



Course Specification

DIPLOMA

Course Title: Special Topics in Renewable Energy Systems

Course Code: APRT3214

Program: Renewable energy technologies

Department: Diploma Department

College: The Applied College

Institution: Umm Al-Qura University

Version: 1

Last Revision Date: 10 February 2025



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A. General information about the course:

1. Course Identification

1. Credit hours: (2)

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (4th Level / 2nd Year)

4. Course General Description:

1. Course Description

This course provides students with the new trends in Renewable Energy Systems Engineering. In particular, students will study this special topic according to the student project. This special topic will be assigned by the project supervisor. In addition, this course may be dealing with specific details in the topics related to the student project, which need more in deep theoretical analysis and better understanding of recent advances and technologies in the field of research related to the project topic.

5. Pre-requirements for this course (if any):

6. Co-requisites for this course (if any):

7. Course Main Objective(s):

Course Main Objective

The main goal of this course is to give students specific details in the research point of the project which need more theoretical analysis.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Figure out a comprehensive knowledge and critical understanding of the main subjects of the specific topic in Energy Systems Engineering or specialization, including the main concepts, principles, theories and their current applications in the field of academic research specializing in specific topic in Renewable Energy Systems Engineering.	K1	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
1.2	Understand deeply one or more areas of specific specialization in relation to the latest theories, research and professional practice in certain topic of Renewable Energy Systems Engineering.	K2	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.3	Describe the most current advancements in one or more mechanical engineering sectors, professional specialties, or professions with sufficient level of competence and comprehension.	K3	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
1.4	Demonstrate knowledge and awareness of a number of well-known and specialized research and/or inquiry methodologies, as well as experience in certain topic of Renewable Energy Systems Engineering.	K4	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
2.0	Skills			
2.1	Apply continuously theoretical and practical knowledge in dealing with a variety of contexts, new and unexpected scientific, and provide authentic and innovative responses to problems and issues. Make convincing and informed judgments in situations where complete or consistent information is not available.	S1	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
2.2	Produce innovative solutions to contemporary difficulties and problems in complex and sophisticated situations, in a discipline, profession, or sector of	S2	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	employment, and critically evaluate, review, and reflect on essential concepts, principles, and theories. Utilizing specialist research and inquiry approaches, carry out advanced study or professional projects in a subject area, profession, or line of business.			
2.3	Plan and execute large projects or part of scientific research independently, applying his theoretical and practical knowledge and using research methods to arrive at valuable conclusions that lead to important additions to current knowledge or professional practices in certain field of Renewable Energy Systems Engineering.	S3	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
2.4	Support and develop cutting-edge research and/or projects related to mechanical engineering field, professional practice, or sector of work, one must choose, use, and adapt cutting-edge digital technology and ICT tools and applications to process and analyze a variety of	S5	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	data and information sets.			
3.0	Values, autonomy, and responsibility			
3.1	Ability to self-learning about engineering problems in specific topic in Renewable Energy Systems Engineering.	V3	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
3.2	Act with integrity and uphold professional and academic standards when addressing various challenges in specific topic of Renewable Energy Systems Engineering.	V1	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
3.3	Make highly autonomous professional academic and/or professional strategic decisions related to study and/or work in specific topic in Energy Systems Engineering. Manage with high autonomy specialized tasks and activities in a discipline, job, or field of practice.	V2	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam

C. Course Content

No	List of Topics	Contact Hours
1. 1	Topic I	3
2. 2	Topic II	3
3	Topic III	6
4	Topic IV	6
5	Topic V	6
6	Topic VI	6
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1. 1	Quizzes and Exercise	3-8	%10
2. 2	Report & Presentation	3-8	%20
3. 3	Mid-term	9	%20
4	Final exam	17/18	50%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).



E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<ul style="list-style-type: none"> According to the topic
Supportive References	<ul style="list-style-type: none"> According to the topic
Electronic Materials	<ul style="list-style-type: none"> According to the topic
Other Learning Materials	<ul style="list-style-type: none"> According to the topic

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms
Technology equipment (projector, smart board, software)	Data show
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Faculty	Direct (project, HW, Quiz, midterm and final exam)
Effectiveness of Students assessment	Students	Indirect (Student Survey)
Quality of learning resources	Program Coordinator	Direct analysis
The extent to which CLOs have been achieved	Program Coordinator	Direct analysis
Other		





Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190394
DATE	22/11/1446

