



Course Specifications

Muharram 1437 H

Institution:	Majmaah University
Academic Department :	Electrical Engineerig
Programme :	Power Track
Course :	Power Systems Protection (EE476)
Course Coordinator :	Dr. Ahmed Bilal Awan
Programme Coordinator :	
Course Specification Approved Date :	.... / ... / ..... H



A. Course Identification and General Information

1 - Course title :	Power Systems Protection	Course Code:	EE 476
2. Credit hours :	(3)		
3 - Program(s) in which the course is offered:	Electrical (Power Track)		
4 – Course Language :	English		
5 - Name of faculty member responsible for the course:	Dr. Ahmed Bilal Awan		
6 - Level/year at which this course is offered :	Level 9/Year 4		
7 - Pre-requisites for this course (if any) :	<ul style="list-style-type: none"> • 		
8 - Co-requisites for this course (if any) :	<ul style="list-style-type: none"> • Power Systems Analysis (EE472) 		
9 - Location if not on main campus:	College of Engineering		
10 - Mode of Instruction (mark all that apply)			
A - Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	90 %
B - Blended (traditional and online)	<input checked="" type="checkbox"/>	What percentage?	10 %
D - e-learning	<input type="checkbox"/>	What percentage? %
E - Correspondence	<input type="checkbox"/>	What percentage? %
F - Other	<input type="checkbox"/>	What percentage? %
Comments :	<p>.....</p>		

B Objectives

<p>What is the main purpose for this course?</p> <p>This course is aimed to provide undergraduate students with knowledge, skills and the ability to analyze the electrical power system, perform analysis under different fault conditions and design protection scheme to protect the power system against faults.</p>
<p>Briefly describe any plans for developing and improving the course that are being implemented :</p> <p>Changing the content of the course by adding some new important protection schemes</p>



C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Protection system principles and components	2	8
Short circuit calculations	2	8
Protective instrument transformers|: VT-CVT-CT	2	8
Protective relays: Electromechanical relays, Static relays, Numerical relays	2	8
Over-current protection	2	8
Distance protection systems	2	8
Power frequency and carrier systems	1	4
Protection of generators- motors- transformers- busbars- reactors- capacitors; Protection of distribution system feeders.	2	8
.....

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	.....	.....	.....	60
Credit	3	0	.....	.....	.....	3

3. Additional private study/learning hours expected for students per week.

2 hours

On average two hours per week needed to prepare the required assignments, project of the course

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1			
1.2	.....	.....	.....
1.3	.....	.....	.....
1.4	.....	.....	.....
1.5	.....	.....	.....
1.6	.....	.....	.....
2.0	Cognitive Skills		
2.1	Calculate faults current and voltages	- Lectures - Solving specific design problems (Tutorial)	- Exams - Quizzes - Homework
2.2	Use instrument transformers: CT, CVT, VT.	- Lectures - Solving specific design problems (Tutorial) - Assignment	- Exams - Homework
2.3	Identify and analyze faults in a real power system.	- Lectures - Solving specific design problems (Tutorial)	- Exams - Quizzes - Homework
2.4	Design a protection scheme for distribution system, transmission lines, generators, motors, bus-bars etc.	- Lectures - Solving specific design problems (Tutorial) - Assignment	- Exams - Quizzes - Homework
2.5	Configure the settings of protective relays for a particular application.	- Lectures - Solving specific design problems (Tutorial) - Assignment	- Exams - Quizzes - Homework
2.6	.....	.....	.....
3.0	Interpersonal Skills & Responsibility		
3.1	.....	.....	.....
3.2	.....	.....	.....
3.3	.....	.....	.....





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
3.4
3.5
3.6
4.0	Communication, Information Technology, Numerical		
4.1	Identify basic components of a protection system.	Lecture, research activities, projects, and individual presentation	Standardized exams, Oral exams, Micro projects
4.2
4.3
4.4
4.5
4.6
5.0	Psychomotor		
5.1
5.2
5.3
5.4
5.5
5.6

5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	First Midterm Exam	7	20%
2	Second Midterm Exam	12	20%
3	Final Exam	15	40%
4	Semester Project	13	10%
5	Quizzes and Homework	During semester	10%
6	.....	.....	.....





7	.....	.....	.....
8	.....	.....	.....





D. Student Academic Counseling and Support

1. All students are distributed among academic advisors
2. Advising Information are included in the student Guide and in the college website
3. Every Advisor assignees 3 office hours for supporting the student academic counselling

E. Learning Resources

1. List Required Textbooks :

- Badri Ram, “ Power system protection and switchgear”, Tata McGraw-Hill
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2. List Essential References Materials :

- Walter Elmore “Protective Relaying: Theory and Applications”, Marcel Dekker
- Blackburn “Protective Relaying: Principles and Applications”, Marcel Dekker

3. List Recommended Textbooks and Reference Material :

-
-
-

4. List Electronic Materials :

- 25 seats in the classroom..
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-

5. Other learning material :

- Data show
- Laptop

F. Facilities Required

1. Accommodation

-
-
-

2. Computing resources

-





<ul style="list-style-type: none"> • •
3. Other resources <ul style="list-style-type: none"> • • •

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching: <ul style="list-style-type: none"> • Students' course survey is used by quality unit in the department for obtaining students feedback. •
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor : <ul style="list-style-type: none"> • Visits of colleagues to evaluate the teaching process.
3 Processes for Improvement of Teaching : The process for improvement of teaching by considering the following: <ul style="list-style-type: none"> - Course Report - Results of students' course survey - Results of teaching evaluation by program instructor - Related workshops and training sessions
4. Processes for Verifying Standards of Student Achievement <ul style="list-style-type: none"> • Process of marking is checked by independent member, teaching staff for a sample and verifying the sum of marks.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement : <ul style="list-style-type: none"> - Reviewing the course description by the undergraduate program power subcommittee periodically parallel with program specifications for improving contents, textbook and references and level or year. - Reviewing the course report every semester and every year for improving the teaching strategies, distribution of topics over weeks and method of assessment.

Course Specification Approved
Department Official Meeting No (.....) Date ... / / H

Course's Coordinator

Name : Dr. Ahmed Bilal
Signature :
Date : .../ ... / H

Department Head

Name :
Signature :
Date : .../ ... / H



