Course Plan for Mechanical Engineering (Bachelor Program) No.: (2021-2022)
Approved by Deans Council by decision (09/19/2020-2021) dated (28/07/2021)

(160) Credit Hours **Study system / hybrid program**

Type of specialty ☐ **Humanitarian** ☐ **Scientific / technical** ☐ **Medical Sciences**

Teaching style	Percentage of study plan hours / number	Model used (synchronous: asynchronous)
Complete e-learning courses	17% / 27 CH	1:1 (For THER. SAT.)
Blended Learning courses (For Humanity)		1:1 (For SUN. TUE.) or (MON. WED.)
Blended learning courses (for scientific and medical)	44% / 71 CH	1:1 (For SUN. TUE.) or (MON. WED.)
Traditional learning courses (for humanity)		2:0 For all academic divisions
Traditional learning courses (for scientific and medical)	39% / 62 CH	2:0 For all academic divisions

Important note: (The teaching patterns of the subjects are distributed at all academic levels in the program)

Program vision: Towards a competitive faculty committed to excellence in teaching, innovative research, entrepreneurship and .community service

Program mission and objectives:

1. Implement technical, collaborative, and communication skills with leadership principle, to pursue careers in Mechanical Engineering
2. Seek higher degree in Mechanical Engineering and embark on continuing education
3. Seek professional membership, discharge their professional skills ethically, and being conscious of the impact of Mechanical Engineering projects on society as well as environment

Program learning outcomes (*(MK= Main Knowledge, MS= Main Skills, MC= Main Competences)*

Main knowledge	
MK1	Understand the basic principles and mathematical theories related to mechanical engineering
MK2	Possess general knowledge and various engineering tools to build successful pioneering engineering projects in the field of mechanical engineering
MK3	Familiarity with new sources of knowledge and findings of science in the field of mechanical engineering
Basic skills	
MS1	Ability to solve complex engineering problems by applying principal methods of engineering, science and mathematics
MS2	Ability to produce engineering designs within determinants to find specialized engineering solutions
MS3	Ability to analyze data and results using appropriate engineering experiments
MS4	Ability to evaluate and supervise technical design plans
General competencies	
MC1	Ability to assume ethical and professional responsibilities
MC2	Ability to apply leadership and communication skills within a team in the work environment
MC3	Ability to identify and address learning needs and engage in continuous learning
MC4	Ability to express and apply creative skills
MC5	Ability to manage mechanical engineering projects and realize their impact on society and environment

Teaching style	Course	Course name	Credit hr.	Year or Level	Prerequisite	Indicative

Study Plan for Bachelor program - Study Plan Development and Updating Procedures/ Mechanical Engineering Department	QF09/0407-4.0E

Electronic learning	Blended learning	Traditional learning	No.					Co-requisite	Semester	year
1. Requirements (27) Credit Hours										
1.1 Mandatory requirement (21 credit hour)										
•			0420101	Military Sciences	3	3	0		1	1
•			0420151	National Education	3	3	0		2	1
•			0420271	Life skills	3	3	0		1	2
•			0420115	Communication skills in Arabic	3	3	0	Remedial Arabic Language	1	1
•			0420122	Communication skills in English	3	3	0	Remedial English Language	2	1
•			0420261	Entrepreneurship and innovation	3	3	0		2	2
•			0420241	Leadership and social responsibility	3	3	0		1	2
1.2 University elective requirements(06 credit hour)										
•			0420142	Human Civilization	3	3	0		1	1
•			0420253	Development and environment	3	3	0		1	2
•			0420172	Digital skills	3	3	0	Remedial computer skills	2	1
•			0420201	first aid	3	3	0		2	2
•			0420134	Sports and health	3	3	0		1	1
•			0420212	Islamic culture	3	3	0		1	2

Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	Prerequisite Co-requisite	Indicative	
Electronic learning	Blended learning	Traditional learning							Semester	year
2. Faculty Requirements (26) Credit Hours										
		•	0120121	*Calculus I	3	3	0	-	1	1
		•	0150111	*General Physics I	3	3	0	-	1	1
		•	0150101	General Physics Lab I	1	0	3	Co. General Physics	1	1
		•	0911101	Engineering Workshops	2	1	3	-	1	1
		•	0905111	Principles of Electrical Circuits	3	3	0	General Physics I	2	1
	•		0909101	Computer Engineering Applications	3	3	0	Remedial computer Skills	2	1
		•	0911102	*Engineering Drawing	3	0	6	-	2	1
	•		0908201	Technical Writing and Profession Ethics	2	2	0	English Language I	2	2
	•		0909404	Engineering Economy	3	3	0	3rd Year Level	1	4
	•		0908461	Projects Management and Value Engineering	3	3	0	Engineering Economy	1	5

Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	Prerequisite Co-requisite	Indicative	
Electronic learning	Blended learning	Traditional learning							Semester	year
3. Major requirements (110) Credit Hours										
3.1 **Mandatory requirements (80) credit hours**										
	•		0911113	Physics of heat, Light and Sound	3	3	0	Co- General Physics I	1	2

