جامعة المجمعة
Majmaah University

كلية الهندسة
College of Engineering

Electrical Engineering Program
Course Specifications

المملكة العربية السعودية
وزارة التعليم
جامعة المجمعة
كلية الهندسة

Kingdom of Saudi Arabia
Ministry of Education
Majmaah University
College of Engineering

Electrical Engineering Curriculum

Track: Power & Machine

First Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
MATH 105	Differential Calculus			3	(3,1,0)
PHY 103	General Physics			4	(3,1,2)
GE 101	Fundamentals of Engineering Technology			2	(1,0,2)
GE 102	Fundamentals of Engineering Drawing			3	(1,0,4)
GE 103	Engineering Mechanics (Statics)			3	(3,1,0)
				17	

Spring Semester

Course code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MATH 106	Integral Calculus	MATH 105		3	(3,1,0)
MATH 107	Algebra and Analytical Geometry			3	(3,1,0)
GE 108	Engineering Mechanics (Dynamics)	GE 103		3	(3,1,0)
GE 105	Engineering Chemistry			3	(3,1,0)
EE 101	Fundamentals of Electric Circuits		MATH 107	3	(3,1,0)
EE 111	Basic Electronic Devices and Circuits		EE 101	3	(3,1,0)
				18	

Second Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
MATH 204	Differential Equations	MATH 106 MATH 107		3	(3,1,0)
EE 205	Electric Circuits Lab.		EE 202	1	(0,0,2)
EE 208	Logic Design			3	(3,1,0)
EE 207	Logic Design Lab.		EE 208	1	(0,0,2)
EE 202	Electric Circuits Analysis	EE 101		3	(3,1,0)
EE 206	Electromagnetics 1	MATH 107		3	(3,1,0)
EE 212	Basics of Electronic Devices and Circuits Lab.	EE 111		1	(0,0,2)
				17	

Spring Semester

Course code	Course Title	Pre-Req.	Co-Req.	CH	Hours
STAT 201	Statistics and Probability			3	(3,1,0)
CEN 210	Introduction To Programming			3	(2,0,2)
EE 288	Principles of Electric Machines	EE 202		3	(3,1,0)
EE 234	Electromagnetics 2	EE 206		3	(3,1,0)
EE 221	Signals and Systems Analysis	MATH 204		3	(3,1,0)
EE 270	Fundamentals of Electrical Power Systems	EE 206		2	(2,1,0)
EE 271	Principles of Electric Power and Machines Lab		EE 288 EE 270	1	(0,0,2)
				18	

Third Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 306	Engineering Report Writing	STAT 201		2	(2,0,0)
EE 341	Automatic Control Systems	EE 221		3	(3,1,0)
EE 307	Analog and Digital Measurements	EE 208		3	(3,1,0)
EE 308	Measurements and Control Lab.		EE 307 EE 341	1	(0,0,2)
EE 322	Communications Principles	EE 221 STAT 201		3	(3,1,0)
EE 323	Communications Principles Lab.		EE 322	1	(0,0,2)
EE 360	Microprocessors	EE 208 EE 111		3	(3,1,0)
				18	

Spring Semester

Course code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
MATH 254	Numerical Methods	MATH 204		3	(3,1,0)
EE 361	Microprocessors Lab	EE 360		1	(0,0,2)
EE 389	Electric Machines	EE 288		3	(3,1,0)
EE 372	Electric Power Systems Analysis	EE 288 EE 270		3	(3,1,0)
EE 373	Electric Power and Machine Lab 2		EE 372 EE 389	1	(0,0,2)
EE 374	Power Electronics	EE 288		3	(3,1,0)
				16	

EE 399	Engineering Practice	0

Fourth Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 407	Engineering Economy			2	(2,1,0)
EE 475	Applied Control	EE 341		3	(3,1,0)
EE 476	Power Systems Protection	EE 372		3	(3,1,0)
EE 477	High-Voltage Engineering Systems	EE 270		3	(3,1,0)
EE 4xx	Elective (1)			2	(2,1,0)
EE 498	Senior Design (1)			2	(1,0,2)
				17	

Spring Semester

Course code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 408	Engineering Project Management	GE 407		2	(2,1,0)
EE 478	Distribution System Planning	EE 372		2	(2,1,0)
EE 479	Protection & High Voltage Lab.	EE 477		1	(0,0,2)
EE 4xx	Elective (2)			3	(3,1,0)
EE 4xx	Elective (3)			3	(3,1,0)
EE 499	Senior Design (2)	EE 498		2	(1,0,2)
				15	

Track: Communications & Electronics

First Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
MATH 105	Differential Calculus			3	(3,1,0)
PHY 103	General Physics			4	(3,1,2)
GE 101	Fundamentals of Engineering Technology			2	(1,0,2)
GE 102	Fundamentals of Engineering Drawing			3	(1,0,4)
GE 103	Engineering Mechanics (Statics)			3	(3,1,0)
				17	

Spring Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MATH 106	Integral Calculus	MATH 105		3	(3,1,0)
MATH 107	Algebra and Analytical Geometry			3	(3,1,0)
GE 108	Engineering Mechanics (Dynamics)	GE 103		3	(3,1,0)
GE 105	Engineering Chemistry			3	(3,1,0)
EE 101	Fundamentals of Electric Circuits		MATH 107	3	(3,1,0)
EE 111	Basic Electronic Devices and Circuits		EE 101	3	(3,1,0)
				18	

Second Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
MATH 204	Differential Equations	MATH 106 MATH 107		3	(3,1,0)
EE 205	Electric Circuits Lab.		EE 202	1	(0,0,2)
EE 208	Logic Design			3	(3,1,0)
EE 207	Logic Design Lab.		EE 208	1	(0,0,2)
EE 202	Electric Circuits Analysis	EE 101		3	(3,1,0)
EE 206	Electromagnetics I	MATH 107		3	(3,1,0)
EE 212	Basics of Electronic Devices and Circuits Lab.	EE 111		1	(0,0,2)
				17	

Spring Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
STAT 201	Statistics and Probability			3	(3,1,0)
CEN 210	Introduction To Programming			3	(2,0,2)
EE 288	Principles of Electric Machines	EE 202		3	(3,1,0)
EE 234	Electromagnetics II	EE 206		3	(3,1,0)
EE 221	Signals and Systems Analysis	MATH 204		3	(3,1,0)
EE 270	Fundamentals of Electrical Power Systems	EE 206		2	(2,1,0)
EE 271	Principles of Electric Power and Machines Lab		EE 288 EE 270	1	(0,0,2)
				18	

Third Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 306	Engineering Report Writing	STAT 201		2	(2,0,0)
EE 341	Automatic Control Systems	EE 221		3	(3,1,0)
EE 307	Analog and Digital Measurements	EE 207		3	(3,1,0)
EE 308	Measurements and Control Lab.		EE 307 EE 341	1	(0,0,2)
EE 322	Communications Principles	EE 221 STAT 201		3	(3,1,0)
EE 323	Communications Principles Lab.		EE 322	1	(0,0,2)
EE 360	Microprocessors	EE 208 EE 111		3	(3,1,0)
				18	

Spring Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
MATH 254	Numerical Methods	MATH 204		3	(3,1,0)
EE 361	Microprocessors Lab	EE 360		1	(0,0,2)
EE 314	Analog and Digital Electronic Circuits	EE 111		3	(3,1,0)
EE 315	Analog and Digital Electronic Circuits Lab		EE 314	1	(0,0,2)
EE 324	Digital Signal Processing	EE 221		3	(3,1,0)
EE 325	Digital Communications	EE 322		3	(3,1,0)
				16	

EE 399	Engineering Practice	0

Fourth Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 407	Engineering Economy			2	(2,1,0)
EE 435	Antennas & Wave Propagation	EE 234		3	(3,1,0)
EE 426	Wireless Communications	EE 325		3	(3,1,0)
EE 427	Communication and Signal Processing Lab.	EE 324 EE 325		1	(0,0,2)
EE 436	Antennas and Wave Propagation Lab.		EE 435	1	(0,0,2)
EE 4xx	Elective (1)			3	(3,1,0)
EE 498	Senior Design (1)			2	(1,0,2)
				17	

Spring Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 408	Engineering Project Management	GE 407		2	(2,1,0)
EE 415	VLSI	EE 314		3	(3,1,0)
EE 4xx	Elective (2)			3	(3,1,0)
EE 4xx	Elective (3)			3	(3,1,0)
EE 499	Senior Design (2)	EE 498		2	(1,0,2)
				15	

Track: Control & Systems

First Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
MATH 105	Differential Calculus			3	(3,1,0)
PHY 103	General Physics			4	(3,1,2)
GE 101	Fundamentals of Engineering Technology			2	(1,0,2)
GE 102	Fundamentals of Engineering Drawing			3	(1,0,4)
GE 103	Engineering Mechanics (Statics)			3	(3,1,0)
				17	

Spring Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MATH 106	Integral Calculus	MATH 105		3	(3,1,0)
MATH 107	Algebra and Analytical Geometry			3	(3,1,0)
GE 108	Engineering Mechanics (Dynamics)	GE 103		3	(3,1,0)
GE 105	Engineering Chemistry			3	(3,1,0)
EE 101	Fundamentals of Electric Circuits		MATH 107	3	(3,1,0)
EE 111	Basic Electronic Devices and Circuits		EE 101	3	(3,1,0)
				18	

Second Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
MATH 204	Differential Equations	MATH 106 MATH 107		3	(3,1,0)
EE 205	Electric Circuits Lab.		EE 202	1	(0,0,2)
EE 208	Logic Design			3	(3,1,0)
EE 207	Logic Design Lab.		EE 208	1	(0,0,2)
EE 202	Electric Circuits Analysis	EE 101		3	(3,1,0)
EE 206	Electromagnetics 1	MATH 107		3	(3,1,0)
EE 212	Basics of Electronic Devices and Circuits Lab.	EE 111		1	(0,0,2)
				17	

Spring Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
STAT 201	Statistics and Probability			3	(3,1,0)
CEN 210	Introduction To Programming			3	(2,0,2)
EE 288	Principles of Electric Machines	EE 202		3	(3,1,0)
EE 234	Electromagnetics 2	EE 206		3	(3,1,0)
EE 221	Signals and Systems Analysis	MATH 204		3	(3,1,0)
EE 270	Fundamentals of Electrical Power Systems	EE 206		2	(2,1,0)
EE 271	Principles of Electric Power and Machines Lab		EE 288 EE 270	1	(0,0,2)
				18	

Third Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 306	Engineering Report Writing	STAT 201		2	(2,0,0)
EE 341	Automatic Control Systems	EE 221		3	(3,1,0)
EE 307	Analog and Digital Measurements	EE 208		3	(3,1,0)
EE 308	Measurements and Control Lab.		EE 307 EE 341	1	(0,0,2)
EE 322	Communications Principles	EE 221 STAT 201		3	(3,1,0)
EE 323	Communications Principles Lab.		EE 322	1	(0,0,2)
EE 360	Microprocessors	EE 208 EE 111		3	(3,1,0)
				18	

Spring Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,1,0)
MATH 254	Numerical Methods	MATH 204		3	(3,1,0)
EE 343	Automatic Control	EE 341 EE 308		3	(3,1,0)
EE 361	Microprocessors Lab	EE 360		1	(0,0,2)
EE 350	Discrete Event and Hybrid Systems	EE 221 EE 307		2	(2,1,0)
EE 362	Introduction to Robotics and Mechatronics	MATH 107 GE 108		3	(3,1,0)
EE 363	Programmable Logic Controllers			2	(2,1,0)
				16	

EE 399	Engineering Practice	0

Fourth Year

Fall Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 407	Engineering Economy			2	(2,1,0)
EE 451	Modeling and Simulation of Dynamic Systems	MATH 204 EE 343		3	(3,1,0)
EE 442	Automatic Control Lab	EE 343 EE 308		1	(0,0,2)
EE 452	Advanced system Engineering			3	(3,1,0)
EE 4xx	Elective (1)			3	(3,1,0)
EE 498	Senior Design (1)			2	(1,0,2)
				16	

Spring Semester

Course Code	Course Title	Pre-Req.	Co-Req.	CH	Hours
MURE	University Requirement			2	(2,0,0)
GE 408	Engineering Project Management	GE 407		2	(2,1,0)
EE 464	Robotics and Mechatronics Lab	EE 361 EE 362 EE 307 EE 308		1	(0,0,2)
EE 4xx	Elective (2)			3	(3,1,0)
EE 4xx	Elective (3)			3	(3,1,0)
EE 499	Senior Design (2)	EE 498		2	(1,0,2)
EE 453	Introduction To Intelligent Systems			3	(3,1,0)
				16	

EE 101

Course Specification

Institution: Majmaah University	Date of Report: 10/12/2014
College/Department: Engineering/Electrical	

A. Course Identification and General Information

1. Course title and code: Fundamentals of Electric Circuits EE 101			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: spring semester, freshman year			
6. Pre-requisites for this course (if any): None			
7. Co-requisites for this course (if any): MATH 107 Algebra and Analytical Geometry			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	■	What percentage?	100 %
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?
   - Knowing basic Electric circuit elements.
   - Learning the basic concepts of electric circuits.
   - Mastering basic electric circuit theorems.
   - Learning the basic techniques of circuit analysis.
   - Understanding the concept of phasor and vectors in circuit analysis.
   - Learning the concept of power in electric circuits.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
   - Discussing all the topics of the course at the beginning of the semester.
   - Encourage the student to use the Internet and encyclopedias to get more information about these topics.
   - Let the student using the Internet to do a project to develop their knowledge and skills.
   - Introducing any of the CAD software in circuit analysis, such as *PSpice*.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Basic circuit elements and concepts	2	8
Basic laws of circuit theory: Ohm's law, Kirchoff's law	3	12
Techniques of circuit analysis: Nodal and mesh analysis.	3	12
Circuit theorems: superposition principle, Thevenin theorems	3	12
Circuit theorems: Norton theorems; maximum power transfer theorem;	2	8
Electric circuit phasors and vectors, Analyzing electric circuit active and reactive powers.	2	8

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

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

3. Additional private study/learning hours expected for students per week. 0

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies,	Standardized exams, Seminars and Assignments

		memorization and individual presentation	
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	1st Exam	Week 6	20%
2	Participation	All along	10%
3	Quizzes & Homework	All along	10%
4	2nd Exam	Week 11	20%
5	Final Exam	Week 15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
    1. Weekly office hours (1 hour per week)
    2. Exam error analysis in class
    3. Feedback for each student
    4. Providing weekly guidelines on students' overall performance
    5. Teacher's web page.

E. Learning Resources

1. List Required Textbooks
Sadiku, Fundamentals of Electric Circuits, 3rd Edition, McGraw-Hill Science, 2005.

2. List Essential References Materials (Journals, Reports, etc.)
Boylestad, "Introductory Circuit Analysis", Prentice Hall, 1999

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Lecture rooms should be large enough to accommodate 25 students

2. Computing resources (AV, data show, Smart Board, software, etc.) computer - projector system- smart board
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Data show to facilitate going over student papers in class

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 111

Course Specifications

Institution: Majmaah University	Date of Report: 28/12/ 2014
College/Department : College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Basic Electronic Devices and Circuits, EE 111			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering (General Course)			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Spring semester, freshman year			
6. Pre-requisites for this course (if any): None			
7. Co-requisites for this course (if any): Fundamentals of Electric Circuits EE 101			
8. Location if not on main campus	College of Engineering		
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	Yes	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? To provide students with solid foundation in the fundamentals of Diodes, Transistors and Amplifier Circuits and hence to equip them with the necessary skills to practically implement application oriented and need based electronic circuits.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) Encouraging the students to design Amplifier Circuits, Voltage Regulator and Voltage Multiplier Circuits so that they can implement the theoretical knowledge to practical circuits.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Semiconductor material and properties, Diode model, equivalent model and circuit analysis	3	12
Analysis of diode based circuits and Special diodes characteristics and applications	2	8
Bipolar Junction Transistor(BJT), Basic structure, Modes of operation, Types of Connection, dc biasing, dc and small signal models and its characteristics	4	16
Single stage BJT Amplifiers, FET, construction and operation, I-V characteristics, dc biasing	2	8
Construction and operation Enhancement MOSFETS, I-V characteristics	2	8
Linear and non-linear applications of op-amp, negative and positive feedback CMOS logic gates, pass transistor logic gates and dynamic logic gates	2	8

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	0	0	0	60
Credit	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week.	6
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role	Standardized exams, Seminars and Assignments

		playing, case studies, memorization and individual presentation	
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	6	20%
2	Second Exam	12	20%
3	Final Exam	15	40%
4	Assignments	4 and 9	10%
5	Quiz	5 and 11	10%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) 1. Three office hours for supporting the student academic counseling. 2. All students are distributed among academic advisors 3. Advising information are included in the student Guide and in the College website

E. Learning Resources

1. List Required Textbooks Thomas l.Floyd, Electronic Devices, 7th edition, PEARSON, Prentice Hall 2005, Pearson Education Adel S.Sedra and Kenneth C.Smith, Microelectronic Circuits (6th edition), Oxford University Press, 2010
2. List Essential References Materials (Journals, Reports, etc.) None
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) - Electronics Devices and Circuits, by Bogart - Electronic Devices and Circuit Theory, 4th Edition by Robert L Boylestad
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) www.nptel.ac.in, www.faculty.mu.edu.sa/praveen.r
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) • Lecture room: Available. • Laboratory: available.

