DEPARTMENT OF MECHANICAL ENGINEERING

Mechanical engineering is one of the oldest and broadest of all engineering disciplines. Mechanical engineers design, analyze, and manufacture new products and technologies in order to address society's needs. Graduates of this program are employed by government agencies, multinational corporations, consulting firms, and universities. They can work in the areas of research, design, manufacturing, sales, quality assurance, and management.

Since launching the program in the year 2008, Sarhad University has developed the required facilities related to faculty, classrooms, library and laboratories, in accordance with the guidelines of the Pakistan Engineering Council.

It is possible for graduates of this program to specialize in the areas of mechanical engineering design, thermo-fluid systems, energy systems, air conditioning and refrigeration, manufacturing engineering, engineering management, mechatronics, building services, and micro and nano technologies.

VISION

To nurture academic and economic vitality through teaching, research and outreach in the field of mechanical engineering in order to improve the quality of life.

MISSION

To provide the students a high quality Education in Mechanical Engineering and Allied disciplines and to maintain recognition through service to the national and international community.

PROGRAM OFFERED:

Bachelor of Science in Mechanical Engineering

FACULTY MEMBERS, DEPARTMENT OF MECHANICAL ENGINEERING

Dr. Sohail Gohar	Head Of Department	Ph.D Mechanical Engineering, GIKI, Swabi
Engr. Mian Muhammad Asim Zahir	Coordinator / Asst. Professor	Ph.D Mechatronics Engineering, (in Progress), MS Mechanical Engineering, NUST, Islamabad
Engr. Dr. Muhammad Saleem	Assistant Professor / DG-DLM	Ph.D (Mech & Indus Engg), Ryerson University, Toronto Canada
Engr. Abdul Hadi	Associate Professor	MS Mechanical Engineering, Shiraz University, Iran
Mr. Adam Khan	Assistant Professor	MS Computer Science, Abasyn University Peshawar, Ph.D Computer Science (in Progress), Sarhad University, Peshawar
Engr. Zeeshan Wazir	Assistant Professor	M.Sc Engineering Management, Sarhad University, Peshawar
Engr. Muhammad Ilyas	Assistant Professor	M.Sc Engineering Management, Sarhad University, Peshawar
Engr. Muhammad Irfan	Assistant Professor	Ph.D Renewable Energy (in Progress), MSc Dynamics & Control, UET Peshawar
Engr. Muhammad Amin	Lecturer	MS Mechanical Engineering, Sarhad University, Peshawar
Engr. Riaz Hussain	Lecturer	MS Mechanical Engineering, Sarhad University, Peshawar
Engr. Abdul Samad Khan	Lecturer	MS Mechanical Engineering, GIKI, Swabi
Engr. Mohsin Amin	Lecturer	MS Mechanical Engineering, GIKI, Swabi
Engr. Rohan	Lab Engineer	MS Mechanical Engineering, GIKI, Swabi

Bachelor of Science in Mechanical Engineering

Program Code	072
Number of Courses	44
Credit Hours	133/136
Minimum Duration	8 Semesters, 4 Years
Maximum Duration	14 Semesters, 7 Years
Minimum CGPA Required To Earn Degree	2.00

Eligibility :

I. Candidates who have passed Intermediate (Pre-Engineering / Computer Science) from a recognized BISE in Pakistan with at least 60% unadjusted marks.

· *Students with F.Sc Computer Science are eligible but will have to study Chemistry as a remedial course in the 1st semester after admission.

II. Candidates possessing B-Tech (Hons) in the relevant field are also eligible for admission against the 2% reserved seats on open merit

III. Candidates possessing 3-years Post-Matric Diploma of Associate Engineer in the relevant technology with at least 60% unadjusted marks.

IV. All candidates are required to pass an entry test conducted by NTS / ETEA or any registered testing agency or University with at least 33% cumulative score.

Foreign Students need to pass entry/aptitude test conducted by the University. For further details, see clause 4 in Admission Process.

Program Educational Objectives (PEOs) :

PEO-01 To produce graduates with strategic thinking and essential knowledge in diverse areas of Mechanical Engineering & possesses requisite skills for working in industry and solving real life problems.

