granular Flows	ME6573	3
Gradient Optimization Techniques	ME6833	3
Nano Fabrication and Manufacturing	ME6843	3
Quality Engineering and Management	ME6853	3
Product Life Cycle Management	ME6863	3
Productivity Engineering	ME6873	3
Experimental Methods	ME5313	3
Scheduling and Sequencing	ME6883	3
Theory of Metal Cutting	ME6893	3

#### d) Research Thesis

Course Title	Code	Cr. Hrs.
Research Thesis	ME6916	6
Thesis Continuation	ME6921	1

#### CGPA Requirement

A student is required to earn a minimum of 2.50/4.00 CGPA on the completion of his/her degree requirements.

Area	Cr. Hrs.
a) Civil Engineering Foundation Courses	28
b) Civil Engineering Breadth Courses	15
c) Civil Engineering Depth Courses	33
d) Natural Sciences	19
e) Computing Courses	02
f) Inter Departmental Engineering Elective (IDEE)	09
g) Humanities Courses	15

Course Title	Code	Cr. Hrs.
h) Management Courses		06
i) Industrial Internship		00
j) Survey Camp		00
k) Design Project		06
<b>Total</b>		<b>133</b>

### a) Civil Engineering Foundation Courses (28 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Strength of Materials I	CE2212	2
Strength of Materials I Lab	CE2211	1
Theory of Structures I	CE3233	3
Theory of Structures I Lab	CE3231	1
Civil Engineering Drawing	CE1112	2
Civil Engineering Materials	CE1122	2
Civil Engineering Materials Lab	CE1121	1
Engineering Surveying I	CE1142	2
Engineering Surveying I Lab	CE1152	2
Civil Engineering Drawing & Estimation	CE2181	1
Civil Engineering Drawing & Estimation Lab	CE2182	2
Fluid Mechanics-I	CE2412	2
Fluid Mechanics-I Lab	CE2411	1
Engineering Geology	CE1133	3
Soil Mechanics	CE3512	2
Soil Mechanics Lab	CE3511	1

### b) Civil Engineering Breadth Courses (15 Cr. Hrs.)

Course Title	Code	Hrs.
Plain and Reinforced Concrete I	CE3262	2



Plain and Reinforced Concrete I Lab	CE3261	1
Engineering Surveying II	CE2172	2
Engineering Surveying II Lab	CE2171	1
Fluid Mechanics II	CE3422	2
Fluid Mechanics II Lab	CE3421	1
Transportation Engineering I	CE4532	2
Transportation Engineering I Lab	CE4531	1
Environmental Engineering I	CE3612	2
Environmental Engineering I Lab	CE3611	1

Environmental Engineering II	CE4622	2
Environmental Engineering II Lab	CE4621	1
Strength of Materials II	CE3223	3
Strength of Materials II Lab	CE3221	1
Theory of Structures II	CE3252	2
Theory of Structures II Lab	CE3251	1

#### d) Natural Sciences Courses (19 Cr.Hrs.)

Course Title	Code	Cr. Hrs.
Applied Mathematics I	CEMT1013	3
Applied Mathematics II	CEMT1023	3
Applied Mathematics III	CEMT2033	3
Engineering Mechanics	CEME2023	3
Engineering Mechanics Lab	CEME2021	1
Numerical Analysis	CEMT2043	3
Probability and Statistics	CEMT3053	3

#### e) Computing Courses (02 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Computer Programming	CECS1011	1
Computer Programming Lab	CECS1021	1

#### f) Inter Departmental Engineering Elective (09 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Basic Electro Mechanical Engineering	CEME1013	3
Basic Electro Mechanical Engineering Lab	CEME1011	1
Architectural and Town Planning	CE2162	2
Entrepreneurship	CEMG2013	3