2. Computing resources (AV, data show, Smart Board, software, etc.) • LCD Projector available • Smart Board
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) None

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 5. Plan: The instructor will develop a strategy for teaching. 6. Do: The strategy will be implemented for one semester. 7. Study: The experiences of the students will be collected through a survey. 8. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process

of course objectives refinement and assessment.

- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 202

Course Specifications

Institution: Majmaah University	Date of Report: 28/12/ 2014
College/Department : College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Electric Circuits Analysis EE 202			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Fall semester, sophomore year			
6. Pre-requisites for this course (if any): Fundamentals of Electric Circuits, EE 101			
7. Co-requisites for this course (if any)			
8. Location if not on main campus: College of Engineering			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?

This course is aimed to provide undergraduate students with knowledge, skills and the ability to:

1. Develop the understanding regarding power calculations in ac circuits.
2. Find the circuit frequency response.
3. Understand the condition of resonance.
4. Understand the basic Op-Amp applications.
5. Design a simple passive filter.
6. Understand the mutual inductance and transformers.
7. Analyze a three-phase circuit.
8. Deal with two port circuits.
9. Understand the mutual inductance and transformer.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Discussing all the topics of the course at the beginning of the semester.
- Use software such as PSpice and Multisim to analyze the ac circuits.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Revision of fundamentals of electric circuits	1	4
Power in ac circuits	1	4
Three-phase circuits	1	4
Three-phase circuits	1	4
Introduction to operational amplifier	1	4
Frequency response of RLC circuits	1	4
Series and parallel resonance	1	4
Transient analysis of first-order circuits	1	4
Transient analysis of second-order circuits	1	4
Laplace transform and circuits analysis	1	4
Transient analysis of 1-st and 2-nd order circuits using Laplace transform	1	4
Introduction to frequency selective circuits: Low-pass & high-pass filters	1	4
Passive filters: Band-pass filter and band-reject filter	1	4
Two-port networks	1	4
Mutual inductance and transformers	1	4

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

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

3. Additional private study/learning hours expected for students per week. 6

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	Homework and micro project	3rd , 5th, 9th and 12th	10%
2	Quizzes	4th , 7th, 11th and 13th	10%
3	Exams (First and Second)	6th and 10th	40 %
4	Final Exam	16th	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Four office hours are dedicated for student in each week.

E. Learning Resources

1. List Required Textbooks Sadiku, Fundamentals of Electric Circuits, 3rd Editon, McGraw-Hill Science, 2005.
2. List Essential References Materials (Journals, Reports, etc.) J.W. Nilsson, S.A. Riedel; "Electric Circuits", Prentice-Hall, 8-th edition
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

2. Computing resources (AV, data show, Smart Board, software, etc.) A laptop for the instructor.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 9. Plan: The instructor will develop a strategy for teaching. 10. Do: The strategy will be implemented for one semester. 11. Study: The experiences of the students will be collected through a survey. 12. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 205

Course Specifications

Institution: Majmaah University	Date of Report: 16/12/2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Electrical Circuits Lab EE 205			
2. Credit hours: 1			
3. Program(s) in which the course is offered: Electrical Engineering (All Programs)			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Fall semester, sophomore year			
6. Pre-requisites for this course (if any): Fundamentals of Electrical Circuits EE 101			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom		What percentage?	90%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	10%
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:
E-learning includes electrical circuits software and related websites

B Objectives

1. What is the main purpose for this course? Electrical Circuits laboratory at MU is state of art with all the latest electrical equipment available, including Digital Oscilloscopes, DC Power sources, Function Generators, and Digital Multimeters. As well as, most of the components needed, such as, resistors, diodes, capacitors, coils, transformers, switches, and so on. This lab's purpose is to allow undergraduate electrical engineering students to develop and test electrical circuits practically and conduct basic electrical engineering experiments.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) 1- Adding more experiments on three phase and alternating current circuits (AC). 2- Using related websites in order to draw, design, and simulate basic electrical circuits.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Experiments	No of Weeks	Contact hours
Introductory to lab equipment's and basic components	1	2
Assemble of simple circuits	1	2
Ohms law, Series and Parallel Connection of Resistors	2	4
VDR on No-Load operation, VDR under Load	1	2
Series and parallel connection of Batterie	1	2
Determining the Internal Resistance of batteries connected in series and Parallel	2	4
Introduction to AC Circuits using the Oscilloscope	1	2
Introduction to AC Circuits using the Function Generator	1	2
Power Factor improvement	1	2
Introduction to Three Phase circuits.	2	4
Revision	1	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week. 1

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct	Lecture, small group	Standardized exams,

	experiments, as well as to analyze and interpret data	work, , research activities, lab demonstrations, projects and individual presentation	oral exams, micro projects
2.2			
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Quizzes	During Semester	5%
4	Lab Reports	During Semester	10%
5	Mini Project	15	5%
5	Final Exam	15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
   a- Weekly office hours
   b- Meetings and discussions on Blackboard/D2L

E. Learning Resources

1. List Required Textbooks

2. List Essential References Materials (Journals, Reports, etc.)
EE 205 Lab manual

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

Fundamentals of Electric Circuits,
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) http://www.digikey.com/schemeit
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. PSPICE 9.1 student version

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 15 Seats in the laboratory

2. Computing resources (AV, data show, Smart Board, software, etc.) 1- Smart Board 2- Laptop 3- Projector.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) 1- Components such as, resistors, capacitors, diodes, inductors, and so on 2- Digital Multimeters 3- Digital and Analog Oscilloscopes 4- Function Generators 5- DC Power supplies

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 13. Plan: The instructor will develop a strategy for teaching. 14. Do: The strategy will be implemented for one semester. 15. Study: The experiences of the students will be collected through a survey. 16. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 206

Course Specifications

Institution: Majmaah University	Date of Report: December 2, 2014
College/Department: Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Electromagnetics 1 EE 206			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Spring semester, sophomore year			
6. Pre-requisites for this course (if any): Algebra and Analytical MATH 107			
7. Co-requisites for this course (if any)			
8. Location if not on main campus: College of Engineering			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other (Online References)		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?
   - To use complex number algebra and complex vectors,
   - To understand basic electromagnetic concepts and parameters necessary for the analysis and design of electromagnetic systems
   - To analyze the relationships between fields and flux densities in material media
   - To understand the coupling between electric and magnetic fields through Maxwell's equations

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
   - Showing some online videos about visualizing wave propagation.
   - Linking theory with practical applications for Maxwell's equations.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Vector Algebra	1	4
Coordinate system and transformation	2	8
Vector calculus	1	4
Electrostatic fields	3	12
Electric field in material space	2	8
Electrostatic boundary-value problem	1	4
Magneto-static field	3	12
Magnetic force material and devices	2	8

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

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

3. Additional private study/learning hours expected for students per week. 6

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments

2.0	Cognitive Skills		
2.1			
2.2			
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3			
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	Quizzes	9th	10%
2	Exams (First and Second)	7th and 12th	40 %
3	Final Exam	16th	40%
4	Assignments		10%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
   c- Weekly office hours
   d- Meetings and discussions on Blackboard/D2L

E. Learning Resources

1. List Required Textbooks
Sadiku, Matthew N. O. *Elements of Electromagnetics*. New York: Oxford University Press, 2001.

2. List Essential References Materials (Journals, Reports, etc.)
NA

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
HAYT, W. H. (1981). *Engineering electromagnetics*. New York, McGraw-Hill Book Co.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) NA

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. NA

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Classroom

2. Computing resources (AV, data show, Smart Board, software, etc.) • A Projector and a laptop in the classroom for the instructor. • A working Smart Boards
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) • Books for student's use in the main library.

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 207

Course Specifications

Institution: Majmaah University	Date of Report: 8/12/2014
College/Department: Engineering / Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Logic Design Laboratory EE 207		
2. Credit hours: 1		
3. Program(s) in which the course is offered: General Course		
4. Name of faculty member responsible for the course:		
5. Level/year at which this course is offered: Fall semester, freshman year		
6. Pre-requisites for this course (if any): None		
7. Co-requisites for this course (if any): Logic Design (EE 208)		
8. Location if not on main campus		
9. Mode of Instruction (mark all that apply)		
a. Traditional classroom	What percentage?	100
b. Blended (traditional and online)	What percentage?	
c. e-learning	What percentage?	
d. Correspondence	What percentage?	
f. Other	What percentage?	
Comments:		

B Objectives

1. What is the main purpose for this course?

Students would be expected to achieve the following knowledge and skills:

- Well knowing of Logic Design Lab and equipment.
- Ability to analyze different logic gate circuits through applying the practical circuits and calculating their outputs.
- Familiarize and ability to use the tools like ETS-5000 Advance Logic training system and Basic level digital electronic training set for the analysis and implementation of logic circuits.
- Get ready and prepare to work in the field of electronics operation and maintenance.
- Specially focus on the topics and concepts taught as co-requisite in logic design course, prepare students to work efficiently for their graduation project.
- Feasible and easy selection of tools and equipment as per need regarding logical gate circuits.

Practical circuits concepts with physical implementation of proper lab equipment and their connections.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to laboratory equipment and their use like ETS-5000 advance logical training system.	1	2
Digital electronic training system, Connectivity of ICs, logic Gates, equipment.	1	2
Lab Familiarization, Basic Logic Gates (OR, AND & NOT, NOR, NAND XOR & XNOR Gates)	2	4
Boolean Functions, Adder & Subtractor	2	4
Decoders & Encoders, Multiplexers & Magnitude Comparator	4	8
Code Converters, Latches & Flip-Flops, Registers & Shift Registers.	3	6
Synchronous & Asynchronous Counters	2	4

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week.
At least 2 hours per week: 2

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Mid Term Exam	7th Week	20%
2	Second Mid Term Exam	13th Week	20%
3	Final Term Exam	15th Week	40%
4	Quizzes	During Semester	10%
5	Homework and Assignments	During Semester	10%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and

academic advice. (include amount of time teaching staff are expected to be available each week) Available in office hours, 3 hours per week.

E. Learning Resources

1.List Required Textbooks Digital Design, M. Morris Mano, Michael D. Ciletti , 4th Edition", Prentice Hall,
2. List Essential References Materials (Journals, Reports, etc.) Laboratory Manual
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Digital Design, M. Morris Mano, Michael D. Ciletti , 4th Edition", Prentice Hall,
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Laboratory for at least 20 students quipped with no more than 2 students for one experiment.

2. Computing resources (AV, data show, Smart Board, software, etc.) Data Show and Laptop
3. Other resources

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 5. Plan: The instructor will develop a strategy for teaching. 6. Do: The strategy will be implemented for one semester. 7. Study: The experiences of the students will be collected through a survey. 8. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 208

Course Specifications

Institution: Majmaah University	Date of Report: 10-12-2014
College/Department: Engineering / Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Logic Design EE 208			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course: Eng.			
5. Level/year at which this course is offered: Fall semester, freshman year			
6. Pre-requisites for this course (if any)			
7. Co-requisites for this course (if any): Logic Design Lab EE 207			
8. Location if not on main campus: Main Campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	Yes	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?

The purpose of this course is to provide the students with:

- Well knowledge of Logic Design concepts and ideas.
- Understanding of number system
- Ability to construct and analyze different logic gate circuits
- Introduction to sequential clocked synchronous circuits
- Students should get ready and prepare to work in the field of electronics operation and maintenance.
- Specially focus on the topics and concepts taught as co-requisite in logic design lab, prepare students to work efficiently for their graduation project.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Toics	No. of Weeks	Contact Hours
Introduction to course syllabus and distribution of marks	1	4
Introduction to Number System, Binary, Octal, Decimal and Hexadecimal numbers and base conversions, Complements, binary Codes	2	8
Boolean Functions, Basic Logic Gates (OR, AND & NOT, NOR, NAND XOR & XNOR Gates)	2	8
Adder & Subtractor ,	1	4
Decoders & Encoders	2	8
Multiplexers	1	4
Code Converters,	1	4
Latches	1	4
Flip-Flops,	1	4
Registers & Shift Registers,	2	8
Synchronous & Asynchronous Counters	1	4

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

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

3. Additional private study/learning hours expected for students per week.
At least 2 hours per week: 2

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total

			Assessment
1	First Exam	7th	20%
2	Second Exam	13th	20%
3	Final Exam	15th	40%
4	Group Project	13th	10%
5	Quizzes and Homework	During semester	10%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Available in office hours, 3 hours per week.

E. Learning Resources

1. List Required Textbooks Digital Design, M. Morris Mano, Michael D. Ciletti , 4th Edition", Prentice Hall,
2. List Essential References Materials (Journals, Reports, etc.) John Passafiume and Michael Douglas, "Digital Logic Design: Tutorial and Laboratory Exercises", Wiley, 2008.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Digital Design, M. Morris Mano, Michael D. Ciletti , 4th Edition", Prentice Hall,
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) The laboratory should be facilitated with 20 students and no more than 2 students for each experiment.
2. Computing resources (AV, data show, Smart Board, software, etc.) Data show and Laptops
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course

planning and design, implementation, evaluation, and revision.

- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 212

Course Specifications

Institution: Al-Majmaah University	Date of Report: 4/12/2014
College/Department: College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Basics of Electronic Devices and Circuits LAB EE 212			
2. Credit hours: 1			
3. Program(s) in which the course is offered: Electrical Engineering (General)			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Fall semester, freshman year			
6. Pre-requisites for this course (if any): None			
7. Co-requisites for this course (if any): Basic Electronic Devices and Circuits (EE 111)			
8. Location if not on main campus:			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	■	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?
   - Distinguish the basic principle of operation of the dual trace oscilloscope
   - Apply the oscilloscope to measure: the frequency and amplitude of a signal, the phase-shift between signals
   - Familiarize the students with Diode Characteristics
   - Demonstrate construction, principle of operation, limitations, waveform error, and applications of a half- wave and full-wave rectifier
   - Studying the Bipolar Junction Transistor (BJT) input/output Characteristics
   - Studying the Field Effect Transistor (FET) input/output Characteristics

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
   - Using the D2L for uploading exams and reference material
   - Construction of PCB using LPKF tool kit

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
The Introduction to laboratory equipment and basic components.	1	2
Diode Characteristics	1	2
Diode Application as Rectifier (Half wave Mid Point)	1	2
Diode Application as Rectifier (Full Wave) + Smoothing/Filtering	1	2
Silicon Diode Application as Clipper/ Clamper+ Zener Diode Characteristics and voltage Stabilization	2	4
Project1 (Hardware + Sftware) AM Receiver Circuit/ Power Supply	2	4
Transistor I/O Characteristics	1	4
Transistor(Common Emitter, Common Base, Common Collector)	2	4
Transistor as an Amplifier and Switch	1	2
Characteristics of MOSFET	1	2
Common Source (CS)MOSFET Amplifier	1	2
MOS Digital Circuit (MOS inverter Ciruits)	1	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week. 2

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Project (Hardware+ Software)+ Workbook	13	20%

4	Final Term	15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
   - All students are distributed among academic advisor
   - Advising information are included in the student guide and in the college website
   - Every advisor assignees 3 office hour for supporting the student academic counseling

E. Learning Resources

1. List Required Textbooks
   - Lab manual provided in the lab

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
   - Adel S. Sedra and Kenneth C.Smith, Microelectronic Circuits (6th Edition), Oxford University press 2010

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
http://www.electronics-tutorials.ws/
http://electroschematics.com/
http://ecelab.com/projects.htm
http://www.gott.com.my/v2/index.php
http://sa.rs-online.com/web/
http://www.lpkf.de
D2L e-Learning Platform

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

2. Computing resources (AV, data show, Smart Board, software, etc.)
   - Personal Computer
   - Data Show
   - Smart Board

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)
   - Electronic component (GOTT kit compatible)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

3. Processes for Improvement of Teaching
   5. Plan: The instructor will develop a strategy for teaching.
   6. Do: The strategy will be implemented for one semester.
   7. Study: The experiences of the students will be collected through a survey.
   8. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement
Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning

for improvement.

- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 221

Course Specifications

Institution: Majmaah University	Date of Report: April 26, 2015
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Signals and Systems Analysis EE 221			
2. Credit hours 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Spring semester, sophomore year			
6. Pre-requisites for this course (if any): Differential Equations MATH 204			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	**X**	What percentage?	**100 %**
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? Students in this course are introduced to learn: Motivation and Applications, Signal Classifications, Signal Operations, Singularity Functions; Linear time-Invariant Systems and Convolution; Correlation; Fourier Series and Transform for continuous and discrete time signals; Applications; Laplace transform and applications; Introduction to z-transform.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) None

C. Course Description

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Introduction and basic system properties	3	12
Linear time-invariant systems.	2	8
Continuous-time Fourier transform	2	8
Discrete-time Fourier transform.	2	8
Sampling	2	8
Laplace transform	2	8
Z-transform.	2	8

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	0	0	0	60
Credit	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week.	**2**
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments

2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	Week 7	20%
2	Second Exam	Week 12	20%
3	Quizzes	Weeks 6,11	15%
4	Homework assignments	Week 13	5%
5	Final	Week 15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

1. Weekly office hours.
2. Exam solving in class.
3. Feedback from each student.
4. Weekly guidelines on student performance.
5. Instructor webpage.

E. Learning Resources

1. List Required Textbooks

Haykin and Veen, Signals & Systems, John Wiley, 1998.

2. List Essential References Materials (Journals, Reports, etc.) A. V. Oppenheim, Signals & Systems, Prentice Hall, 1997
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) None
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) None
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. None

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) • Lecture room: Available.
2. Computing resources (AV, data show, Smart Board, software, etc.) None
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) None

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 234

Course Specifications

Institution: Majmaah University	Date of Report: December 2, 2014
College/Department: College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Electromagnetics 2 EE 234			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Spring semester, sophomore year			
6. Pre-requisites for this course (if any): EE 206			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus: College of Engineering			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other (Online References)		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? To understand basic concepts of wave propagation and apply mathematical concepts of vector analysis to the time dependent solution of electromagnetic engineering. In addition, to apply high level mathematics in the solution of engineering problems making use of Maxwell's equations in applications involving reflection, transmission, and oblique incidence of plane waves, transmission lines, waveguides, and boundary value problems in electromagnetics.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) • Showing some online videos about visualizing wave propagation. • Linking theory with practical applications for Maxwell's equations.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Maxwell's Equations and Waves	3	12
Plane waves	3	12
Transmission Lines	3	12
Waveguides	3	12
Antennas	3	12

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

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

3. Additional private study/learning hours expected for students per week. 6
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations,	Standardized exams, Seminars and Assignments

		projects, debates, role playing, case studies, memorization and individual presentation	
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	Quizzes	10th	10%
2	Exams (First and Second)	7th and 11th	40 %
3	Assignments		10%
4	Final Exam	16th	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
    1. Weekly office hours.
    2. Exam solving in class.
    3. Feedback from each student.
    4. Weekly guidelines on student performance.
    5. Instructor webpage.

E. Learning Resources

1. List Required Textbooks Sadiku, Matthew N. O. *Elements of Electromagnetics*. New York: Oxford University Press, 2001.
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
2. Computing resources (AV, data show, Smart Board, software, etc.) • A Projector and a laptop in the classroom for the instructor. • A working Smart Boards
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Books for student's use in the main library.

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching: • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 270

Course Specifications

Institution: Majmaah University	Date of Report: 3\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Fundamentals of Electrical Power Systems EE 270			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered Fall semester, sophomore year			
6. Pre-requisites for this course (if any): Electromagnetic I EE 206			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom		What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? This course is aim to help the students to understand the basic components of a power system. Understand the methodologies for main and alternative sources of electrical energy. Understanding of the main concepts of different systems of supplying electrical energy. Knowledge of the theory of transmission lines and underground cables construction and their analysis. Understanding of the basic distribution systems structure and their analysis.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Power system components and elements	2	6
Generation of electrical energy: main sources and alternative sources	3	9
Transmission line conductors	2	6
Electric insulators: types-parameters	2	6
Analysis of transmission lines: short lines, medium lines and long lines	2	6
Power cables parameters: series impedance, shunt admittance	2	6
Analysis of distribution systems: radial system- ring system	2	6

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	15	0	0	0	45
Credit	2	0	0	0	0	2

3. Additional private study/learning hours expected for students per week.	2
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and	Standardized exams, Seminars and Assignments

		individual presentation	
2.0	Cognitive Skills		
2.1			
2.2			
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	12	20%
3	Final Exam	15	40%
4	Quizzes and Homework	During semester	20%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
   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 counseling

E. Learning Resources

1. List Required Textbooks
A. Alarainy, et…," Fundamentals of electrical power engineering", King Saud Univ., academic press.

2. List Essential References Materials (Journals, Reports, etc.): None

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
Ashfaq Husain, "Electrical power systems", CBS, 4th edition
Gonen "Electric power distribution: System engineering", McGraw Hill

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 25 seats in the classroom.
2. Computing resources (AV, data show, Smart Board, software, etc.) - Laptop
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G . Course Evaluation and Improvement Processes

6. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
7. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
8. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
9. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.
10. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 271

Course Specifications

Institution: Majmaah University, Al-Majmaah, KSA	Date of Report: 25-12-2014
College/Department : College of Engineering/Department of Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: PRINCIPLES OF ELECTRIC POWER AND MACHINES LAB and EE 271
2. Credit hours: 1
3. Program(s) in which the course is offered. : Electrical Engineering/Power and Machines track
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Spring semester, freshman year
6. Pre-requisites for this course (if any)
7. Co-requisites for this course (if any) Principles of Electric Machines EE288, Fundamental of electric power systems EE270
8. Location if not on main campus College of Engineering
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	90%
b. Blended (traditional and online)	■	What percentage?	0 %
c. e-learning	■	What percentage?	10%
d. Correspondence		What percentage?	0%
f. Other		What percentage?	0%

Comments:

B Objectives

1. What is the main purpose for this course?
   - Students acquire basic fundamentals in this Year; the program prepares graduates for career paths in the electrical Design.
   - Students can be able to find the various values for the components which is present in the laboratory.
   - Students learn how to apply practical experience, knowledge, mathematics, computer skills, and to find and evaluate solutions.
   - Students acquire basic fundamentals during the first two levels. In Levels 7, students develop the skills required by many of the more sophisticated areas of these industries.
   - The curriculum covers core courses in electric circuit principles.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
   After Learning the course (Electrical Machines) the students can develop and improve the:
   - Using D2L for uploading assignment, project and other related materials.
   - Changing the textbook to cover new hot topics in the power and machines field.
   - Changing in the contents by adding specific modern power systems.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction: Introductory to lab equipment's and basic components	1	2
Single Phase Transformers (Determine Equivalent circuits)	1	2
O.C and S.C Test on Single phase transformers	1	2
Voltage and current measured on single phase A.C circuit	1	2
Active Power and frequency Measured on AC Circuit	1	2
Magnetization and Load characteristic on D.C Generator	1	2
The CEM-U coupled to a magnetic powder brake	1	2
EXAM 1	1	2
Three Phase Transformers	1	2
Measurement of No load ratio of the Three Phase Transformers	1	2
Introduction to Induction motor	1	2
Completion of manuals	1	2
Exam 2	1	2
Lab-Report 1	1	2
Lab-Report 2	1	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	15	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week. NO

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
   - A brief summary of the knowledge or skill the course is intended to develop;
   - A description of the teaching strategies to be used in the course to develop that knowledge or skill;
   - The methods of student assessment are be used in the course to evaluate learning outcomes in

the domain concerned.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1			
1.2			
1.3			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1	An ability to function on multidisciplinary teams	Debate, small group work, whole group and small group discussion, research activities, projects and brainstorming	Behavior observation and presentations
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	Lab manual Assessment	Monthly	5%
2	Seminar	10th week	5%
3	Lab Report	14th week	10%
4	Exam 1	8th week	20%

5	Exam 2	13th week	20%
6	Final Exam	16th week	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
Student can access the concern staff during office hours; each student can take the consultation and advice.

Day	Time
Monday	8:00-10:00
Tuesday	1:00-2:00
Wednesday	9:00-10:00

E. Learning Resources

1. List Required Textbooks
Electric Machinery and Transformers by Irving Kosow-2007

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
Laboratory area is small.

2. Computing resources (AV, data show, Smart Board, software, etc.)

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

6. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
- Completion course evaluation questionnaire,
- Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

7. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

8. Processes for Improvement of Teaching
1. Plan: The instructor will develop a strategy for teaching.
2. Do: The strategy will be implemented for one semester.
3. Study: The experiences of the students will be collected through a survey.
4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

9. Processes for Verifying Standards of Student Achievement
Check marking of a sample of examination papers.

10. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.

- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 288

Course Specifications

Institution: Majmaah University	Date of Report: 3-12-2014
College/Department : Engineering/ Electrical	

A. Course Identification and General Information

1. Course title and code: Principles of Electric Machines EE 288
2. Credit hours: 3
3. Program(s) in which the course is offered: Electrical Engineering Program
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Spring semester, sophomore year
6. Pre-requisites for this course (if any): EE 202 (Electric Circuit Analysis)
7. Co-requisites for this course (if any): None
8. Location if not on main campus: Main Campus

9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course?

By the end of the course, student should:

1- Understand the construction, connections, principle of operation of single-phase, three-phase and autotransformers.
2- Understand the Equivalent circuits representing the transformers.
3- Understand how to calculate the performance characteristics (voltage regulation and efficiency) of the transformers.
4- Understand the fundamentals of the ac machines such as the concept of the rotating flux, the induced voltage and torque.
5- Understand the construction, principle of operation, modeling of the synchronous generator.
6- Understand how to calculate the voltage regulation of the alternator using the phasor diagram or the complex numbers
7- Understand the power-delta relation and how to determine the steady state stability of the alternator.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

1- Apply modern techniques and tools to simulate electrical machines systems.
2- Use software such as Matlab and Pscad to analyze the performance of electric machines.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
The construction, connections, principle of operation of single-phase, three-phase and autotransformers	1, 2	8
The performance characteristics (voltage regulation and efficiency) of the transformers	3, 4	8
The fundamentals of the ac machines such as the concept of the rotating flux, the induced voltage and torque.	5, 6	8
The construction, connections, principle of operation of single-phase, three-phase and autotransformers	7, 8	8
The construction, principle of operation, modeling of the synchronous generator.	9, 10	8
Calculation the voltage regulation of the alternator using the phasor diagram or the complex numbers.	11, 12	8
The construction and principle of operation of the induction motor.	13 , 14	8
Induction motor starting and speed control.	15	4

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

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

3. Additional private study/learning hours expected for students per week. 0

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20
2	Second Exam	12	20
3	Project	10	10

4	Quiz and homework	-	10
5	Final Exam	16	40

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
The office hours for this course is 2 hours, in which the students can ask and discuss the topics and details they haven't understand in the lecture and tutorial main time. These hours can be arranged according to the student needs.

E. Learning Resources

1. List Required Textbooks
S. J. Chapman, "Electric Machinery Fundamentals", McGraw Hill.

2. List Essential References Materials (Journals, Reports, etc.)
SARMA, "Electric Machines-steady state theory and dynamic performance"

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
Electric Machinery , A. E. Fitzgerald, Charles Kingsley Jr., and Stephen Umans, McGraw Hill

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
Lecture rooms

2. Computing resources (AV, data show, Smart Board, software, etc.)
None

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)
Internet, Computers and Data show

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

3. Processes for Improvement of Teaching
   1. Plan: The instructor will develop a strategy for teaching.
   2. Do: The strategy will be implemented for one semester.
   3. Study: The experiences of the students will be collected through a survey.
   4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)
Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
   - Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
   - A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.

- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 307

Course Specifications

Institution: Majmaah University	Date of Report: 28/12/ 2014
College/Department : College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Analog and Digital Measurements EE 307			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: fall semester, junior year			
6. Pre-requisites for this course (if any): Logic Design EE 208			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus:			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? The course will focus of the kind of errors in measurements and how to reduce their effect. Either, to calculate errors and design more accurate equipment and to get basic information about constructions of electrical meters, such as AC and DC ammeter, voltmeter and ohmmeter; and to understand the use of oscilloscope. The goal of this course is to be familiarized with transducers and sensors and their application in the industry.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) Show in class the measure instruments studied (Darsoval meter, AC and DC ammeter, voltmeter and ohmmeter). Show in class the different types of transducers and sensors. Show in class the different circuits constituting the oscilloscope and the spectrum analyzer.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Introduction	1	4
Measurement Fundamentals	1	4
Measurement Errors and Statistical analysis	1	4
Measurement units and standards	1	4
DC indicating Meters	1	4
AC indicating Meters	1	4
Ohmmeter	1	4
Oscilloscope	1	4
Amplifiers and differences	1	4
Attenuators.	1	4
Transducers, Sensors.	1	4
Spectrum analyzer.	1	4
Digital measurements (Digital voltmeter).	1	4
Liquid Crystal Displays (LCD)	1	4
Grounding shielding and noise.	1	4

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

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

3. Additional private study/learning hours expected for students per week.	6

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2			
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	Homework and micro project	3rd , 5th, 9th and 12th	10
2	Quizzes	4th , 7th, 11th and 13th	10
3	Exams (First and Second)	6th and 10th	20 Each

4	Final Exam	16th	40

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Four office hours are dedicated for student in each week.

E. Learning Resources

1. List Required Textbooks Jones and Chin, "Electronic Instrumentation and measurements." Logic Design, 2000.
2. List Essential References Materials (Journals, Reports, etc.) David A. Bell, 'Electronic Instrumentation and measurements" 2nd edition, Prentice Hall. 1994.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) None
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. None

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Classroom
2. Computing resources (AV, data show, Smart Board, software, etc.) A laptop for the instructor.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) None

G Course Evaluation and Improvement Processes

6. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
7. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
8. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
9. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

10. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and

planning for improvement.

