Faculty: Engineering Faculty

Department:Energy

Program: Face to Face

Semester: 2nd Semester

Academic year: 2022\2023



Course Plan

First: Course Information

Course Name:		Energy engineering software	Credit Hours: 1hour	
Prerequisite:		Class Number: 0906303	<i>Lecture Time</i> : 09:30-11:00 <i>Mon</i> , <i>Wed</i>	
Course Nature:	Mandatory Faculty Requirement Optional University Requirement Mandatory University Requirement Faculty Requirement Ancillary Course Optional SpecialtyRequirementMIndatory Specialization requirement			
Type of Education:	Fully Face-to-Face Education Integrated Education (1Fa Fully Electronic Education	on (fully Direct) ce-to-Face + 1 Asynchronous) a (2 Synchronous + 1 Asynchr	ronous) 🗆	

Second: Instructor's Information

Name:Dr. MaisAlzgool		Academic Rank:Assistant Professor			
Office Number:L136		Ext. Number: 2039	E-mail:mail	E-mail:malzgool@zu.edu.jo	
Office Hours:	Sunday Monday Tu 11-12 11:00-0	uesday WednesdayThu 01:00 11-12	rsday 11:00-01:00	11-12	

Third: Course Description

The PSCAD environment, User defined PSCAD functions, Special topics in electrical and energy engineering, (electrical and electronics circuits, single phase\ three phase system, PV array simulation).

The PVsystenvironment, design a PV system.



Fourth: Learning Source					
Main Reference:	ference: PSCAD Users Guide V4_6_0. A Quiet Revolution in Simulation. PVsyst software				
		Issue No.:	Publication Year:V4		
Additional Sources Websites:					
Teaching Type:	Classroom	Laboratory Workshop MS	Teams Moodl		

Fifth: Learning Outcomes

Course Code	CourseIntended Learning Outcomes (CILOs)	Connection To Program ILOs Code
	Knowledge	
**K1	Able to use PSCAD platform.	*PK1
K2	Able to generate plots and export this for use in reports and presentations.	PK2
	Skills	
***S1	Able to use basic functions and models in PSCAD	PS1
	Competencies	
****C1	Able to design and model a PV system.	PC1
C2	Able to model a basic control of MPPT.	PC2

* P: Program, **K: knowledge, ***S: skills, ****C: competencies.



Sixth: Course Structure

Lecture Date	Teaching Outcome	Topics	Teaching Procedures*	Teaching Methods***	References***
04\03\2023	PK1,PK2,PS1,PC1,PC2	Starting PSCAD and Introduce some common models found in the PSCAD master library	Face-to-Face	PSCAD Software	All Material
06\03\2023	PK1,PK2,PS1,PC1,PC2	Activity (1) Simulation of basic rectifier circuit	Asynchronous	Assignment\ simulation using PSCAD and the result will be discussed in the class room	Main Reference
11\03\2023	PK1,PK2,PS1,PC1,PC2	Simulation of DC-DC converter	Face-to-Face	PSCAD Software	Main Reference
13\03\2023	PK1,PK2,PS1,PC1,PC2	Activity (2) Simulation of DC-DC converter	Asynchronous	Assignment∖ simulation using PSCAD and the result will be discussed in the class room	Main Reference
18\03\2023	PK1,PK2,PS1,PC1,PC2	Build a simple power system network with 3- phase source	Face-to-Face	PSCAD Software	Main Reference
20\03\2023	PK1,PK2,PS1,PC1,PC2	Activity (3) Build a simple power system network with 3- phase source	Asynchronous	Assignment\ simulation using PSCAD and the result will be discussed in the class room	Main Reference
25\03\2023	PK1,PK2,PS1,PC1,PC2	Simulate a full bridge inverter	Face-to-Face	PSCAD Software	Main Reference
27\03\2023	PK1,PK2,PS1,PC1,PC2	Activity (4) Simulate a full bridge inverter	Asynchronous	Assignment\ simulation using PSCAD and the result will be discussed in the class room	Main Reference
01\04\2023	PK1,PK2,PS1,PC1,PC2	Design a PV system and	Face-to-Face	PSCAD Software	Main Reference