#### c) Civil Engineering Depth Courses (33 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Steel Structures	CE3242	2
Steel Structures Lab	CE3241	1
Plain and Reinforced Concrete II	CE4272	2
Plain and Reinforced Concrete II Lab	CE4271	1
Design of Structures	CE4201	1
Design of Structures Lab	CE4211	1
Structural Engineering	CE4283	3
Hydraulics Engineering	CE4442	2
Hydraulics Engineering Lab	CE4441	1
Irrigation and Drainage Engineering	CE4452	2
Irrigation and Drainage Engineering Lab	CE4451	1
Geotechnical & Foundation Engineering	CE4522	2
Geotechnical & Foundation Engineering Lab	CE4521	1
Transportation Engineering II	CE4542	2
Transportation Engineering II Lab	CE4541	1

#### g) Humanities Courses (15 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
English I	CEHU1033	3
Pakistan Studies	CEHU1023	3
Islamic Studies	CEHU1013	3
English II	CEHU2043	3
English III	CEHU3053	3

#### h) Management Courses (06 Cr. Hrs.)

Course Title	Code	Cr. Hrs.
Construction Engineering and Management	CEMG2313	3
Engineering Hydrology	CE3432	2
Engineering Hydrology Lab	CE3431	1

#### i) Industrial Internship (CE4000)

Each student is required to complete an 8-week industrial internship training usually after 6 semesters or on the completion of 90 Cr. Hrs. The internship shall be graded as pass/fail.

#### j) Survey Camp (CE3100)

Students are required to register, attend and successfully complete a minimum of 2 weeks of Survey Camp following the fourth semester of their degree program. Course CE2172 is a pre-requisites for Survey Camp. A formal evaluation will be carried out and Pass / Fail grade will be awarded to the students.

#### k) Design Project (06 Cr. Hrs.)

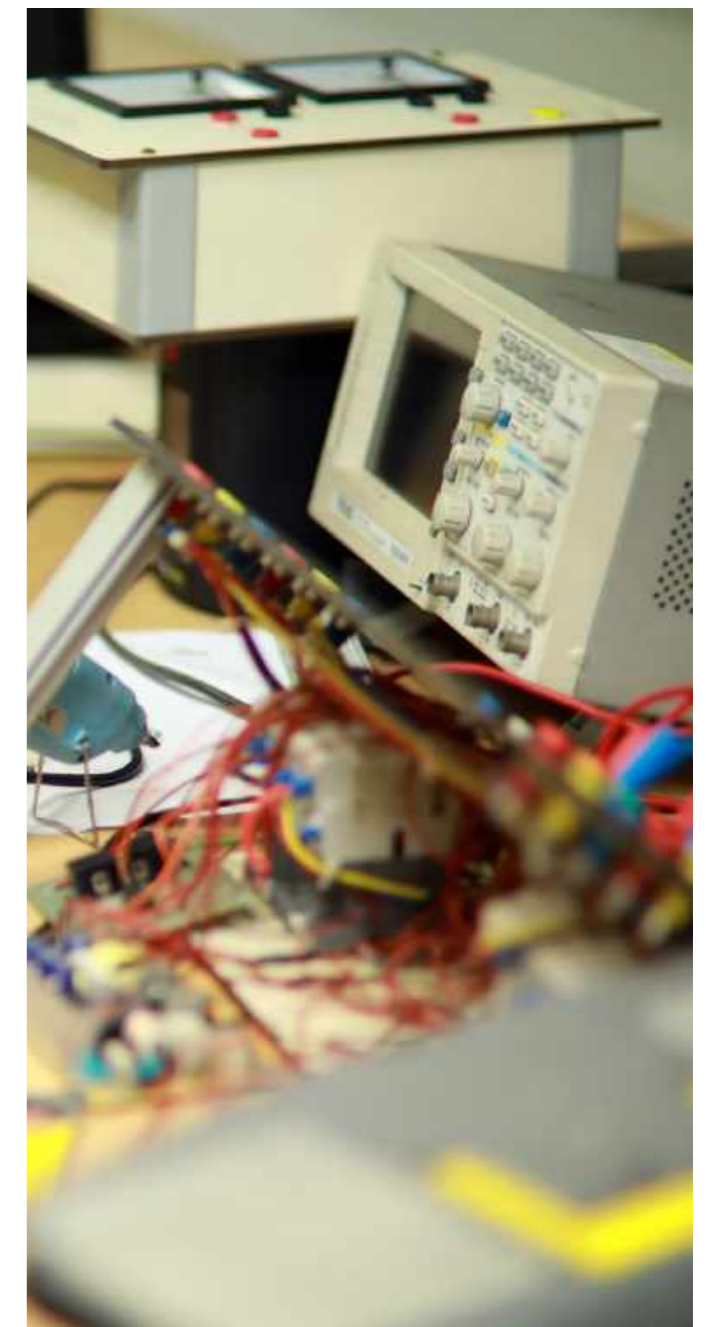
Course Title	Code	Cr. Hrs.
Civil Engineering Project I	CE4912	2
Civil Engineering Project II	CE4924	4