		•	0911111	Statics	3	3	0	General Physics I	2	1
		•	0911212	Dynamics	3	3	0	Statics	1	2
		•	0911215	Strength of Materials	3	3	0	Statics	1	2
		•	0911216	Strength of Materials Lab	1	0	3	Co. Strength of Materials (1)	1	2
		•	0911220	Intermediate Mathematical Analysis	3	3	0	Calculus (2) For engineering students	2	2
	•		0911243	Machine Drawing and Applications in Mechanical Design	2	1	2	Engineering Drawing	1	2
	•		0911221	Thermodynamics (1)	3	3	0	General Physics (1)	2	2
	•		0911271	Materials Science	3	3	0	General Chemistry for Engineering Students	2	2
	•		0911315	Mechanical Vibrations	3	3	0	Dynamics	1	3
	•		0911322	Thermodynamics (2)	3	3	0	Thermodynamics (1)	1	3
	•		0911326	Fluid Mechanics	3	3	0	Dynamics	1	3
	•		0911366	Engineering Numerical Analysis	3	3	0	Calculus (2) For engineering students	1	3
		•	0911372	Manufacturing Processes	3	3	0	Engineering Workshops	1	3
		•	0911316	Mechanical Vibrations Lab	1	0	3	Co. Mechanical Vibrations	2	3
		•	0911323	Thermodynamics Lab	1	0	3	Co. Thermodynamics (2)	2	3
		•	0911327	Fluid Mechanics Lab	1	0	3	Co. Fluid Mechanics	2	3
	•		0911331	Heating and Air Conditioning	3	3	0	Thermodynamics (1)	2	3
	•		0911335	Heat Transfer	3	3	0	Thermodynamics (1), Fluid Mechanics	2	3
	•		0911343	Machinery	3	3	0	Dynamics	2	3
	•		0911364	Advanced Mathematics	3	3	0	Ordinary Differential Equations	2	3
	•		0911365	Advanced Mathematics Lab				Co. Advanced Mathematics		
		•	0911373	Manufacturing Processes Lab	1	0	3	Co. Manufacturing Processes	2	3
		•	0911434	Heat Transfer Lab	1	0	3	Co. Heat Transfer	1	4
		•	0911444	Machines Design (1)	3	3	0	Strength of Materials	1	4
	•		0911451	Engineering Measurements	3	3	0	Fluid Mechanics	1	4
		•	0911445	Machines Design (2)	3	3	0	Machines Design (1)	2	4
	•		0911452	Engineering Measurements Lab	1	0	3	Co. Engineering Measurements	2	4
	•		0911453	Automatic control	3	3	0	Mechanical Vibrations	2	4
		•	0911402	Engineering Training	3	-	9	Pass successfully 115 credit hours (8 weeks and 280 hours)	Summer Semester	
		•	0911556	Automatic control Lab	1	0	3	Co. Automatic control	1	5
	•		0911535	Internal combustion engines	3	3	0	Thermodynamics (2)	1	5
	•		0911504	Graduation Project (1)	1	0	3	Pass successfully 120 credit hours/passing Engineering Training	1	5
	•		0911505	Graduation Project (2)	2	0	6	Graduation Project (1)	2	5
3.2 electives requirements (9) credit hours										
	•		0911520	Refrigeration Systems	3	3	3	Thermodynamics (2)	1	5
	•		0911506	Modern Specialized Topics in Mechanical Engineering	3	3	0	Fifth year level	2	5
	•		0911519	Renewable Energy	3	3	0	Heat Transfer	3	5
	•		0911454	Design and control of hydraulic and pneumatic systems	3	3	0	Fluid Mechanics	2	4
	•		0911547	Design and Computer Aided Manufacturing	3	1	4	Machine Design (2)	1	5
3.3 supporting requirements (18) credit hours										
		•	0201143	General Chemistry for Engineering Students	3	3	0	-	1	1
		•	0201144	General Chemistry for Engineering Students Lab	1	0	3	Co. General Chemistry for Engineering Students	1	1
		•	0101104	Calculus (2) For Engineering students	3	3	0	Calculus (1)	2	1
		•	0101205	Calculus (3) For Engineering students	3	3	0	Calculus (2) For Engineering students	1	2
		•	0101273	Ordinary Differential Equations	3	3	0	Calculus (2) For Engineering students	2	2
		•	0905212	Electrical Circuits Lab	1	0	3	Co. Principles of Electrical Engineering	2	2
	•		0905332	Electrical Machines Fundamental	3	3	0	Principles of Electrical Engineering	1	3

		•	0905432	Electrical Machines Lab	1	0	3	Electrical Machines Fundamentals	2	3

The end of the study plan for the major students

Subjects taught in the major for students of other majors (university requirements, college requirements, major family requirements, support requirements)

Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	The type of requirement and the recipient
Electronic learning	Blended learning	Traditional learning						
		•	0911102	Engineering Drawing	3			Faculty Support Requirement
		•	0911101	Workshops	2			Faculty Support Requirement
	•		0911331	Heating and Air Conditioning	3			Support Requirement for civil engineering and infra structure dept.,
	•		0911363	Numerical Analysis	3			Support Requirement for civil engineering and infra-structure dept., electrical engineering/ power and control and communications and computer engineering
	•		0911221	Thermodynamics 1	3			Support Requirement for civil engineering and infra structure dept.,
		•	0911452	Engineering Measurements Lab	1			Support Requirement for Technology of alternative energy dept.
		•	0911214	Strength of Materials Lab	1			Support Requirement for Technology of alternative energy dept.
		•	0911323	Thermodynamics Lab	1			Support Requirement for Technology of alternative energy dept.
		•	0911327	Fluid Mechanics Lab	1			Support Requirement for Technology of alternative energy dept.
	•		0911271	Materials Science	3			Support Requirement for Technology of alternative energy dept.