EE 308

Course Specifications

Institution: Al-Majmaah University	Date of Report: 3/12/2014
College/Department: College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Measurement and Control LAB EE 308
2. Credit hours : 1
3. Program(s) in which the course is offered: Electrical Engineering (General)
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Spring semester, sophomore year
6. Pre-requisites for this course (if any): None
7. Co-requisites for this course (if any):Automatic Control System EE 341 and Analog and Digital Measurement EE 307
8. Location if not on main campus:
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? • Provide the "hands-on" experience with Measurements and control. • Practicing the measurements and control of many industrial processes via interfacing with PC supported by a computer Package that suite the Microprocessor control and measurements such as LabVIEW.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) Using the D2L

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Measurement of Pressure, Torque, Load, Strain, Displacement and Air Velocity	2	4
Temperature Transducer	1	2
Hall effect sensor	1	2
Infrared transmitter and receiver	1	2
Proximity sensors	1	2
Force sensor	1	2
Ultrasonic transmitter and receiver	1	2
Temperature transducer	1	2
Set point error detector and power amplifier	1	2
PID and On/OFF	1	2
Automatic light control	1	2
Automatic temperature control	1	2
Pressure Control	1	2
Flow Control/ Level Control	1	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week. 2

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			
2.0	Cognitive Skills		

2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Project (Hardware+ Software)+ Workbook	13	20%
4	Final Exam	15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) • All students are distributed among academic advisor • Advising information are included in the student guide and in the college website • Every advisor assignees 3 office hour for supporting the student academic counseling

E. Learning Resources

1. List Required Textbooks • Lab manual provided in the lab
2. List Essential References Materials (Journals, Reports, etc.) • James A. Blackburn: "Modern Instrumentation for Scientists and Engineers", Springer; 1 edition, November 21, 2000.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) • Alan S Morris: "Measurement and Instrumentation Principles", Third Edition, Butterworth-Heinemann; 3 edition, April 10, 2001
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) www.youtube.com www.allaboutelectronics.com D2L e-Learning Platform
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

2. Computing resources (AV, data show, Smart Board, software, etc.) Personal Computer Data Show Smart Board
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) N.A

G Course Evaluation and Improvement Processes

11. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
12. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
13. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
14. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

15. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 314

Course Specifications

Institution: Majmaah University	Date of Report June 4, 2014: June 4, 2014
College/Department: College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Analog & Digital Electronic Circuits EE 314			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Spring semester ,Junior year			
6. Pre-requisites for this course (if any): Basic Electronic Devices and Circuits EE111			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus: College of Engineering			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	97%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other (Online References)	X	What percentage?	3%

Comments:
Some topics have been supported by online video presentations as in the manufacturing process of semiconductor devices presented from well-known manufacturing companies.

B Objectives

1. What is the main purpose for this course? The main purposes of the course are: understanding of how to perform low and high frequency analysis of BJT and MOS amplifiers, understanding the working principle of operational amplifiers and power amplifiers, understanding of linear digital Integrated circuits and their applications, and understanding the basics of digital circuits (MOS & BJT).
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) • The use of CAD simulation to practice the theory presented in the course. • Assigning one project to design, simulate and build an analog and/or digital circuit. For example, a project on designing Class A amplifier. • Showing some online videos about Semiconductor devices fabrication from a well-known manufacturing companies. Thus, the complex manufacturing process will be easier to understand and that will link the theoretical physical structure with the practical manufacturing process.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction and background	1	4
Frequency Response	2	8
Operational Amplifiers & Active Filters	3	12
Power Amplifiers	2	8
Digital ICs	2	8
Feedback & Oscillators	2	8
Digital Circuits	2	8

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

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

3. Additional private study/learning hours expected for students per week.	6
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports

4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	Quizzes	4th , 6th, 9th, 11th and 13th	10%
2	Exams (First and Second)	6th and 10th	30%
3	Final Exam	17th	40%
4	Technical Report for the micro project	12th	5%
5	Oral presentation for the micro project	13th	2%
6	Demonstration for the micro project	13th	3%
7	Homework	3rd , 5th, 7th, 9th, 11th, 13th	5%
8	Participation and group exercises	Each week	5%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Office Hours are dedicated for student. The office hours are on two different days with a total of two hours in each week.

E. Learning Resources

1. List Required Textbooks Paul Horowitz, The Art of Electronics, Winfield Hill, 2nd ed, 1996.
2. List Essential References Materials (Journals, Reports, etc.) A. Sedra and K. Smith, "Microelectronic Circuits", 9th Ed.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) None
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) http://wps.prenhall.com/chet_boylestad_electronic_9/ http://www.youtube.com/watch?v=UvluuAIiA50 http://www.youtube.com/watch?v=35jWSQXku74
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. MultiSim Software or any CAD software that students are able to use and can get access to it through the labs in the university. However, these facilities are still not available.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Labs equipped with computers and appropriate engineering software.

2. Computing resources (AV, data show, Smart Board, software, etc.) • A Projector and a laptop in the classroom for the instructor. • A working Smart Boards
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) • Students don't have access to fully licensed CAD software. I suggest to have a computer lab for EE students where different CAD software installed such as: Multisim, PSPICE, ADS, etc, • Need transistors with their CAD models. This will allow students to compare simulation results with the experiment results. Such project shows students the difference between ideal

and practical world along with the possible limitations of the ideal models.
- Books for student's use in the main library.

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
   Faculty Peer Assessment
3. Processes for Improvement of Teaching
   5. Plan: The instructor will develop a strategy for teaching.
   6. Do: The strategy will be implemented for one semester.
   7. Study: The experiences of the students will be collected through a survey.
   8. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement
   Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
   - Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
   - A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
   - Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 315

Course Specifications

Institution: Al-Majmaah University	Date of Report: 17/12/2014
College/Department: College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

2. Course title and code: Analog and Digital Electronic Circuits LAB EE 315
2. Credit hours : 1
3. Program(s) in which the course is offered: Electrical Engineering (Communication and Electronics)
4. Name of faculty member responsible for the course: Engineer
5. Level/year at which this course is offered: Spring semester ,sophomore year
6. Pre-requisites for this course (if any): None
7. Co-requisites for this course (if any): EE 313 Analog and Digital Electronic Circuits
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course?
   - Emphasized the concepts taught in the analog and digital electronic course.
   - To gain the laboratory benefits of modeling an actual Ideal and Non-Ideal Op-amp circuits and its applications.
   - Analysis of different analog and digital electronic circuits such as BJT, CMOS, TTL and ECL.
   - Using PSpice program in analysis of the different electronic circuits.
   - Emphasizing the concepts taught in the theoretical courses, and preparing them to do experimental work in their graduation project when necessary

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
Using the D2L

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Orientation	1	2
Ideal OP-Amp characteristics	1	2
Ideal Op-amp Application	1	2
Non ideal op-amp characteristics	1	2
Non ideal op-amp applications	2	4
Oscillators, Schmitt trigger and unstable multi-vibrator	2	4
CMOS inverter characteristics	2	4
TTL inverter characteristics	2	4
ECL characteristics	2	4
Revision	1	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	

3. Additional private study/learning hours expected for students per week. 2

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct	Lecture, small group	Standardized exams,

	experiments, as well as to analyze and interpret data	work, , research activities, lab demonstrations, projects and individual presentation	oral exams, micro projects
2.2			
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Project (Hardware+ Software)+ Workbook	13	20%
4	Final Exam	15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
   - All students are distributed among academic advisor
   - Advising information are included in the student guide and in the college website
   - Every advisor assignees 3 office hour for supporting the student academic counseling

E. Learning Resources

1. List Required Textbooks
Lab manual is available in the lab

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
   - Jaeger, R.C," Microelectronic Circuit Design, 2nd Edition", McGraw Hill,2004

• Herniter, M.E., Schematic Capture with Cadence PSpice, Prentice-Hall, 2nd Edition, 2003, ISBN 0-13-048400-8
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) www.allaboutelectronics.com D2L e-Learning Platform
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. None

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 2D025

2. Computing resources (AV, data show, Smart Board, software, etc.) Personal Computer Data Show Smart Board
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) SPICE software for ten computer

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 322

Course Specifications

Institution: Majmaah University	Date of Report: 10/12/2014
College/Department: Engineering/Electrical	

A. Course Identification and General Information

1. Course title and code: Communications Principles EE 322
2. Credit hours: 3
3. Program(s) in which the course is offered: Electrical Engineering
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Fall semester ,junior year
6. Pre-requisites for this course (if any): Signals and Systems Analysis EE221 + Statistics and Probability STAT 201
7. Co-requisites for this course (if any): None
8. Location if not on main campus:
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? Understand the basic concept of information. Understand how information is put into electronic for storage and delivery. Have detailed understanding of amplitude and frequency modulation and demodulation methods including synchronous demodulation, nonlinear demodulation and phase-locked loops (PLL). Have an understanding of design considerations for multiple access/use spectrum and multiplexing. Have detailed understanding of digital communication basics. Understand basic principles of Gaussian noise processes and their use/utility in communication system design.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) - Discussing all the topics of the course at the beginning of the semester. - Encourage the student to use the Internet and encyclopedias to get more information about these topics. - Let the student using the Internet to do a project to develop their knowledge and skills.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1 Topics to be Covered		
List of Topics	No of Weeks	Contact hours
Overview and Basic elements of communication systems	1	4
Double Sideband Modulation (DSB), Amplitude modulation (AM)	1	4
Single Sideband Modulation (SSB), Vestigial Sideband Modulation (VSB)	1	4
Frequency Translation, Superhetrodin Receiver	1	4
Angle Modulation, Frequency Modulation (FM)	1	4
Frequency-division multiplexing (FDM) and Stereo FM Receiver	1	4
Correlation and Spectral Density	1	4
Random Variables	1	4
Random Process and Power Spectral Density	1	4
Random Processes and Linear Systems	1	4
Noise in Analog Systems	1	4
Sampling; Pulse Modulation (PAM, PWM, PPM)	1	4
TDM; Pulse Code Modulation (PCM); DPCM and DM;	1	4
Regenerative Repeaters; Advantages of Digital Communication; Line Coding (Binary Signaling)	1	4
Introduction to Digital Modulation (ASK, FSK, PSK).	1	4

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

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

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

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3			
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	1st Exam	Week 6	20%
2	Participation & Attendance	All along	10%
3	Quizzes & Homework	All along	10%
4	2nd Exam	Week 11	20%

5	Final	Week 15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) 1. Weekly office hours (1 hours per week) 2. Exam error analysis in class 3. Feedback for each student 4. Providing weekly guidelines on students' overall performance 5. Teacher's web page.

E. Learning Resources

1. List Required Textbooks S. Haykin, An Introduction to Digital and Analog Communications, John Wiley, 2007.
2. List Essential References Materials (Journals, Reports, etc.) S. Haykin, Communication Systems, John Wiley, 2001.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) B P Lathi, Modern Digital and Analog Communications Systems, Oxford University Press, 1998.
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

2. Computing resources (AV, data show, Smart Board, software, etc.) computer - projector system- smart board
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Data show to facilitate going over student papers in class

G Course Evaluation and Improvement Processes

6. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
7. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
8. Processes for Improvement of Teaching 5. Plan: The instructor will develop a strategy for teaching. 1. Do: The strategy will be implemented for one semester. 2. Study: The experiences of the students will be collected through a survey. 3. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
9. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.
10. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 323

Course Specifications

Institution: Majmaah University	Date of Report: 16/12/2014
College/Department : Engineering/Electrical	

A. Course Identification and General Information

1. Course title and code: Communication Principles Lab EE 323			
2. Credit hours: 1			
3. Program(s) in which the course is offered: Electrical Engineering (All Programs)			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Fall semester, junior year			
6. Pre-requisites for this course (if any): Fundamentals of Electrical Circuits EE 322			
7. Co-requisites for this course (if any):None			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom		What percentage?	90%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	10%
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:
E-learning includes basic communication software and related websites

B Objectives

1. What is the main purpose for this course?
   - Summary of the main learning outcomes for students enrolled in the course.
   - To develop skills in component-level circuit construction, as well as modular interconnection of subsystems, needed to build physical communications systems.
   - To develop skills in the use of industry-relevant electronic test and measurement equipment typically encountered by a design engineer.
   - To understand the functionality of analog communications modulation and demodulation by building, testing and analyzing circuits.
   - To study and implement essential subsystems such as carrier acquisition and recovery, receiver front-end and super heterodyne receiver architectures.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
   3- Adding more PC and related boards in order to occupy larger number of students
   4- Increase using related websites in order to implement, design, and simulate basic communication techniques.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1 Topics to be Covered

List of Experiments	No of Weeks	Contact hours
Introduction to Lab (familiarization)	1	2
Signals in the time and frequency domain	1	2
Amplitude Modulation AM, DSB ,SSB	3	6
Amplitude Modulation with suppressed carrier, SSB,DSB generation using an IQ modulator	3	6
Frequency Modulation FM, Frequency Modulation generation using an IQ modulator	4	8
Phase Modulation	2	4
Implementation, testing mini project of students team work	1	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week. 2

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Quizzes	During Semester	5%

4	Lab Reports	During Semester	10%
5	Mini Project	15	5%
6	Final Exam	15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) e- Weekly office hours f- Meetings and discussions on Blackboard/D2L

E. Learning Resources

1. List Required Textbooks
2. List Essential References Materials (Journals, Reports, etc.) EE 323 Lab manual (Modulation and Coding Principles 53-230) that introduced by the company which installed the lab (Feedback)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Principles of Communication J.S.Chitode
1. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) MIT provides online VIDEO lectures on principles of communication that might be helpful for students who want to extend their knowledge in this field http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-450-principles-of-digital-communications-i-fall-2006/
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. Discovery 53-230 Software, Version 2.1

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 15 Seats in the laboratory, Workstations, PCs, experiments toolkit.

2. Computing resources (AV, data show, Smart Board, software, etc.) 1- Smart Board 2- Labtop 3- Projector
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) 1- Workstations 2- Personal Computers that have the company software installed (Discovery 53-230 Software, Version 2.1) on every single PC attached with the related board (Real Time Access 92-200) 3- Experiments toolkit 4- Antennas

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 4. Plan: The instructor will develop a strategy for teaching. 5. Do: The strategy will be implemented for one semester. 6. Study: The experiences of the students will be collected through a survey. 7. Act: Effective teaching strategies will be implemented and revised as more experiences are

gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 324

Course Specifications

Institution :Majmaah University	Date of Report: 4\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Digital Signal Processing EE 324
2. Credit hours: 3
3. Program(s) in which the course is offered. Electrical Engineering (Communications and Electronics Track)
4. Name of faculty member responsible for the course
5. Level/year at which this course is offered: Spring semester ,junior year
6. Pre-requisites for this course (if any):EE 221 Signals and Systems Analysis
7. Co-requisites for this course (if any):None
8. Location if not on main campus:
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? This course is aimed to provide undergraduate students with knowledge about digital signal processing techniques, skills and the ability to analyze Discrete signals and systems and to apply appropriate mathematical techniques and skills needed in the design digital filters.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) None

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
	No. of Weeks	Contact Hours
Introduction to digital signal processing and applications	1	4
Digital processing of continuous-time signals	1	4
Discrete-time signals and systems	1	8
Convolution and correlation	1	4
z-Transform	2	8

Discrete-time LTI systems in Transform Domain	2	8
Basic digital filter structures	1	4
IIR digital filter design;	2	8
FIR digital filter design	2	8
Discrete-time Fourier transform	1	4
Fast Fourier Transform	1	4

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

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

3. Additional private study/learning hours expected for students per week. **2**
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations,	Standardized exams, oral exams, micro projects

		projects, case studies, memorization and individual presentation	
4.2			
4.3			
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Final Exam	15	40%
4	Group Project (Simulation)	13	10%
5	Quizzes and Homework	During semester	10%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) 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 counseling

E. Learning Resources

1. List Required Textbooks Sanjit K Mitra, Digital Signal Processing, A computer based approach, 3rd Edition, McGraw Hill, 2006.
2. List Essential References Materials (Journals, Reports, etc.) None
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) - Ashok Ambardar, Analog and Digital Signal Processing, 2nd Edition, Thomson Publishing, 2002. - E.C. Ifeachor, and B.W. Jervis, Digital Signal Processing – A Practical Approach, 2nd Edition, Prentice Hall, 2002.
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) D2L e-learning platform
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 25 seats in the classroom.