#### Community Work (CE3000)

Each student is required to complete 65 hours of community work, usually after 4th semester which would be a prerequisite for the award of degree.

#### Program Duration

This is a 4-year degree program comprising of 8 semesters. There will be a Fall and a Spring semester in each year. The summer semester will be utilized for internship or deficiency courses. The maximum duration to complete B.Sc. Civil Engineering degree is 7-years.





## SCHEME OF STUDIES (B.SC.) IN CIVIL ENGINEERING

### Semester-I (15 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
CEMT1013	Applied Mathematics I	Natural Sciences	3
CEME1013	Basic Electro-Mechanical Engineering		3
CEME1011	Basic Electro-Mechanical Engineering Lab		1
CEHU1013	Islamic studies	Humanities	3
CE1112	Civil Engineering Drawing	CE Foundation	2
CE1122	Civil Engineering Materials	CE Foundation	2
CE1121	Civil Engineering Materials Lab	CE Foundation	1

### Semester-II (18 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
CEMT1023	Applied Mathematics II	Natural Sciences	3
CECS1011	Computer Programming	Computing	1
CECS1021	Computer Programming Lab	Computing	1
CEHU1033	English I	Humanities	3
CE1142	Engineering Surveying I	CE Foundation	2
CE1152	Engineering Surveying I Lab	CE Foundation	2
CE1133	Engineering Geology	CE Foundation	3
CEHU1023	Pakistan Studies	Humanities	3

### Semester-III (18 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
CEMT2033	Applied Mathematics III	Natural Sciences	3
CEME2023	Engineering Mechanics	Natural Sciences	3
CEME2021	Engineering Mechanics Lab	Natural Sciences	1

CE2162	Architecture & Town Planning		2
CEMG2013	Entrepreneurship		3
CE2172	Engineering Surveying II	Breadth	2
CE2171	Engineering Surveying II Lab	Breadth	1
CEMG2313	Construction Engineering & Management	Management	3

### Semester-IV (15 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
CEMT2043	Numerical Analysis	Natural Sciences	3
CEHU2043	English II	Humanities	3
CE2212	Strength of Materials I	CE Foundation	2
CE2211	Strength of Materials I Lab	CE Foundation	1

### Semester-V (17 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
CEMT3053	Probability and Statistics	Natural Sciences	3
CE3233	Theory of Structures I	CE Foundation	3
CE3231	Theory of Structures I Lab	CE Foundation	1
CE3242	Steel Structures	Depth	2
CE3241	Steel Structures Lab	Depth	1
CE3223	Strength of Materials II	Depth	3
CE3221	Strength of Materials II Lab	Depth	1
CE3422	Fluid Mechanics II	Breadth	2
CE3421	Fluid Mechanics II Lab	Breadth	1

### Semester-VI (18 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
CE3252	Theory of Structures II	Depth	2
CE3251	Theory of Structures II Lab	Depth	1
CE3262	Plain and Reinforced Concrete I	Breadth	2



CE3261	Plain and Reinforced Concrete I Lab	Breadth	1
CE3432	Engineering Hydrology	Management	2
CE3431	Engineering Hydrology Lab	Management	1
CE3512	Soil Mechanics	CE Foundation	2
CE3511	Soil Mechanics Lab	CE Foundation	1
CE3612	Environmental Engineering I	Breadth	2
CE3611	Environmental Engineering I Lab	Breadth	1
CEHU3053	English III	Humanities	3

