Learning outcomes for the Renewable and Sustainable Energy Engineering program

(MK= Main Knowledge, MS= Main Skills, MC= Main Competences

First: Main knowledge

After successfully completing the program, the graduate will possess the following knowledge:

MK1	Knowledge and understanding of principles and theories in the fields of basic and supporting sciences and the basics of general culture
MK2	Clarifying the concepts, theories, principles and foundations associated with the science of renewable and sustainable energy engineering and their importance in economic growth and environmental preservation
MK3	Determine the basics of analysis, engineering design, and necessary safety procedures in accordance with approved quality systems
MK4	Describe the methods and steps for conducting practical tests accurately and know the properties of materials used in renewable and sustainable energy engineering

Second: Main Skills

After successfully completing the program, the graduate will possess the following knowledge:

MS1	The ability to design various engineering projects and systems, and prepare drawings and calculation notes in accordance with environmental and economic needs, standards and considerations.
MS2	The ability to carry out experiments and practical tests related to the field of renewable and sustainable energy engineering and interpret and express the results in a scientific manner according to approved specifications and codes of practice in renewable and sustainable energy engineering.
MS3	Ability to analyze data and prepare engineering and economic reports in a systematic manner.
MS4	Ability to manage, supervise and evaluate engineering projects efficiently.

Third: Main Competences

After successfully completing the program, the graduate will possess the following knowledge:

MC1	The ability to use engineering techniques, computer applications, and modern statistical and mathematical methods related to the field of renewable and sustainable energy engineering.
MC2	Employing modern information and communications technology applications to enhance students' academic and professional abilities on their own.
MC3	The ability to practice scientific thinking, criticism, and various mental skills in evaluating and managing engineering risks and problems Relevant sciences, and proposing the necessary measures to confront them.
MC4	Practicing supervision and management and having the necessary skills to solve problems and make successful decisions.
MC5	Performing the tasks assigned to him, alone or within a team, in a positive manner and taking into account legal legislation and ethical and professional standards.
MC6	Communicate with others and discuss complex issues with customers, administrators, and colleagues effectively, and express ideas and suggestions clearly and objectivity.
MC7	Learn about the roles and responsibilities assigned to a renewable energy engineer and the impact of the engineering profession on society.

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كلية الهندسة

قسم هندسة الطاقة المتجددة والمستدامة

Matrix linking the learning outcomes of the (Renewable and Sustainable Energy Engineering) program with the academic courses

S = level Establishment, R = level practice, T =level Empowerment

Learning outcomes for the Renewable and Sustainable Energy Engineering program															Course name	Course number
Main Competences							Main Skills				Main Knowledge					
7 K MC7	6 K MC6	5 K MC5	4 K MC4	3 K MC3	2 K MC2	1 K MC1	4 m MS4	3 m MS3	2 m MS2	1 m MS1	4 A MK4	3 A MK3	2 A MK2	1 A MK1		
												S		S	Engineering Workshop	0901201
						R				R					Engineering drawing	0901202
								R				R		R	Probability and Statistics for Engineering Students	0901206
	T	S													Communication Skills / Faculty of Engineering	0901207
											R			S	Materials Science	0901300
							S	T					S		Economy Engineering	0901302
								R					T		Environmental Engineering	0901408
		R			S			T					T		Environmental Engineering Lab	0901409
T	T	T					T								Professional ethics	0901523
T				T			T	T							Engineering Projects Management	0901525
R	T	T	R				R								Practical training	0901420
	T	T	T	T	T	T		T		R	R	R			Graduation project 1	0901507
	T	T	T	T	T	T	R	T		T	T	T			Graduation project 2	0901508

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Learning outcomes for the Renewable and Sustainable Energy Engineering program															Course name	Course number
Main Competences							Main Skills				Main Knowledge					
7 K MC7	6 K MC6	5 K MC5	4 K MC4	3 K MC3	2 K MC2	1 K MC1	4 m MS4	3 m MS3	2 m MS2	1 m MS1	4 A MK4	3 A MK3	2 A MK2	1 A MK1		
										S				S	Electrical circuits	0904205
									T			S			Electrical circuits lab	0904206
						T				T			T		Engineering mathematics	0904207
						T					T			S	Electronic devices	0904208
				S									S		Analysis of signals and systems	0904310
				S						T					Electrical power and machines	0904312
				T						T			S		Control of electrical machines	0904314
									T			S			Control of electrical machines lab	0904315
				T						R			S		Control systems	0904317
										T	T		T		Power electronics	0904319
				T		R				R	T		T		Power electronics applications	0904321
													T	S	Fluid and thermal mechanics	0904322
										T			T		Communications systems	0904405
									T			S			Communications systems Lab	0904407
				T								T	T		Stability of electrical power systems	0904409
										T		T	T		Control and operation of power systems	0904411
R												S	T	T	Introduction to renewable energy systems	0904413
													S	S	Energy conversion and efficiency	0904415
				T		R				R		T	T		Wind energy systems	0904417
									T			S			Wind energy systems lab	0904418
R						T				R		T	T		Photovoltaic energy systems	0904420
												S	T	T	Artificial intelligence and renewable energy	0904422
									T	S		S			Photovoltaic energy systems laboratory	0904424
		T									T	S	S		Energy storage	0904426
		T									T	S	S	T	Green Hydrogen	0904511

						T				T			S	T	Digital Logic Design	0904509
									T			S			Digital Logic Design Lab	0904510