2. Computing resources (AV, data show, Smart Board, software, etc.)

Data show and Laptop
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

6. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
7. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
8. Processes for Improvement of Teaching 8. Plan: The instructor will develop a strategy for teaching. 1. Do: The strategy will be implemented for one semester. 2. Study: The experiences of the students will be collected through a survey. 3. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
9. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

10. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 325

Course Specifications

Institution: Majmaah University	Date of Report: 10/12/2014
College/Department: Engineering/Electrical	

A. Course Identification and General Information

1. Course title and code: Digital Communications EE 325
2. Credit hours: 3
3. Program(s) in which the course is offered: Communications and Electronics track
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Spring semester, junior year
6. Pre-requisites for this course (if any): Communication Principles EE322
7. Co-requisites for this course (if any): None
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course?
   1. Learn the fundamental concepts of a digital telecommunication system.
   2. Characterize sampling and quantization of analog signals to generate pulse modulation.
   3. Analyze baseband transmission of digital signals.
   4. Study the geometric representation of signals.
   5. Analyze and design baseband digital communications techniques.
   6. Describe the architecture of common digital communication systems.
   7. Determine the bit error rate of basic modulation formats when operating in white Gausian Noise environments.
   8. Determine the advantages of error correcting codes on the performance of digital communication systems.
   9. Design digital communication systems to operate in noisy environments and to achieve basic system specifications on bandwidth usage, data rate, and error rate performance.
   10. Understand basic concepts of source coding.

2. Briefly describe any plans for developing and improving the course that are being implemented.
- Discussing all the topics of the course at the beginning of the semester.
- Encourage the student to use the Internet and encyclopedias to get more information about these topics.
- Let the student using the Internet to do a project to develop their knowledge and skills.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1 Topics to be Covered

List of Topics	No of Weeks	Contact hours
Basic elements of communications systems	1	4
Review of probability theory	1	4
Base-band pulse transmission (matched filters, inter-symbol interference)	2	8
Eye pattern, Nyquist criteria; Equalization	2	8
Digital Pass-band transmission: Coherent PSK, FSK, QPSK, MSK; Non-coherent orthogonal modulation	3	12
Power spectra and bandwidth efficiency of binary and quaternary modulation schemes	2	8
Information theory: Mutual information and channel capacity	2	8
Source coding; Error control coding (channel coding).	2	8

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

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

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

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	1st Exam	Week 6	20%
2	Participation & Attendance	All along	10%
3	Quizzes & Homework	All along	10%

4	2nd Exam	Week 11	20%
5	Final	Week 15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
    6. Weekly office hours (1 hours per week)
    7. Exam error analysis in class
    8. Feedback for each student
    9. Providing weekly guidelines on students' overall performance
    10. Teacher's web page.

E. Learning Resources

1. List Required Textbooks
S. Haykin, An Introduction to Digital and Analog Communications, John Wiley, 2007.

2. List Essential References Materials (Journals, Reports, etc.)
S. Haykin, Communication Systems, John Wiley, 2001.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
S. Haykin, Communication Systems, John Wiley, 2001.
B P Lathi, Modern Digital and Analog Communications Systems, Oxford University Press, 1998.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

2. Computing resources (AV, data show, Smart Board, software, etc.)
computer - projector system- smart board

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)
Data show to facilitate going over student papers in class

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
    - Completion course evaluation questionnaire,
    - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

3. Processes for Improvement of Teaching
    4. Plan: The instructor will develop a strategy for teaching.
    5. Do: The strategy will be implemented for one semester.
    6. Study: The experiences of the students will be collected through a survey.
    7. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement
Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
    - Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.

- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 341

Course Specifications

Institution: Majmaah University	Date of Report: 3\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Automatic Control Systems EE 341
2. Credit hours: 3
3. Program(s) in which the course is offered: Electrical Engineering
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Fall semester ,junior year
6. Pre-requisites for this course (if any): Signals and Systems Analysis EE 221
7. Co-requisites for this course (if any): None
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? This course is intended to lay a foundation for designing advanced control system. This course will help the students to understand mathematical modeling of physical systems, be able to understand time domain specification and steady state error and get familiar with the concept of Frequency domain analysis tool.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) There is no proposed text book in the course descriptions. I would like to propose following text book for EE341 course: Modern Control Engineering by Ogata, 5th Edition, Prentic Hall

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Control Systems- Closed-Loop Control versus Open-Loop Control, Modeling of Dynamic Systems: Transfer Function and Impulse-Response Function	1	4
Modeling of Mechanical and Electrical, Fluid and Thermal Systems	3	12
Signal Flow Graphs	1	4
Transient and Steady-State Response Analyses: First, Second and Higher-Order Systems	2	8
Routh's Stability Criterion	1	4
Root-Locus Analysis: Root-Locus Plots- Positive-Feedback Systems- Conditionally Stable Systems- Control Systems Design by the Root-Locus Method	2	8
Frequency-Response Analysis: Bode Diagrams- Polar Plots- Nyquist Stability Criterion- Stability Analysis- Closed-Loop Frequency Response	3	12
Control Systems Design by Frequency Response: Lead Compensation- Lag Compensation- Lag-Lead Compensation	2	8

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	0	0	0	60
Credit	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week. On average two hours per week needed to prepare the required assignments, project of the course	2
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1	An ability to function on multidisciplinary teams	Debate, small group work, whole group and small group discussion, research activities, projects and brainstorming	Behavior observation and presentations
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	12	20%
3	Final Exam	15	40%
4	Quizzes and Homework	During	20%

		semester	

D. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) 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 Katsuhiko Ogata. Modern Control Engineering 5th edition Benjamin C. Kuo. Automatic Control System 9th editio
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Norman S. Nise Control systems Engineering 4th edition
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 25 seats in the classroom.

2. Computing resources (AV, data show, Smart Board, software, etc.) - Laptop
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

6. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
7. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
8. Processes for Improvement of Teaching 8. Plan: The instructor will develop a strategy for teaching. 1. Do: The strategy will be implemented for one semester. 2. Study: The experiences of the students will be collected through a survey. 3. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
9. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.
10. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 360

Course Specifications

Institution: Majmaah University	Date of Report: 4\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Microprocessors EE 360
2. Credit hours: 3
3. Program(s) in which the course is offered: Electrical Engineering
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered Spring semester, senior year
6. Pre-requisites for this course (if any) EE 111 (Basic Electronic Devices and Circuits) & EE 208 (Logic Design)
7. Co-requisites for this course (if any):None
8. Location
9. Mode of Instruction (mark all that apply)

a. Traditional classroom		What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? To Introduce the Basic Concepts Related to Architecture and Programming Microprocessor Systems through applying Hardware and Software Design and Implementation Process.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) 1- Changing the textbook to meet the development of modern microprocessor. 2- Changing in the contents parallel with changing the textbook to introduce new Architecture and design approaches.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Basic microprocessor architecture	2	8
Timing and signaling for interface applications and control	2	8
Instruction execution cycles and sequencing	2	8
Interrupts, memory systems design and organization	2	8
Basic peripheral interfacing and interface design	2	8
Software topics including assembly language programming	2	8
Interrupt handlers, fast arithmetic algorithms and hardware description languages (HDL).	3	12

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	0	0	0	60
Credit	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week. On average two hours per week needed to prepare the required assignments and Homework	2
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for	Lecture, research activities, lab	Exams, quizzes and reports

	engineering practice.	demonstrations, projects, case studies, memorization and individual presentation	
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Final Exam	15	40%
4	Quizzes and Homework	During semester	20%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
    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
Jon Stokes: "Inside the Machine: An Illustrated Introduction to Microprocessors and Computer Architecture", No Starch Press; 1 edition November 30, 2006.

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
Richard Detmer: " Introduction to 80x86 Assembly Language and Computer Architecture", Jones & Bartlett Publishers; 2 edition, February 26, 2009.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
25 seats in the classroom.

2. Computing resources (AV, data show, Smart Board, software, etc.)
- Data show
- Laptop

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
    - Completion course evaluation questionnaire,
    - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 361

Course Specifications

Institution: Majmaah University	Date of Report: 11-12-2014
College/Department: Engineering College/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Microprocessor Lab. EE 361
2. Credit hours: 1
3. Program(s) in which the course is offered: General Course
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Fall semester, junior year
6. Pre-requisites for this course (if any): Microprocessor EE 360
7. Co-requisites for this course (if any): None
8. Location if not on main campus: Main Campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? Enable the students to be familiarize and be practical in understanding of Microprocessor Architecture, Utilization, Design, Construction and testing of microprocessor
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) Encouragement of Internet use for further detail and explanation of different topics. Be pratical with the microprocessor 8086 tool kit.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Introduction to lab components and 8086 tool kit	1	2
Function of Microprocessors	1	2
Interfacing	1	2
Memory Organization	2	4
Machine Cycles	1	2
LED Experiment	1	2
Display on 8086 microprocessor kit	2	4
Step motor	1	2
Integration of devices with 8086 microprocessor kit	2	4
Assembly Language Introduction	1	2
Emulator 8086 and programs	2	4

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week.	2
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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component,	Lecture, small group	Reports and

	or process to meet desired needs within realistic constraints	work, , research activities, lab demonstrations, projects and individual presentation	presentations
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

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

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Provided with office hours at least 3 per week

E. Learning Resources

1. List Required Textbooks Digital Design for laboratory, Hardware and Simulation(Using Logicworks) 3rd Edition, Daniel J.
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Digital Design for laboratory, Hardware and Simulation(Using Logicworks) 3rd Edition, Daniel J. Lab Manuals (MDA 8086 Manual)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

2. Computing resources (AV, data show, Smart Board, software, etc.) Data show Desktop Computers Software (e.g. MDA 8086, emu 8086)
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 1. Study: The experiences of the students will be collected through a survey. 2. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 372

Course Specifications

Institution Majmaah University	Date of Report 2/12/2014
College/Department College of Engineering/ Department of Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Power Systems Analysis EE 372
2. Credit hours 3
3. Program(s) in which the course is offered. :Electrical Engineering (Power & Machines Track)
4. Name of faculty member responsible for the course
5. Level/year at which this course is offered : Spring semester ,junior year
6. Pre-requisites for this course (if any): Principles of Electric Machines EE 288) Fundamentals of Electrical Power Systems EE 270
7. Co-requisites for this course (if any): None
8. Location if not on main campus: College of Engineering
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	Yes	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? The student should be able to : 1- Be acquainted with the main components of a Power System 2- Understand the different methods used to represent and analyze the power system in normal and abnormal (faulty) steady state conditions 3- Solve problem of an existing power system 4- Think creatively for solving different types of Power System 5- Apply skills when dealing with a given power system
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) 1. Apply modern techniques and tools to carry out Power System Analysis 2. Use the help of software's such as Matlab, ETAP etc. to carry out Load Flow studies and Fault Analysis.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Per Unit system ; Power System Matrices	1	4
Bus Admittance Matrix ; Bus Impedance Matrix	2	8
Load Flow Analysis by Gauss-Seidel Method and Newton-Raphson Method	3	12
Economic Operation of Generators : by neglecting transmission losses and by including transmission losses	2	8
Symmetrical Faults : Thevenins method and Bus Impedance Matrix method	2	8
Unsymmetrical Faults : Thevenins and Bus impedance matrix method	3	12
Stability Analysis : steady state stability, transient stability and equal area criterion	2	8

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	0	0	0	60
Credit	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week.	6

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations

2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Mid-Term	6	20%
2	Second Mid-Term	12	20%
3	Final Exam	15	40%
4	Micro-Project	7	10%
5	Quiz	11	10%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

1. Three office hours for supporting the student academic counseling.
2. All students are distributed among academic advisors
3. Advising information are included in the student Guide and in the College website

E. Learning Resources

1. List Required Textbooks

Saadat, " Power System Analysis", McGraw Hill, 2nd edition

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

Grainger and Stevenson, "Power System Analysis", McGraw Hill

Glover and Sarma, "Power System Analysis and Design", PWS, 3rd edition

D P Kothari and I J Nagrath, "Modern Power System Analysis", Mc Graw Hill, 3rd edition
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) www.nptel.ac.in, www.faculty.mu.edu.sa/praveen.r
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) • Lecture room: Available. • Laboratory: Available.
2. Computing resources (AV, data show, Smart Board, software, etc.) • LCD Projector Available • Smart Board Available
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Check marking of a sample of examination papers.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 373

Course Specifications

Institution: Majmaah University	Date of Report : 25-12-2014
College/Department : College of Engineering/Department of Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: ELECTRIC POWER AND MACHINES LAB-II EE 373
2. Credit hours: 1
3. Program(s) in which the course is offered: Electrical Engineering/Power Track
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Spring semester ,junior year
6. Pre-requisites for this course (if any) : None
7. Co-requisites for this course (if any): Electric Power System Analysis EE 372, Electric Machines EE 389
8. Location if not on main campus College of Engineering
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	90%
b. Blended (traditional and online)		What percentage?	0 %
c. e-learning	■	What percentage?	10%
d. Correspondence		What percentage?	0%
f. Other		What percentage?	0%

Comments:

B Objectives

3. What is the main purpose for this course?
   - Students acquire basic fundamentals in this Year, the program prepares graduates for career paths in the electrical Machine Design and power system faults.
   - Students can be able to find the various values for the components which is present in the laboratory.
   - Students learn how to apply practical experience, knowledge, mathematics, computer skills, and to find and evaluate solutions.
   - Students acquire basic fundamentals during the first two levels. In Levels 8, students develop the skills required by many of the more sophisticated areas of these industries.
   - The curriculum covers core courses in electric machines principles.
   - All students entering into the program are expected to have use their devices to enhance their learning experience, obtain and work with course materials, participate in collaborative and learning environments and become skilled, confident users of the technologies used within an educational environment and workplace.

4. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
   After Learning the course (Electrical Machines) the students can develop and improve the :
   - Using D2L for uploading assignment, project and other related materials.
   - Changing the textbook to cover new hot topics in the power and machines field.
   - Changing in the contents by adding specific modern power systems systems.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction: Introductory to lab equipment's and basic components	1	2
Symmetrical and unsymmetrical fault analysis	1	2
Transient stability simulation; Active and reactive power generator control; Characteristics of isolated and interconnected systems	1	2
Load-flow simulation	1	2
Equivalent circuit of transformers	1	2
Three-phase connections and harmonic problems.	1	2
Equivalent circuit of three-phase and single-phase induction motors	1	2
EXAM 1	1	2
Starting of single-phase induction motors.	1	2
Load testing of induction motors.	1	2
Terminal characteristics of dc machines.	1	2
Completion of manuals	1	2
EXAM 2	1	2
Revision.	1	2
Revision	1	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30

Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week. NO
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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1	An ability to function on multidisciplinary teams	Debate, small group work, whole group and small group discussion, research activities, projects and brainstorming	Behavior observation and presentations
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			

4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	Lab manual Assessment	Monthly	5%
2	Seminar	10th week	5%
3	Lab Report	14th week	10%
4	Exam 1	8th week	20%
5	Exam 2	13th week	20%
6	Final Exam	16th week	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
Student can access the concern staff during office hours; each student can take the consultation and advice.

Day	Time
Monday	8:00-10:00
Tuesday	1:00-2:00
Wednesday	9:00-10:00

E. Learning Resources

1. List Required Textbooks
- Saadat, “Power System Analysis”, McGraw Hill
- S. J. Chapman, “Electric Machinery Fundamentals”, McGraw Hill

2. List Essential References Materials (Journals, Reports, etc.)
- Grainger and Stevenson, "Power System Analysis", McGraw Hill
- SARMA, "Electric Machines Steady State Theory and Dynamic Performance". WEST
- Laboratory Manual will be distributed by the Lecturer.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

2. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
Laboratory area is small.

2. Computing resources (AV, data show, Smart Board, software, etc.)

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

6. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
- Completion course evaluation questionnaire,
- Classroom observations to measure student behavior through how well the student groups are

interacting in-class activity and how well the in-class activity went.
7. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
8. Processes for Improvement of Teaching 5. Plan: The instructor will develop a strategy for teaching. 6. Do: The strategy will be implemented for one semester. 1. Study: The experiences of the students will be collected through a survey. 2. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
9. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

10. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 374

Course Specifications

Institution: Majmaah University	Date of Report: 28/12/ 2014
College/Department : College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Power Electronics EE 374			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering, Power and machine track			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Spring semester, junior year			
6. Pre-requisites for this course (if any): Principles of Electric Machines EE 288			
7. Co-requisites for this course (if any)			
8. Location if not on main campus: College of Engineering			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?