Issue Date:11/7/2021

		analyze the output DC voltage and current			
03\04\2023	PK1,PK2,PS1,PC1,PC2	Activity (5) Design a PV system and analyze the output DC voltage and current	Asynchronous	Assignment∖ simulation using PSCAD and the result will be discussed in the class room	Main Reference
08\04\2023	PK1,PK2,PS1,PC1,PC2	Design and simulate a PV system and study the effect of the temperature\ Irradiation on the I-V curve	Face-to-Face	PSCAD Software	Main Reference
10\04\2023	PK1,PK2,PS1,PC1,PC2	Activity (6) Design and simulate a PV system and study the effect of the temperature\ Irradiation on the I-V curve	Asynchronous	Assignment\ simulation using PSCAD and the result will be discussed in the class room	Main Reference
17\04\2023	PK1,PK2,PS1,PC1,PC2	Assignment discussion	Face-to-Face	PSCAD Software	Main Reference
19\04		Mid Exam			
20\04\2023	PK1,PK2,PS1,PC1,PC2	Activity (7) Design and simulate a PV system and study the effect of the temperature\ Irradiation on the I-V curve	Asynchronous	Assignment\ simulation using PSCAD and the result will be discussed in the class room	Main Reference
23\04		Official Holiday			
25\04		Official Holiday			
27\04	PK1,PK2,PS1,PC1,PC2	Activity (8) Design a PV array connected with MPPT	Asynchronous	Assignment\ simulation using PSCAD and the result will be discussed in the class room	Main Reference
08\05\2023	PK1,PK2,PS1,PC1,PC2	Design a PV array connected with MPPT	Face-to-Face	PSCAD Software	Main Reference



04\05	PK1,PK2,PS1,PC1,PC2	Activity (9) Design a PV array and study the importance of the bypass and blocking diodes	Asynchronous	Assignment∖ simulation using PSCAD and the result will be discussed in the class room	Main Reference
07\05	PK1,PK2,PS1,PC1,PC2	Three phase Inverter (DC- AC)	Face-to-Face	PSCAD Software	Main Reference
11\05	PK1,PK2,PS1,PC1,PC2	Activity (10) Simulate a Three phase Inverter (DC- AC)	Asynchronous	Assignment\ simulation using PSCAD and the result will be discussed in the class room	Main Reference
14\05	PK1,PK2,PS1,PC1,PC2	Transformers	Face-to-Face	PSCAD Software	Main Reference
18\05	PK1,PK2,PS1,PC1,PC2	Activity (11) Mini project: design a residential PV system using a PVsyst package	Asynchronous	Assignment\ simulation using PSCAD and the result will be discussed in the class room	Main Reference
21\05	PK1,PK2,PS1,PC1,PC2	Will be determined	Face-to-Face	PSCAD Software	Main Reference
25\05		Official Holiday			
28\05	PK1,PK2,PS1,PC1,PC2	Introducing PVsyst	Face-to-Face	PVsystSoftware	Main Reference
01\06	PK1,PK2,PS1,PC1,PC2	Activity (12) Mini project: design a residential PV system using a PVsyst	Asynchronous	Assignment\ simulation using PVsyst and the result will be discussed in the class room	Main Reference
04\06	PK1,PK2,PS1,PC1,PC2	Mini project: design a residential PV system using a PVsyst	Face-to-Face	PVsystSoftware	Main Reference
08\06	PK1,PK2,PS1,PC1,PC2	Project Submission	Asynchronous	mini project Power Point slides and presentation Project Submission Started from 09/05- 08/06.2023	Project



* Learning procedures: (Face-to-Face, synchronous, and asynchronous). * * Teaching methods: (Lecture, video....). ** * Reference: (Pages of the book, recorded lecture, video....).

Seventh: Assessment methods

Methods	Online Learning	Blended Learning	Direct Teaching	Material Output to be measured
Mid exam			30%	
Activities		20%		
Final Exam			50%	

Eighth: Course Policies

- All course policies are applied on all teaching patterns (online, blended, and face-to-face Learning) as follows:
 - a. Punctuality.
 - b. Participation and interaction.
 - c. Attendance and exams.
- Academic integrity: (cheating and plagiarism are prohibited).

Approved by:	Name	Date	Signature
Head of Department	Dr. AymanAmer	6/3/2023	(p)
Faculty Dean	Prof. TaiseerAlghanim	6/3/2023	Mª