## Semester-VII (17 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
CE4272	Plain and Reinforced Concrete II	Depth	2
CE4271	Plain and Reinforced Concrete II Lab	Depth	1
CE4442	Hydraulics Engineering	Depth	2
CE4441	Hydraulics Engineering Lab	Depth	1
CE4522	Geotechnical & Foundation Engineering	Depth	2
CE4521	Geotechnical & Foundation Engineering Lab	Depth	1
CE4532	Transportation Engineering I	Breadth	2
CE4531	Transportation Engineering I Lab	Breadth	1
CE4622	Environmental Engineering II	Depth	2
CE4621	Environmental Engineering II Lab	Depth	1
CE4912	Civil Engineering Project I	Design Project	2

## Semester-VIII (15 Cr. Hrs.)

Course Code	Course Title	Category	Cr. Hrs.
CE4201	Design of Structures	Depth	1
CE4211	Design of Structures Lab	Depth	1
CE4283	Structural Engineering	Depth	3
CE4452	Irrigation and Drainage Engineering	Depth	2
CE4451	Irrigation and Drainage Engineering Lab	Depth	1
CE4542	Transportation Engineering II	Depth	2
CE4541	Transportation Engineering II Lab	Depth	1
CE4924	Civil Engineering Project II	Design Project	4

## MASTER OF SCIENCE IN CIVIL ENGINEERING

### Admission Requirements

- A minimum of 16 years of education leading to BS / BE / B.Sc. in Civil Engineering or equivalent
- Minimum 2.00/4.00 CGPA or 50% marks
- Admission Test/HEC Approved Test

### Degree Requirements

A student admitted in this program will have to complete the degree requirements by following any one of the options given below:

- 24 Cr. Hrs. course work with 6 Cr. Hrs Thesis
- Course work only (10 Courses)

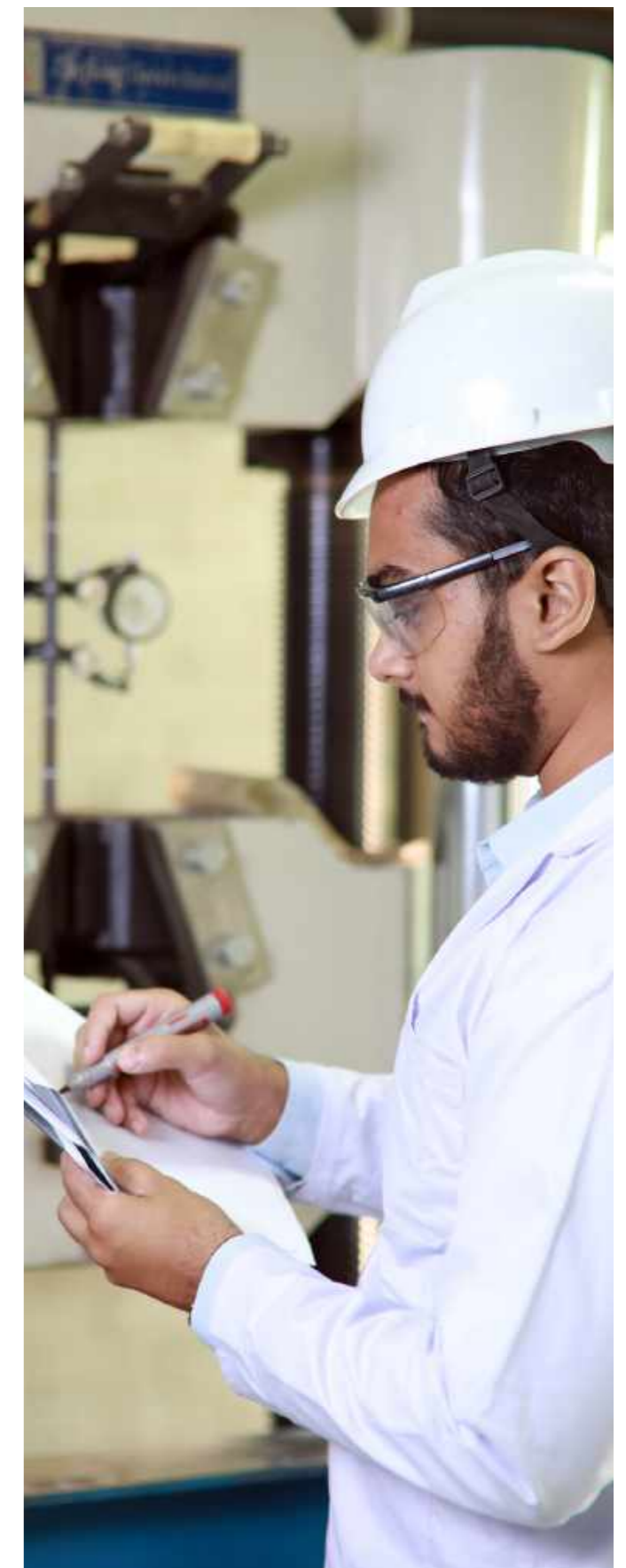
Each candidate for the M.Sc. Civil Engineering degree is required to successfully earn 30 Cr. Hrs. as per the following detail:

Area	Cr. Hrs.
a) Specialization Courses	18
b) Elective	06
c) Thesis/Project/Additional Courses	06
Total	30

### a) Specialization Courses

#### i) Structural Engineering

Course Title	Code	Cr. Hrs.
Advanced Structural Analysis	CE5203	3
Structural Dynamics	CE5213	3
Advanced Concrete Technology	CE5223	3
Theory of Plates and Shells	CE5233	3
Conceptual Design of Bridges	CE5243	3
Design of Timber Structures	CE5253	3
Advanced Reinforce Concrete Design	CE6203	3
Finite Element Methods in Engineering	CE6213	3
Earthquake Engineering	CE6223	3
Pre-stressed Concrete	CE6233	3
Steel Structures	CE6243	3
Design of Glass Structures	CE6253	3
Design for Fire Resistance of Structures	CE6263	3



## ii) Hydraulics & Irrigation Engineering

Course Title	Code	Cr. Hrs.
Design of Hydraulic Structures	CE5403	3
Irrigation Engineering and Practices	CE5413	3
Advanced Fluvial Hydraulics	CE5423	3
River Engineering and Flood Management	CE5443	3
Computer Aided Design of Hydraulic Structures	CE5453	3
Application of RS & GIS	CE5463	3
Water Resources Engineering	CE5473	3
Ground Water Engineering	CE5483	3
Statistical Hydrology	CE5493	3
Advanced Open Channel Hydraulics	CE6403	3
Applied Hydrology	CE6413	3
Sediment Transport	CE6423	3
Hydro Power Engineering	CE6433	3
Drainage Engineering	CE6443	3
Climate Change and Water Resources	CE6463	3
Catchment Modeling	CE6473	3
Hydrometeorology	CE6483	3
Integrated Water Resource Management	CE6493	3

## iii) Geotechnical Engineering

Course Title	Code	Cr. Hrs.
Advanced Soil Mechanics	CE5503	3
Geotechnical Investigation	CE5513	3
Geotechnical Engineering in Professional Practice	CE5523	3
Advanced Foundation Engineering	CE5533	3
Earth Retaining Structures	CE5543	3
Foundation Engineering	CE6503	3
Dam Engineering	CE6513	3
Soil Improvement Techniques	CE6523	3
Soil Dynamics	CE6533	3
Soil Erosion & Watershed Management	CE6543	3
Rock Engineering	CE6553	3

## b) Elective Courses

Elective courses (two courses, 6 Cr. Hrs.) can be taken from any specialization with the approval of academic advisor.

## c) Research Thesis

Course Title	Code	Cr. Hrs.
Research Thesis	CE6916	6
Thesis Continuation	CE6921	1

## CGPA Requirement

A student is required to earn a minimum of 2.50/4.00 CGPA on the completion of his/her degree requirements.

## Program Duration

This is nominally a 2-year degree program comprising of 4 semesters. There will be a Fall and a Spring semester in each year. The maximum duration to complete MSc Civil Engineering degree is 4-years.