The main objectives of this course are:

- Teaching the students the basics and concepts related to the semiconductor devices and converter circuits used in the power applications.
- Acquainting the students the ability of dealing with the several power electronics based equipment and converters found in the power system.
- Enabling the students to handle and master the recent concepts of controlling the electric machines as well as the active and reactive power flow in the power networks via the power electronic switches.
- Preparing the student for the advanced courses of the electric drives and the graduation project.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Apply modern techniques and tools to simulate electrical power electronics circuits.
- Use software such as Matlab to design power electronics circuits.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Contacts with students + overview of the course	1	4
Introduction, converters types	1	4
Semi-conductor devices	1	4
Rectifier: single-phase, half-wave rectifiers	1	4
Rectifier: Bi-phase half-wave rectifiers	1	4
Single-phase, full-wave controlled rectifiers	1	4
Poly-phase rectifiers, Three-Phase star rectifier, six-phase star rectifier	1	4
Bridge rectifier	1	4
AC voltage controller: introduction, naturally-commutated ac controller	1	4
Pure resistive load, inductive load	1	4
Forced-commutated ac controller, Pure resistive load, inductive load	1	4
DC chopper : introduction, chopper classes	1	4
DC chopper with R-L back emf load	1	4
Inverter : introduction, single-phase inverter	1	4
Three-Phase inverter, pulse with modulation	1	4

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

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

3. Additional private study/learning hours expected for students per week. 6

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total

			Assessment
1	Homework and micro project	3rd , 5th, 9th and 12th	10%
2	Quizzes	4th , 7th, 11th and 13th	10%
3	Exams (First and Second)	6th and 10th	40 %
4	Final Exam	16th	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Four office hours are dedicated for student in each week.

E. Learning Resources

1. List Required Textbooks W. Hart, Introduction to Power Electronics, Prentice Hall, New York, 1997.
2. List Essential References Materials (Journals, Reports, etc.) C. W. Lander, Power Electronics, McGraw-Hill, London, 1993.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) None
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) None
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.) None
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) None

2. Computing resources (AV, data show, Smart Board, software, etc.) A laptop for the instructor.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 3. Plan: The instructor will develop a strategy for teaching. 4. Do: The strategy will be implemented for one semester. 5. Study: The experiences of the students will be collected through a survey. 6. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course

planning and design, implementation, evaluation, and revision.

- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 389

Course Specifications

Institution: Majmaah University	Date of Report: 28/12/ 2014
College/Department: College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Electric Machines EE 389			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering, Power and machine track			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Spring semester, junior year			
6. Pre-requisites for this course (if any): Principles of Electric Machines EE 288			
7. Co-requisites for this course (if any)			
8. Location if not on main campus: College of Engineering			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?
The main objectives of this course are:

- Teaching the students the concepts, principles of operation, performance characteristics and methods of control of the induction motors, dc motors, fractional horse-power motors and servo-motors.
- Preparing the students for dealing with the different types of electrical motors which find many applications in the industries, workshops, transportation, petroleum field, and home appliances regarding the operation, the maintenance, the control and the developing of the performance.
- Covering some subjects as introduction for consequent advanced courses in the electrical machines, electric drives and power systems.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Apply modern techniques and tools to simulate induction and dc machines.
- Use software such as Matlab to analyze the performance of induction and dc machines.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to AC machinery	1	4
3-phase induction machines (construction)	1	4
3-phase induction machines (operation-1)	1	4
3-phase induction machines (operation-2)	1	4
3-phase Induction machines (equivalent circuit)	1	4
3-phase Induction machines (performance calculations-1)	1	4
3-phase Induction machines (performance calculations-2)	1	4
3-phase Induction motors (starting, speed control)	1	4
1-phase Induction	1	4
1-phase Induction motors	1	4
Fundamentals of DC machines	1	4
DC machines (components, classification)	1	4
DC machines (performance, motor characteristics)	1	4
DC machines (performance, motor characteristics)	1	4
DC motors (starting, speed control)	1	4

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

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

3. Additional private study/learning hours expected for students per week. 6

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	Homework and micro project	3rd , 5th, 9th and 12th	10%
2	Quizzes	4th , 7th, 11th and 13th	10%
3	Exams (First and second)	6th and 10th	20 Each
4	Final Exam	16th	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Four office hours are dedicated for student in each week.

E. Learning Resources

1. List Required Textbooks S. J. Chapman, “Electric Machinery Fundamentals”, McGraw Hill
2. List Essential References Materials (Journals, Reports, etc.) SARMA, "Electric Machines-steady state theory and dynamic performance" WEST
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

2. Computing resources (AV, data show, Smart Board, software, etc.) A laptop for the instructor.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 398

Course Specifications

Institution	Majmaah University	Date of Report	2/12/2014
College/Department	College of Engineering/ Department of Electrical Engineering		

A. Course Identification and General Information

1. Course title and code: Electrical Machines EE 398			
2. Credit hours 2			
3. Program(s) in which the course is offered: Mechanical and Industrial Engineering			
4. Name of faculty member responsible for the course			
5. Level/year at which this course is offered: Fall semester, junior year			
6. Pre-requisites for this course (if any) : Electrical and Electronic Circuits EE 210			
7. Co-requisites for this course (if any)			
8. Location if not on main campus		College of Engineering	
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	Yes	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? To understand the construction, types, characteristics and operation of Transformers, Synchronous machines, Induction machines and DC Machines. The course will help to develop the skills necessary to communicate concepts and experimental results in clear and logical fashion, both verbally and in writing. The students will also be able to gain some of the knowledge and skills necessary to pursue professional careers in mechanical engineering arena.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) Encouraging the students to refer quality web based contents so that they can be familiar with the detailed constructional and technical aspects of both DC and AC machines in addition to the prescribed text books. Also power point presentations detailing on the actual cross-sectional views were used so as to give the students a better understanding about the technicalities of Electrical Machines.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Transformers; principle of operation, construction and types	3	9
Performance Analysis of transformer using equivalent circuit	1	3
Synchronous machines (construction, generator performance, motor characteristics, starting methods)	3	9
Induction Motor Principle of operation, Construction, Types, Characteristics	3	9
Equivalent Circuit of Induction Motor, Starting Methods, Different methods of speed control	2	6
Principle of operation and construction of DC machines, types, characteristics, Electrical Equivalent circuit and analysis of various types of DC Machines	3	9

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	15				45
Credit	2					2

3. Additional private study/learning hours expected for students per week. 3
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	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.	Research activities, debates, case studies and guest speakers	Reports, discussions and presentations
1.2	Knowledge of contemporary issues.	Lecture, research activities, debates, case studies and guest speakers	Exams and presentations
1.3	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5	The ability to apply project management techniques to electrical systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Behavior observation and reports
3.0	Interpersonal Skills & Responsibility		
3.1	An ability to function on multidisciplinary	Debate, small group	Behavior observation

	teams	work, whole group and small group discussion, research activities, projects and brainstorming	and presentations
3.2	An understanding of professional and ethical responsibility	Lecture, debate, small group work, whole group and small group discussion, research activities, projects and brainstorming	Discussions
3.3	Recognition of the need for and an ability to engage in life-long learning.	Lecture, debate, small group work, whole group and small group discussion, research activities, projects and brainstorming	Reports, discussions and presentations
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2	An ability to communicate effectively	Lecture, debate, small group work, whole group and small group discussion, role playing, guest speakers, individual presentation and brainstorming	Reports, discussions and presentations
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Final Exam	15	40%
4	Assignments	5	10%
5	Quiz	11	10%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) - Three office hours for supporting the student academic counseling. - All students are distributed among academic advisors - Advising information are included in the student Guide and in the College website

E. Learning Resources

1. List Required Textbooks Fundamentals of Electric Machinery, Chapman, McGraw Hill, 1995
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) - Electrical Machines by Irving L Kosow ,Pearson Education
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) • Lecture room: Available. • Laboratory: available.
2. Computing resources (AV, data show, Smart Board, software, etc.) • LCD Projector available • Smart Board available
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 7. Plan: The instructor will develop a strategy for teaching. 1. Do: The strategy will be implemented for one semester. 2. Study: The experiences of the students will be collected through a survey. 3. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 415

Course Specifications

Institution Majmaah University, Al-Majmaah,	Date of Report 21-12-2014
College/Department College of Engineering/Department of Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: VLSI, EE 415
2. Credit hours 3
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) B sc. Electrical Engineering - Electronics and Communication Engineering
4. Name of faculty member responsible for the course
5. Level/year at which this course is offered Spring semester, Senior year
6. Pre-requisites for this course (if any): Analog & Digital Electronic Circuits (EE 314)
7. Co-requisites for this course (if any)
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	Yes	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course?
   - Introduced digital Integrated Circuits(ICs),CMOS devices and manufacturing technology, CMOS logic gates and their layout
   - Ability to, find Propagation delay, noise margins, and power, dissipation in the digital VLSI circuits, design Combinational (e.g., arithmetic) and sequential circuit, and to design Memory in VLSI circuits.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
   - To focus and concentrate more on usage of VLSI simulation and design software (VLSI design and implementation practice)
   - More activation of E-Learning D2L system in the teaching and learning process

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to VLSI systems	1	4
Review of digital systems	1	4
CMOS logic and fabrication	2	8
MOS transistor theory	2	8
Layout design rules	1	4
Circuit characterization and performance estimation	2	8
Circuit simulation	2	8
Combinational and sequential circuit	2	8
Design Static and dynamic CMOS gates Memory system design	1	4
Design methodology and tools	1	4

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

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

3. Additional private study/learning hours expected for students per week. 2

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies,	Standardized exams, Seminars and Assignments

		memorization and individual presentation	
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	Exam 1	7	20
2	Exam 2	12	20
3	Quiz	During the semester	10
4	Micro project ,report writing , and Oral presentation	14	10
5	Final Exam	16-17	40

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- All students are distributed among academic advisors

- Advising Information are included in the student Guide and in the college website
- Every Advisor assignees 3 office hours for supporting the student academic counseling

E. Learning Resources

1. List Required Textbooks
- Neil Weste and David Harris, CMOS VLSI Design: A Circuits and Systems Perspective, Addison Wesley, 2005

2. List Essential References Materials (Journals, Reports, etc.)
- Jan M. Rabaey, A. Chandrakasan and B. Nikolic, Digital Integrated Circuits: A Design Perspective, (2003), 2nd Edition, Prentice Hall.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
- Neil Weste and David Harris, CMOS VLSI Design: A Circuits and Systems Perspective, Addison Wesley, 2005(textbook)

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
Weste/Addison Wesley – Rabaey/Pearson
http://scale.engin.brown.edu/classes/EN1600S08/links.html

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
- L-Edite tanner ,Pspice

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
- 25 seats in the classroom, equipped with data show and PC

2. Computing resources (AV, data show, Smart Board, software, etc.)
- Data show, Smart Board, Laptop

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)
- PC lab with VLSI simulation and design software (L- Edit –Spice –VHDL,…etc)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
- Completion course evaluation questionnaire,
- Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

3. Processes for Improvement of Teaching
4. Plan: The instructor will develop a strategy for teaching.
1. Do: The strategy will be implemented for one semester.
2. Study: The experiences of the students will be collected through a survey.
3. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement
Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.

- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 426

Course Specifications

Institution: Majmaah University	Date of Report: 3\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Wireless Communications EE 426
2. Credit hours:3
3. Program(s) in which the course is offered: Electrical Engineering (Communications and Electronics)
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered Fall semester, senior year
6. Pre-requisites for this course (if any): Digital Communications (EE 325)
7. Co-requisites for this course (if any): None
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	90%
b. Blended (traditional and online)		What percentage?	
c. e-learning	■	What percentage?	10%
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:
e-learning instruction mode includes Project, Assignments using D2L university platform

B Objectives

1. What is the main purpose for this course? This course is aimed to provide undergraduate students with knowledge, skills and the ability to analyze and design cellular wireless communication systems through identifying, formulating and solving problems associated with transmitting, propagation and receiving of electromagnetic waves.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) 1- Using D2L for uploading assignment, project and other related materials. 2- Changing the textbook to cover new hot topics in the wireless communications field. 3- Changing in the contents by adding specific modern wireless communications systems such as WLAN, Bluetooth and cordless communication systems.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Historical Overview: Wireless Communication Systems Development	2	8
The Cellular Concept-System Design Fundamentals: Particular emphasis is on mobile communications: frequency reuse, hand-off, cell splitting, indoor/outdoor propagation, co-channel interference	2	8
Grade of Service (GOS): Probability of Blocking and delay	1	4

Large Scale Propagation Model: Free-Space Propagation Model, Reflection form dielectrics, Reflection from perfect conductors, Diffraction, Scattering.	2	8
Practical Link Budget Design Using Path Loss Models: Outdoor Propagation Models; Okumura and Hata	2	8
Small Scale Fading and Multipath: Small –Scale Multipath Measurements, Parameters of Mobile Multipath Channels	2	8
MSK, GMSK and Spread Spectrum Techniques	2	8
Wireless cellular communication systems: GSM and AMPS	2	8

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

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

3. Additional private study/learning hours expected for students per week. **2**
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects

2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

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

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

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

E. Learning Resources

1. List Required Textbooks
T. Rappaport, Wireless Communications: Principles and Practice, Prentice Hall, 2001.

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
Goldsmith, Wireless Communications, Cambridge University, 2006.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
D2L e-learning platform

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
VB program: Modelling of Outdoor propagation models: Hata and Okumura models

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
25 seats in the classroom.

2. Computing resources (AV, data show, Smart Board, software, etc.)

- Data show - Laptop
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 4. Plan: The instructor will develop a strategy for teaching. 1. Do: The strategy will be implemented for one semester. 2. Study: The experiences of the students will be collected through a survey. 3. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 427

Course Specifications

Institution: Majmaah University	Date of Report: 1/12/2014
College/Department: Engineering/ Electrical	

A. Course Identification and General Information

2. Course title and code: Communication and Signal Processing LAB EE 427			
2. Credit hours: 1			
3. Program(s) in which the course is offered: Electrical Engineering (Communication and Electronics)			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Fall semester, junior year			
6. Pre-requisites for this course (if any): Digital Communications (EE 325) and Digital Signal Processing (EE 324)			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus:			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	■	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?
   - To develop skills in modular interconnection of subsystems ,needed to build physical DSP and communications systems
   - To develop skills in the use of industry-relevant electronic test and measurement equipment typically encountered by a design engineer
   - To use industry-relevant software communications systems simulation methods for the purpose of evaluating overall communication and DSP system performance.
   - To understand the functionality of digital communications modulation and demodulation by building, testing and analyzing circuits.
   - To understand and apply the appropriate practical techniques and skills needed in the design of IIR (infinite impulse response) digital filters
   - To understand and apply the appropriate practical techniques and skills needed in the design of (finite impulse response) FIR digital filters.
   - To familiar the students with the MATLAB environment
   - Learning how to generate and manipulate the different types of signals in time domain as well as in frequency domain
   - Understanding and implementing some simple digital systems and investigate their properties using MATLAB
   - Learning and implementing the DFT and Z-Transform representation of discrete time signal & system
   - Learning and implementing the different modulation and demodulation techniques used in digital communication

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
Use of D2L

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
The Introduction and getting started with MATLAB.	2	4
Signal generation and manipulation	1	2
Discrete time systems	1	2
Discrete time signals and systems in frequency domain	1	2
FIR and IIR filter design	1	2
Analog Modulation technique	1	2
Digital Modulation technique	1	2
Introduction to DSP LAB 2000	1	2
Signal processing and Analysis techniques Test	3	6
Programming on DSP LAB 2000 console	3	6

3. Course components (total contact hours and credits per semester):
None

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week.	2

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
4.0	Communication, Information Technology, Numerical		
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20%
2	Second Exam	13	20%
3	Project (Hardware+ Software)+ Workbook	13	20%

4	Final Term	15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
   - All students are distributed among academic advisor
   - Advising information are included in the student guide and in the college website
   - Every advisor assignees 3 office hour for supporting the student academic counseling

E. Learning Resources

1. List Required Textbooks
Lab manual provided in the lab

2. List Essential References Materials (Journals, Reports, etc.)
   - C. W. Sayre, Complete Wireless Design, McGraw Hill, 2001.
   - J. G. Proakis, M. Salehi and G. Bauch, Contemporary Communication
   - Systems Using MATLAB and Simulink, Thomson Engineering, 2004.
   - M. C. Jeruchim, P. Balaban and K. S. Shanmugan, Simulation of Communication Systems, Plenum Press, 1992.
   - Ashok Ambardar, Analog and Digital Signal Processing, 2nd Edition, Thomson Publishing, 2002.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
   - P.H. Young, Electronic Communication Techniques,PrenticeHall-2004
   - SanjitK Mitra, Digital Signal Processing, A computer based approach 3rd edition, McGraw,2006

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
www.youtube.com D2L e-Learning Platform

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
2D027 and 3D028

2. Computing resources (AV, data show, Smart Board, software, etc.)
Personal Computer, Data Show and Smart Board

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) N.A

G. Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

3. Processes for Improvement of Teaching
   1. Plan: The instructor will develop a strategy for teaching.
   2. Do: The strategy will be implemented for one semester.
   3. Study: The experiences of the students will be collected through a survey.
   4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement
Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning

for improvement.

- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 431

Course Specifications

Institution: Majmaah University	Date of Report: April 29, 2015
College/Department	

A. Course Identification and General Information

1. Course title and code: Digital Image and Video Processing EE 431			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Communications and Electronics (elective course)			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered Spring semester, senior year			
6. Pre-requisites for this course (if any): Signals and Systems Analysis EE 221			
7. Co-requisites for this course (if any) : None			
8. Location if not on main campus:			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? 1. Get students acquainted with 2-D data and learn about sampling, convolution and other 2-D basics 2. Get students acquainted with Image enhancement, transformation, segmentation, and interpolation 3. Get students acquainted with edge detection, image compression and Discrete cosine transformation
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) Using educational animations

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Two dimensional signal processing basics,	2	8
Image enhancement and restoration	1	4
Image transformation	2	8
Image compression	1	4
Image super resolution and video mosaic	2	8
Edge detection and image segmentation	2	8
Video coding techniques	2	8
Convolution and sampling of images	2	8

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	3	0	0	0	45
Credit	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week.	2
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
1.2			
2.0	Cognitive Skills		

2.1	An ability to design and conduct experiments, as well as to analyze and interpret data.	Lecture, small group work, , research activities, lab demonstrations, Reports and presentations Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Exams, quizzes and reports Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	Week 7	20%
2	Second Exam	Week 12	20%
3	Quizzes	Week 6, 11	15%
4	Homework assignment		5%
5	Final	Week 15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
1. Weekly office hours.
2. Exam solving in class.
3. Feedback from each student.
4. Weekly guidelines on student performance.
5. Instructor webpage.

E. Learning Resources

1. List Required Textbooks
Digital Video Processing by M. Tekalp, Prentice Hall

2. List Essential References Materials (Journals, Reports, etc.)
1. Data Fundamentals of Digital Image Processing by A.K. Jain, Prentice Hall

2. Video Processing and Communications by Yao Wang, Joern Ostermann, and Ya-Qin Zhang, Prentice Hall
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Lecture room: Available.

2. Computing resources (AV, data show, Smart Board, software, etc.) Computer: Available
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3 Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) • Check marking of a sample of examination papers.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 433

Course Specifications

Institution : Majmaah University	Date of Report : April 30, 2015
College/Department: Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Satellite Communication Principles EE 433			
2. Credit hours 3			
3. Program(s) in which the course is offered: Communications and Electronics (elective course)			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered Spring semester, senior year			
6. Pre-requisites for this course (if any): Wireless Communications EE 426			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus:			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?
   - To understand various aspects of satellite orbital properties.
   - Understand the process of controlling satellites.
   - Understand various antennas' types in satellite communications.
   - Calculate and analyze link budget.
   - Understand modern applications of satellite communications.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
Using educational animations

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction and brief history	1	4
Orbital mechanics and launchers	4	16
Satellites (Subsystems - Antennas - Tracking)	3	12
Satellite link budget	2	8
Modulation and multiplexing	2	8
Propagation effect	2	8
GPS and GLONASS	1	4

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

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

3. Additional private study/learning hours expected for students per week. **2**

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies,	Standardized exams, Seminars and Assignments

		memorization and individual presentation	
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	Week 7	20%
2	Second Exam	Week 12	20%
3	Quizzes	Weeks 6,11	15%
4	Quiz and homework assignments		5%
5	Final	Week 15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and

academic advice. (include amount of time teaching staff are expected to be available each week)

6. Weekly office hours.
7. Exam solving in class.
8. Feedback from each student.
9. Weekly guidelines on student performance.
10. Instructor webpage.

E. Learning Resources

1. List Required Textbooks
Dennis Roddy, Satellite Communications, 4th Edition, McGraw-Hill, 2006.

2. List Essential References Materials (Journals, Reports, etc.)
Timothy Pratt, Satellite Communications, 2nd Edition, Wiley, 2002.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
Lecture room: Available.

2. Computing resources (AV, data show, Smart Board, software, etc.)
Computer: Available

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

3. Processes for Improvement of Teaching
   1. Plan: The instructor will develop a strategy for teaching.
   2. Do: The strategy will be implemented for one semester.
   3. Study: The experiences of the students will be collected through a survey.
   4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement
Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
   - Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
   - A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
   - Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 435

Course Specifications

Institution: Majmaah University	Date of Report December 2, 2014
College/Department : College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Antenna & Wave Propagation EE 435			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering (Communications Track)			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered Fall semester, Senior year			
6. Pre-requisites for this course (if any): Electromagnetics 2 EE 234			
7. Co-requisites for this course (if any):None			
8. Location if not on main campus: College of Engineering			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?
   - To understand the fundamentals of antenna theory.
   - To expose students to examples of applications and various antenna types including linear and planar micro strip configurations.
   - To understand the relation between the transmission and reception of antenna signal.
   - To improve the design and problem solving skills

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction	1	4
Fundamental parameters of antennas	2	8
Linear wire antennas	1	4
Loop antennas	1	4
Antenna arrays	2	8
Aperture antennas	1	4
Horn antennas	2	8
Microstrip antennas	2	8
Reflector antennas	2	8
Antenna Measurements	1	4

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

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

3. Additional private study/learning hours expected for students per week. 6

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments

2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task	Week Due	Proportion of Total Assessment
1	1st Exam	Week 7	20%
2	2nd Exam	Week 12	20%
3	Quizzes	Week 12	10%
4	Assignments		10%
5	Final Exam	Week 15	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
    1. Weekly office hours.
    2. Exam solving in class.
    3. Feedback from each student.
    4. Weekly guidelines on student performance.

5. Instructor webpage.

E. Learning Resources

1. List Required Textbooks Warren L. Stutzman, Antenna Theory and Design, 3rd Edition, Wiley, 2012.
2. List Essential References Materials (Journals, Reports, etc.) C. A. Balanis, Antenna Theory: Analysis and Design, 3rd edition, Wiley, 2005.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Collin, Robert E. Antennas and Radiowave Propagation. New York: McGraw-Hill, 1985.
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) • Lecture room: Available. • Laboratory: available.
2. Computing resources (AV, data show, Smart Board, software, etc.) • Computer: Available
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 436

Course Specifications

Institution : Majmaah University	Date of Report 21-12-2014
College/Department: Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Antennas and wave propagation Lab, EE 436			
2. Credit hours: 1			
3. Program(s) in which the course is offered: Electronics and Communication Engineering Track			
4. Name of faculty member responsible for the course			
5. Level/year at which this course is offered Fall semester, senior year			
6. Pre-requisites for this course (if any): None			
7. Co-requisites for this course (if any) Antennas and Wave Propagation EE 435			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional Lab, classroom	■	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

3. What is the main purpose for this course?
   - To characterize the antennas used in the microwave transmission system.
   - To explore the concept of polarization
   - To design and plot the radiation pattern of an antenna.
   - To understand the wide range of options for antenna.
   - To illustrate the relationship between antenna size, gain and beam width.

4. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

To focus and concentrate more on simulation and design software (design and implementation of micro strip antennas, beam forming ,array ,and smart antennas)

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to the Lab –familiarization- Hard ware equipment's and Simulation software)	1	2
Modeling hardware and simulation software on the dipole and dual sources in free space.	1	2
Ground Reflections	1	2
Gain, Directivity and Aperture	1	2
Resonance, Impedance and Standing waves. Return loss and VSWR Measurements	2	4
The Monopole. Phased Monopoles	2	4
Parasitic elements and Uda Yagi antenna	2	4
Stacked and Bayed Arrays	2	4
The Horn Antenna. The log periodic antenna, The dish antenna.	2	4
Implementation, Operation, and Testing of Micro project	1	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30	0	0	30
Credit	0	0	1	0	0	1

3. Additional private study/learning hours expected for students per week. 1

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct	Lecture, small group	Standardized exams,

	experiments, as well as to analyze and interpret data	work, , research activities, lab demonstrations, projects and individual presentation	oral exams, micro projects
2.2			
2.3			
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1			
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	25
2	Second Exam	12	25
3	Micro project, Report, Oral Presentation and Q&A	14	10
4	Final Exam	16-17	40

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

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

E. Learning Resources

1.List Required Textbooks - Lab manuals in the lab, Student manual, feedback instruments Ltd, Park road, UK. - Tutor's manual feedback instruments Ltd, Park road, UK.
2.List Essential References Materials (Journals, Reports, etc.) The ARRL BOOK Balanis, Antenna Theory Analysis and Design, 3rd Edition, John Wiley
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. 1- Win+ NEC antennas simulation software 2- Modeling hardware + operating program (Antennas Lab 57-200 model) 3- PCs 4- Matlab codes

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Antennas and Wave Propagations Lab

2. Computing resources (AV, data show, Smart Board, software, etc.) Win+ NEC antennas simulation software Modeling Hardware + Operating Program (Antennas Lab 57-200 model)
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Modeling Hardware + Operating Program (Antennas Lab 57-200 model)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 17. Plan: The instructor will develop a strategy for teaching. 18. Do: The strategy will be implemented for one semester. 19. Study: The experiences of the students will be collected through a survey. 20. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and

planning for improvement.

EE 439

Course Specifications

Institution :Majmaah University	Date of Report: 4\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Optical Communications EE 439
2. Credit hours: 3
3. Program(s) in which the course is offered: Electrical Engineering (Communications and Electronics Track)
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered Spring semester, senior year
6. Pre-requisites for this course (if any): EE 322 Communications Principles
7. Co-requisites for this course (if any): None
8. Location if not on main campus:
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	What percentage?	90%
b. Blended (traditional and online)	What percentage?	
c. e-learning	What percentage?	10%
d. Correspondence	What percentage?	
f. Other	What percentage?	

Comments:
e-learning instruction mode includes Project, Assignments using D2L university platform

B Objectives

1. What is the main purpose for this course? This course is aimed to provide undergraduate students with knowledge, skills and the ability to analyze and design Optical communication systems through identifying, formulating and solving problems associated with transmitting and receiving of light waves using optical fibers.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) 1- Using D2L for uploading assignment, project and other related materials. 2- Changing the textbook to cover new hot topics in the Optical communications field. 3- Changing in the contents by adding specific modern applications of optical communications systems such as TV broadcasting and Networking

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Introduction of optical fiber communications	2	8

Ray optics and wave equations,	2	8
Wave equations for slab waveguide and optical fibers, Wave solutions for optical fibers	2	8
LP modes, Dispersions, Fiber loss and fiber manufacturing	2	8
Optical transmitters, Laser diodes	2	8
Laser modes and optical receivers, Photo-detectors	1	4
Noises and sensitivity, System performance	2	8
Light-wave systems, Optical amplifiers.	2	8

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

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

3. Additional private study/learning hours expected for students per week. **2**
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		

3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects

5. Schedule of Assessment Tasks for Students During the Semester

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

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

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

E. Learning Resources

1. List Required Textbooks

Optical Fiber Communications, Gerd Keiser, McGraw-Hill

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

1. Fiber Optic Communications, Joseph C. Palais, Prentice-Hall
2. Optoelectronics and Photonics, S.O. Kasap, Prentice-Hall
3. Optical Fiber Communication, A. Selvarajan et. al., McGraw-Hill
4. Optical Electronics in Modern Communications, Amnon Yariv, Oxford

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

D2L e-learning platform

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 25 seats in the classroom.

2. Computing resources (AV, data show, Smart Board, software, etc.) - Data show - Laptop
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 475

Course Specifications

Institution: Majmaah University	Date of Report: 28/12/ 2014
College/Department : College of Engineering/ Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Applied Control EE 475			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering, Power and machine track			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Fall semester, senior year			
6. Pre-requisites for this course (if any): Automatic Control Systems EE 341			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus: College of Engineering			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?

The main objectives of this course are:

- Acquainting the students the ability of dealing with the fundamentals of feedback control systems.
- Acquainting the students the ability to obtain mathematical models of applied control systems.
- Teaching the students the basic requirements of control systems design and implementation aspects.
- Acquainting the students the ability to obtain and judge the performance of control systems in time and frequency domains.
- Enabling the students to handle and master the design of PID controller.

2. Briefly describe any plans for developing and improving the course that are being implemented.

- Apply modern techniques and tools to simulate control systems.
- Use software such as Matlab to design PID controller.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to control systems and their classifications	1	4
Advantages of using feedback in control systems.	1	4
Basics of system modeling and analysis.	1	4
Examples of applied control systems: speed control system,	1	4
Temperature control system, liquid-level control system.	1	4
State-space models. Derivation of state-space model from transfer function and vice versa.	1	4
Time response of state-space model.	1	4
Transient response characteristics.	1	4
Classifications of industrial controllers.	1	4
Automatic controller.	1	4
Basics of PID controller.	1	4
PID controller design methods;	1	4
Transducers and actuators;	1	4
Control applications in power systems: turbine-governor control,	1	4
Control applications in power systems: generator voltage control, and load frequency control.	1	4

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

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

3. Additional private study/learning hours expected for students per week. 6

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4	The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of electrical systems.	Lecture, research activities, lab demonstrations, projects, case studies,	Standardized exams, oral exams, micro projects

		memorization and individual presentation	

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	Homework and micro project	3rd , 5th, 9th and 12th	10%
2	Quizzes	4th , 7th, 11th and 13th	10%
3	Exams	6th and 10th	20 each
4	Final Exam	16th	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Four office hours are dedicated for student in each week.

E. Learning Resources

1. List Required Textbooks R.C.Dorf and R.H. Bishop, *Modern Control Systems*, Prentice Hall, New York, 1998.
2. List Essential References Materials (Journals, Reports, etc.) K. Ogata, *Modern Control Engineering*, Prentice Hall, New York, 1997
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
2. Computing resources (AV, data show, Smart Board, software, etc.) A laptop for the instructor.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 476

Course Specifications

Institution: Majmaah University	Date of Report: 3\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Power System Protection EE 476
2. Credit hours: 3
3. Program(s) in which the course is offered: Electrical Engineering (Power Track)
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered Fall semester, senior year
6. Pre-requisites for this course (if any): Power System Analysis EE 372
7. Co-requisites for this course (if any): None
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom		What percentage?	90%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	10%
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:
e-learning instruction mode includes Project, Assignments

B Objectives

1. What is the main purpose for this course? 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.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) Changing the content of the course by adding some new important protection schemes

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

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	0	0	0	60
Credit	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week. On average two hours per week needed to prepare the required assignments, project of the course	2
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments

2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

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

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
    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 counseling

E. Learning Resources

1. List Required Textbooks
BadriRam, " Power system protection and switchgear", Tata McGraw-Hill

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
Walter Elmore "Protective Relaying: Theory and Applications", Marcel Dekker
Blackburn "Protective Relaying: Principles and Applications", Marcel Dekker

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 25 seats in the classroom.
2. Computing resources (AV, data show, Smart Board, software, etc.) - Data show - Laptop
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list).