PEO-02 To produce graduates who are sensitive to the social, ethical, cultural and the environmental aspects of engineering solutions.

PEO-03 To produce graduates capable of performing and communicating as effective engineering professionals in both individual and team based project environment with a tendency to enhance their knowledge, skills and professional development.

Outcome Based Education (OBE) System :

OBE is an approach of curriculum design and teaching that focuses on what students should be able to do (attain) at the end of course/ program. The Undergraduate curriculum at Department of Mechanical Engineering, Sarhad University was transformed into adopting OBE from Spring 2018 in accordance with requirements from Pakistan Engineering Council Accreditation Manual 2014 and to satisfy the requirements of Washington Accord 2013. The framework for OBE in the Mechanical engineering department and the process control mechanism consists of four different phases i.e. design, assess, analyze and review. For each of the phases, Program Educational Objectives (PEOs), Program Learning Outcomes (PLOs) and Course Learning Outcomes (CLOs), are defined.

1st SEMESTER

Course Code	Course Title	Cr. Hrs.13/16
MA 103	Applied Maths-I (Calculus & Analytical Geometry)	3-0
GS 115	Applied Physics	2-0
GS 117	Applied Physics Lab	0-1
ENG 102	English-I (Functional English)	1-0
CS 116	Computer System & Programming	2-0
CS 118	Computer System & Programming Lab	0-1
ME 102	Engineering Drawing & Graphics	2-0
ME 104	Engineering Drawing & Graphics Lab	0-1
CH 103	*Chemistry (For the students of ICS background only)	2-1

2nd SEMESTER

Course Code	Course Title	Cr. Hrs.17
GS 128	Pakistan Studies	2-0
CH 104	Applied Chemistry	2-0
ENG 111	English-II (Communication Skills)	2-0
EE 211	Electrical Engineering	2-0
EE 215	Electrical Engineering Lab	0-1
ME 106	Engineering Mechanics-I (Statics)	3-0
ME 130	Thermodynamics-I	3-0
ME 150	Workshop Practice	0-2

3rd SEMESTER

Course Code	Course Title	Cr. Hrs.18
ME 140	Engineering Materials	3-0
MA 104	Applied Maths-II (Linear Algebra & Ordinary D.E.)	3-0
ME 215	Fluid Mechanics-I	3-0
ME 217	Fluid Mechanics-I Lab	0-1
ME 225	Engineering Mechanics-II (Dynamics)	3-0
ME 227	Engineering Mechanics-II (Dynamics) Lab	0-1
ME 301	Mechanics of Materials-I	3-0
ME 303	Mechanics of Materials-I Lab	0-1

4th SEMESTER

Course Code	Course Title	Cr. Hrs.17
MA 210	Applied Maths-III (Complex Variables & Transforms)	3-0
MGT 230	Engineering Economics	2-0
GS 301	Applied Statistics	3-0
GS 123	Islamic Studies/Ethics	2-0
ME 312	Mechanics of Machines	3-0
ME 314	Mechanics of Machines Lab	0-1
ME 360	Machine Design & CAD-I	2-0
ME 362	Machine Design & CAD-I Lab	0-1

5th SEMESTER

Course Code	Course Title	Cr. Hrs.17
MA 226	Applied Maths-IV (Numerical Analysis)	3-0
ME 351	Manufacturing Processes	3-0
ME 353	Manufacturing Processes Lab	0-1
ME 347	Heat & Mass Transfer	3-0
ME 349	Heat & Mass Transfer Lab	0-1
ME 230	Thermodynamics-II	3-0
ME 232	Thermodynamics-II Lab	0-1
MGT 476	Safety, Health & Environmental Management	2-0

6th SEMESTER

Course Code	Course Title	Cr. Hrs.18
ME 336	Mechanical Vibrations	3-0
ME 338	Mechanical Vibrations Lab	0-1
ME 235	Fluid Mechanics-II	3-0
ME 237	Fluid Mechanics-II Lab	0-1
ME 411	Machine Design & CAD-II	3-0
ME 413	Machine Design & CAD-II Lab	0-1
ME 406	Power Plants-I	3-0
ENG 323	English-III (Technical Report Writing & Presentation Skills)	3-0

