جامعـة الـزيتونــة الأردنيــة
Al-Zaytoonah University of Jordan
كلية الهندسة والتكنولوجيا
Faculty of Engineering and Technology

" عراقة وجودة"
"Tradition and Quality"

QF09/0413-4.0E	**Study Plan for Master program - Study Plan Development and Updating Procedures/ Mechanical Engineering Department**

Course Plan for Mechanical Engineering / Master of Science in Smart Manufacturing No.: (2023/2024)		
Approved by Deans Council by decision (………………) dated (………….)		
(33) 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	18% / number (6) Credit Hours	1:1
Blended Learning courses (For Humanity)	45% / number (15) Credit Hours	1:1
Blended learning courses (for scientific and medical)	45% / number (15) Credit Hours	1:1
Traditional learning courses (for humanity)	37% / number (12) Credit Hours	1:0
Traditional learning courses (for scientific and medical)	37% / number (12) Credit Hours	1:0

Important note: (The teaching patterns of the subjects are distributed at all academic levels in the program, and the Thesis hours are taught in a blended learning mode).

Program vision: Building specialized competencies in the field of Smart Manufacturing, provided with the knowledge, skills and leadership, creative and entrepreneurial competencies necessary to compete in the global labor market, through creative application in the use of information technology and modern teaching and learning strategies.

Program mission and objectives:
1. Achieving the conformity of the learning outcomes in all areas of specialization with the seventh level descriptors (knowledge, skills and competencies) in the National Qualifications Framework.
2. Integrating modern information technology and employing it creatively in the teaching and learning processes in order to achieve more effective learning and take into account the needs of the learner.
3. Promote the principle of self-sustainable, lifelong learning, and highlight the creativity of the learner in light of global changes through the application of various teaching and learning strategies.

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

Main knowledge	
MK1	Understand the basic principles and mathematical theories related to smart manufacturing
MK2	Possess general knowledge and various engineering tools to build successful pioneering engineering projects in the field of smart manufacturing
MK3	Familiarity with new sources of knowledge and findings of science in the field of smart manufacturing
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

1. Master thesis program (33) credit hours:

Teaching style			Course No.	Course name	Credit hour	Indicative		Notes
Fully electronic learning	Blended learning	Traditional learning				Semester	year	
1. Mandatory requirements (18) credit hours								
		•	0912741	Research Methodology	3	**1**	**1**	
		•	0912742	Manufacturing Control and Automation	3	**2**	**1**	
		•	0912743	Materials Selection for Design and Applications	3	**2**	**2**	
		•	0912744	Management of Global Manufacturing	3	**1**	**1**	
		•	0912745	Industry 4.0	3	**1**	**1**	
		•	0912746	Internet of Things in Advanced Manufacturing	3	3	2	
2. electives requirements (6) credit hours								
		•	0912750	Advanced Design and Manufacturing Processes	3	3	1	
		•	0912751	Molds and Die Design and Manufacturing	3	3	2	
		•	0912752	Systems Simulation & Modeling for manufacturing processes	3	3	1	
		•	0912755	Robotics Mechanics and Control	3	3	2	
		•	0912756	Additive Manufacturing	3	**1**	**1**	
		•	0912757	Special Topics in Smart Manufacturing	3	3	2	
		•	0912758	Machine Learning and Data Science for manufacturing processes	3	**2**	**2**	
3. Thesis (9) Credit Hours								

2. Comprehensive exam program (33) credit hours:

Teaching style			Course No.	Course name	Credit hour	Indicative		Notes
Fully electronic learning	Blended learning	Traditional learning				Semester	year	
1. Mandatory requirements (24) credit hours								
		•	0912741	Research Methodology	3	**1**	**1**	
		•	0912742	Manufacturing Control and Automation	3	**2**	**1**	
		•	0912743	Materials Selection for Design and Applications	3	**2**	**2**	
		•	0912744	Management of Global Manufacturing	3	**1**	**1**	
		•	0912745	Industry 4.0	3	**1**	**1**	

		•	0912746	Internet of Things in Advanced Manufacturing	3	3	2	
		•	0912750	Advanced Design and Manufacturing Processes	3	3	1	
		•	0912752	Systems Simulation & Modeling for Manufacturing Processes	3	3	1	
2.	Electives requirements (9) credit hours							
		•	0912751	Molds and Die Design and Manufacturing	3	3	2	
		•	0912755	Robotics Mechanics and Control	3	3	2	
		•	0912757	Special Topics in Smart Manufacturing	3	3	2	
		•	0912758	Machine Learning and Data Science for Manufacturing Processes	3	2	2	
		•	0912756	Additive Manufacturing	3	1	1	
3.	Passing comprehensive exam							