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 477

Course Specifications

Institution: Majmaah University	Date of Report: 3\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: High Voltage Engineering Systems EE 477
2. Credit hours: 3
3. Program(s) in which the course is offered: Electrical Engineering (Power Track)
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered Fall semester, senior year
6. Pre-requisites for this course (if any): Principles of Electric Machines EE 288
7. Co-requisites for this course (if any): None
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	What percentage?	90%
b. Blended (traditional and online)	What percentage?	
c. e-learning	What percentage?	10%
d. Correspondence	What percentage?	
f. Other	What percentage?	

Comments:
e-learning instruction mode includes Project, Assignments

B Objectives

1. What is the main purpose for this course? This course is aimed to provide undergraduate students with knowledge, skills and the ability to study the electrical power system, understand the methods of generation of high voltage, understand the mechanism of conduction and breakdown of dielectric materials, to learn different methods and techniques of high voltage testing.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Generation and measurements of high DC, AC and impulse voltages	5	20
Conduction and breakdown processes in gaseous, liquid, and solid insulating media	5	20
High voltage test techniques	5	20

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	0	0	0	60
Credit	3	0	0	0	0	3

3. Additional private study/learning hours expected for students per week. On average two hours per week needed to prepare the required assignments, project of the course	2
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2			
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3			
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

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

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
   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
Naidu and Kamaraju, "High Voltage Engineering", 2nd Edition, Tata McGraw Hill

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
Kuffel, Zaengl, Kuffel, "High Voltage Engineering - fundamentals", Butterworth Heinenmann.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
25 seats in the classroom.

2. Computing resources (AV, data show, Smart Board, software, etc.)
- Laptop

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

3. Processes for Improvement of Teaching
   1. Plan: The instructor will develop a strategy for teaching.
   2. Do: The strategy will be implemented for one semester.
   3. Study: The experiences of the students will be collected through a survey.
   4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement
Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning

for improvement.

- Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
- A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
- Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 478

Course Specifications

Institution: Majmaah University	Date of Report: 3\12\2014
College/Department : Engineering/Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Distribution System Planning EE 478
2. Credit hours: 2
3. Program(s) in which the course is offered: Electrical Engineering (Power Track)
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Fall semester, senior year
6. Pre-requisites for this course (if any): Power System Analysis EE 372
7. Co-requisites for this course (if any): None
8. Location if not on main campus
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	**90%**
b. Blended (traditional and online)		What percentage?	
c. e-learning	■	What percentage?	**10%**
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:
e-learning instruction mode includes Project, Assignments

B Objectives

1. What is the main purpose for this course? This course is aimed to provide undergraduate students with knowledge, skills and the ability to study the electrical power system, to understand the load types and forecasting methodology, Learn about different categories of electric energy consumers, understand the cost assessment methods in distribution system.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Electric loads types and characteristics	2	6
Electric energy consumer categories	1	3
Basic load forecast methodologies	5	15
Distribution system reliability evaluation	3	9
Distribution system cost assessment	2	6
Distribution system planning: feeder expansion, distribution transformer expansion	2	6

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	15	0	0	0	45
Credit	2	0	0	0	0	2

3. Additional private study/learning hours expected for students per week. On average two hours per week needed to prepare the required assignments, project of the course	2
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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, memorization and individual presentation	Standardized exams, Seminars and Assignments
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component,	Lecture, small group	Reports and

	or process to meet desired needs within realistic constraints	work, , research activities, lab demonstrations, projects and individual presentation	presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5	The ability to apply project management techniques to electrical systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Behavior observation and reports
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester

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

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
    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

T. Gonen, " Electric Power Distribution System Engineering", McGraw-Hill. Billinton, Allan, "Reliability Evaluation of Power Systems", Longman.
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) Sullivan," power system planning", McGraw Hill
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories.
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 25 seats in the classroom.

2. Computing resources (AV, data show, Smart Board, software, etc.) - Laptop
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Completion course evaluation questionnaire, • Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor Faculty Peer Assessment
3. Processes for Improvement of Teaching 1. Plan: The instructor will develop a strategy for teaching. 2. Do: The strategy will be implemented for one semester. 3. Study: The experiences of the students will be collected through a survey. 4. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.
4. Processes for Verifying Standards of Student Check marking of a sample of examination papers.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 479

Course Specifications

Institution: Majmaah University, Al-Majmaah, KSA	Date of Report : 25-12-2014
College/Department : College of Engineering/Department of Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: PROTECTION AND HIGH VOLTAGE LAB EE 479		
2. Credit hours: 1		
3. Program(s) in which the course is offered: Power and Machines Track		
4. Name of faculty member responsible for the course:		
5. Level/year at which this course is offered: Spring semester, senior year		
6. Pre-requisites for this course (if any) None		
7. Co-requisites for this course (if any) High-Voltage Engineering Systems EE 477		
8. Location if not on main campus College of Engineering		
9. Mode of Instruction (mark all that apply)		
a. Traditional classroom	■ What percentage?	90%
b. Blended (traditional and online)	☐ What percentage?	0 %
c. e-learning	■ What percentage?	10%
d. Correspondence	☐ What percentage?	0%
f. Other	☐ What percentage?	0%
Comments:		

B Objectives

1. What is the main purpose for this course?

- The course gives an overview of different types of fault analysis, transmission, and distribution.
- Different types of mechanical loads are discussed. Maxwell's equations are applied to magnetic circuits including permanent magnets.
- This course explores various aspects of the design and operation of modern power systems.
- The focus will be on the area of Protection in Power Systems and High Voltage Engineering.
- In the laboratory classes, you will work with some state-of-the-art equipment used in industry for protection and measurement in power systems.
- It gives an idea about under voltage Relay.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

After Learning the course (Protection and High Voltage) the students can develop and improve the :
1-Using D2L for uploading assignment, project and other related materials.
2- Changing the textbook to cover new hot topics in the high-voltage engineering field.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction: Introductory To Lab Equipment's And Basic Components	1	2
Characteristics Of Different Protective Relays	2	2
Co-Ordination Of Protective Relays	3	2
To Determine The Relay Testing	4	2
Equivalent Circuit Of Transformers	5	2
Three-Phase Connections And Harmonic Problems.	6	2
Equivalent Circuit Of Three-Phase And Single-Phase Induction Motors.	7	2
Exam 1	8	2
High Voltage Ac Test Source.	9	2
To Determine The Characteristics Of Under Voltage Relay.	10	2
To Determine The Characteristics Of Undercurrent Relay.	11	2
To Determine The Characteristics Of Under Power Relay.	12	2
Exam 2	13	2
Lab-Report-I	14	2
Lab-Report-Ii	15	2

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

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	0	0	30			30
Credit	0	0	1			1

3. Additional private study/learning hours expected for students per week. NO

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total

			Assessment
1	Lab manual Assessment	Monthly	5%
2	Seminar	10th week	5%
3	Lab Report	14th week	10%
4	First Exam	8th week	20%
5	Second Exam	13th week	20%
6	Final Exam	16th week	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) Student can access the concern staff during office hours; each student can take the consultation and advice. g- Weekly office hours h- Meetings and discussions on Blackboard/D2L

E. Learning Resources

1. List Required Textbooks Badri Ram, “Power System Protection and Switchgear”, Tata McGraw-Hill.
2. List Essential References Materials (Journals, Reports, etc.) - Aidu and Kamaraju, "High Voltage Engineering", 2nd Edition, Tata McGraw Hill - Laboratory Manual will be distributed by the Lecturer
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) None
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) None
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. None

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
3. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Laboratory
4. Computing resources (AV, data show, Smart Board, software, etc.) None
5. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) None

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
   Faculty Peer Assessment

3. Processes for Improvement of Teaching
   5. Plan: The instructor will develop a strategy for teaching.
   6. Do: The strategy will be implemented for one semester.
   7. Study: The experiences of the students will be collected through a survey.
   8. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement
   Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
   - Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
   - A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
   - Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 480

Course Specifications

Institution : Majmaah University	Date of Report : 3-12-2014
College/Department :Engineering Electrical	

A. Course Identification and General Information

1. Course title and code: Electric Energy Utilization EE 480			
2. Credit hours: 3			
3. Program(s) in which the course is offered: Electrical Engineering Program			
4. Name of faculty member responsible for the course:			
5. Level/year at which this course is offered: Fall semester, senior year			
6. Pre-requisites for this course (if any): EE 270 Fundamentals of Power Systems			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom		What percentage?	100%
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course?
By the end of the course, student should:

1- Understand the types of lamps, illumination schemes, calculation of illumination, and requirements of proper lighting.
2- Understand the advantages of electrical heating, heating methods, design of resistance heating element.
3- Understand the laws of electrolysis, process of electro-deposition, factors affecting electro-deposition, manufacturing of chemicals by electrolysis process
4- Understand advantages of electric traction, systems of electric traction, types of motors used for electric traction, starting and braking of traction motors.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

Apply modern techniques and tools to simulate and analyze electric energy systems.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to energy systems	1	4
Electric heating	2,3	8
Wind power	4,5	8
Solar Power	6,7	8
Electrolysis and electro-deposition	8,9	8
Electric traction	10,11	8
Energy-Flow Control Technology	12,13	8
Energy Conversions	14,15	8

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

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

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

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	The ability to recall, understand, and present information, including knowledge of specific facts, knowledge of concepts, principles and theories, and knowledge of procedures	Lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role	Standardized exams, Seminars and Assignments

		playing, case studies, memorization and individual presentation	
2.0	Cognitive Skills		
2.1			
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4			
2.5	The ability to apply project management techniques to electrical systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Behavior observation and reports
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total Assessment
1	First Exam	7	20
2	Second Exam	12	20
3	Project	14	20
4	Final Exam	15	40

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and

academic advice. (include amount of time teaching staff are expected to be available each week)
The office hours for this course is 2 hours, in which the students can ask and discuss the topics and details they haven't understand in the lecture and tutorial main time. These hours can be arranged according to the student needs.

E. Learning Resources

1. List Required Textbooks
C.L. Wadhwa, "Generation, Distribution and Utilization of Electrical Energy" , Wiley Eastern Ltd., New Delhi, 1989

2. List Essential References Materials (Journals, Reports, etc.)
G. C. Garg, "Utilization of Electric Power and Electric Traction", Khanna Publishers, Delhi, India.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
N. V. Suryanarayana, "Utilization of Electrical Power including Electric drives and Electric traction" , New Age International (P) Limited, Publishers, 1996

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)
   - Lecture rooms
   - Power and Machine lab.

2. Computing resources (AV, data show, Smart Board, software, etc.)

3. Other resources
Internet, Computers and Data show

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Faculty Peer Assessment

3. Processes for Improvement of Teaching
   9. Plan: The instructor will develop a strategy for teaching.
   10. Do: The strategy will be implemented for one semester.
   11. Study: The experiences of the students will be collected through a survey.
   12. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement
Check marking of a sample of examination papers.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
   - Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision.
   - A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment.
   - Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.

EE 482

Course Specifications

Institution: Majmaah University, Al-Majmaah	Date of Report : 25-12-2014
College/Department : College of Engineering/Department of Electrical Engineering	

A. Course Identification and General Information

1. Course title and code: Control And Operation Of Power Systems EE 482
2. Credit hours: 3
3. Program(s) in which the course is offered: Power and Machines
4. Name of faculty member responsible for the course:
5. Level/year at which this course is offered: Spring semester, senior year
6. Pre-requisites for this course (if any) None
7. Co-requisites for this course (if any) Electric power systems Analysis EE 372
8. Location if not on main campus College of Engineering
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	90%
b. Blended (traditional and online)		What percentage?	0 %
c. e-learning	■	What percentage?	10%
d. Correspondence		What percentage?	0%
f. Other		What percentage?	0%

Comments:

B Objectives

1. What is the main purpose for this course?
- The technology of power system operations and control has undergone significant changes during the past several years and it is essential to include these changes in our graduate power program.
- A course dealing with modern power system operational and control problems and solution techniques.
- understand the solution methods of economic dispatch and static state estimation and explain the automatic generation control of a multi-area system;
- apply the gradient and the Newton's method to unconstrained nonlinear optimization problems;
- apply the Lagrange's method to the economic dispatch of thermal units;
- explain the automatic generation control and carry out a small-signal analysis of a multi-area system;
- Understand and derive the weighted least-squares state estimation method of an electric power system.

2. Briefly describe any plans for developing and improving the course that are being implemented.
After Learning the course (Control and Operation of Power System) the students can develop and improve the :
1- Using D2L for uploading assignment, project and other related materials.
2- Changing the textbook to cover new hot topics in the Power systems field

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Concepts Of Power System Operation	1	4
Formulation Of Unit Commitment Problem	2	4
Principles Of Power System Security Assessment	3	4
Contingency Analysis (Dc And Ac Load Flow Methods)	4	4
Correcting Generation, Introduction To Opf.	5	4
Linear Sensitivity Analysis	6	4
Linear Prog Methods, Security Constrained Opf, Introduction To Agc, Ems And Control Centre.	7	4
Exam 1	8	4
Models Of Generator, Load, Primemover And Governer.	9	4
Generation Control Agc Implementation.	10	4
Overview Of State Estimation, Power System State Estimation.	11	4
State Estimation Of Ac Network.	12	4
Exam 2	13	4
Weighted Least-Square Estimation.	14	4
Application Of Power Systems State Estimation	15	4

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

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

3. Additional private study/learning hours expected for students per week. NO

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			
2.0	Cognitive Skills		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.2	An ability to design a system, component, or process to meet desired needs within realistic constraints	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Reports and presentations
2.3	An ability to identify, formulate, and solve engineering problems	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.4	The ability to analyze, design, and implement systems.	Lecture, small group work, , research activities, lab demonstrations, projects and individual presentation	Standardized exams, oral exams, micro projects
2.5			
3.0	Interpersonal Skills & Responsibility		
3.1			
3.2			
3.3			
4.0	Communication, Information Technology, Numerical		
4.1	An ability to apply knowledge of mathematics, science, and engineering	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Standardized exams, oral exams, micro projects
4.2			
4.3	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Lecture, research activities, lab demonstrations, projects, case studies, memorization and individual presentation	Exams, quizzes and reports
4.4			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task	Week Due	Proportion of Total

			Assessment
1	Homework	Monthly	10%
2	Quiz	10th week	5%
3	Assignments	14th week	5%
4	First Exam	8th week	20%
5	Second Exam	13th week	20%
6	Final Exam	16th week	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
Student can access the concern staff during office hours; each student can take the consultation and advice.

Day	Time
Monday	8:00-10:00
Tuesday	1:00-2:00
Wednesday	9:00-10:00

E. Learning Resources

1. List Required Textbooks
   - Allen J. Wood and Bruce F. Wollenberg: Power Generation Operation and Control(2nd Edit), John Willey & Sons, Inc.
   - John J. Grainger and William D. Stevenson, Jr. (1994): Power System Analysis: McGraw Hill.

2. List Essential References Materials (Journals, Reports, etc.)
   - Saadat, "Power System Analysis", McGraw Hill.
   - Manual will be distributed by the Lecturer

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

6. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

2. Computing resources (AV, data show, Smart Board, software, etc.)

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   - Completion course evaluation questionnaire,
   - Classroom observations to measure student behavior through how well the student groups are interacting in-class activity and how well the in-class activity went.

2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor
   Faculty Peer Assessment

3. Processes for Improvement of Teaching
   13. Plan: The instructor will develop a strategy for teaching.
   14. Do: The strategy will be implemented for one semester.
   15. Study: The experiences of the students will be collected through a survey.
   16. Act: Effective teaching strategies will be implemented and revised as more experiences are gained.

4. Processes for Verifying Standards of Student Achievement Check marking of a sample of examination papers.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Continuous improvement is a circular process, encompassing student assessment, course planning and design, implementation, evaluation, and revision. • A feedback from all relevant assessment tools must be considered in the continuous process of course objectives refinement and assessment. • Continuous process for reviewing feedback from student on the quality of the course and planning for improvement.