7th SEMESTER

Course Code	Course Title	Cr. Hrs.17
ME 352	Engineering Measurement and Control	3-0
ME 356	Engineering Measurement and Control Lab	0-1
	Technical Elective	3-0
ME 415	Refrigeration & A.C.	3-0
ME 417	Refrigeration & A.C. Lab	0-1
ME 430	Introduction to Finite Element Analysis	2-0
ME 432	Introduction to Finite Element Analysis Lab	0-1
RES 491	Project Phase-I	0-3

8th SEMESTER

Course Code	Course Title	Cr. Hrs.16
ME 445	Power Plants-II	3-0
ME 447	Power Plants-II Lab	0-1
ME 311	Mechanics of Materials-II	3-0
ME 313	Mechanics of Materials-II Lab	0-1
	Management Elective	3-0
	Social Science Elective	2-0
RES 492	Project Phase-II	0-3

Electives

Technical

Course Code	Course Title	Cr. Hrs.
ME 433	Maintenance Engineering	3-0
ME 435	Mechatronics	3-0
ME 450	Fluid Power: Hydraulics & Pneumatics	3-0
ME 460	Renewable Energy Resource	3-0
ME 464	Gas Dynamics	3-0
ME 468	Aerodynamics	3-0
ME 470	Computational Fluid Dynamics	3-0
ME 474	Tribology	3-0

Social Sciences

Course Code	Course Title	Cr. Hrs.
GS 301	Introduction to Sociology	2-0
GS 329	Sociology and Development	2-0
GS 404	Social Anthropology	2-0
PSY 319	Understanding Psychology and Human behavior	2-0
PSY 322	Professional Psychology	2-0
GS 302	Critical thinking	2-0
GS 319	Introduction to Philosophy	2-0
GS 422	Professional Ethics	2-0

Management

Course Code	Course Title	Cr. Hrs.
MGT 227	Industrial Management	3-0
MGT 305	Operational Management	3-0
MGT 345	Organizational Behavior	3-0
MGT 410	Project Management	3-0
MGT 430	Business and Entrepreneurship	3-0
MGT 450	Total Quality Management	3-0
MGT 355	Operational Research	3-0

Program Learning Outcomes (PLOs) / Graduating Attributes (GAs):

GA-01 **Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

GA-02 **Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

GA-03 **Design/Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

GA-04 **Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.

GA-05 **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.

GA-06 **The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.

GA-07 **Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of, and need for, sustainable development.

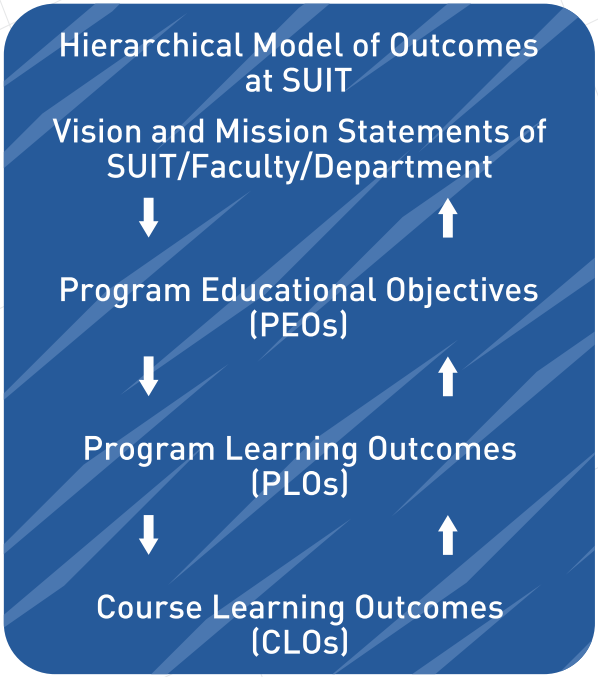
GA-08 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

GA-09 **Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.

GA-10 **Communication:** An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. .

GA-11 **Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multi disciplinary environment.

GA-12 **Lifelong Learning:** An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological change.



The facility for teaching of any of the elective course will be arranged only if reasonable number of students opt for.

NOTE: Students are required to study The Holy Quran as per the directive of the Government of Pakistan. See section 5 (a) e (i and ii).