جامعة المجمعة
Majmaah University

Course Specifications

Muharram 1437 H

Institution:	Majmaah University
Academic Department :	Department of Electrical Engineering
Programme :	Electrical Engineering
Course :	Basic Electronic Devices and Circuits , EE111
Course Coordinator :	Dr. Fathi KALLEL
Programme Coordinator :	Dr. Fathi KALLEL
Course Specification Approved Date :	…./ … / …… H

This form compatible with NCAAA 2013 Edition

A. Course Identification and General Information

1 - Course title : Basic Electronic Devices and Circuits	Course Code: EE111
2. Credit hours : **3(3,1,0)**	
3 - Program(s) in which the course is offered:	Electrical Engineering (General Course)
4 – Course Language :	English
5 - Name of faculty member responsible for the course:	Dr. Fathi KALLEL
6 - Level/year at which this course is offered :	4/2
7 - Pre-requisites for this course (if any) : • **EE 101**	
8 - Co-requisites for this course (if any) : •	
9 - Location if not on main campus : **(College of Engineering)**	

10 - Mode of Instruction (mark all that apply)

A - Traditional classroom	YES	What percentage?	**100 %**
B - Blended (traditional and online)		What percentage?	**……. %**
D - e-learning		What percentage?	**……. %**
E - Correspondence		What percentage?	**……. %**
F - Other		What percentage?	**……. %**

Comments :

.....

B Objectives

What is the main purpose for this course?

To understand Semiconductors and its properties, PN Junction Diodes, basic structure of diodes. Understand Characteristics of diodes, large and small signal models. Understand applications and working of special purpose diodes. Understand Bipolar Junction Transistor(BJT), Basic structure, Modes of operation, Types of Connection, dc biasing, dc and small signal models and its characteristics. To understand Single stage BJT Amplifiers, FET, structure and operation of enhancement MOSFETS,I-V characteristics, dc biasing. Understand Linear and non-linear applications of op-amp, negative and positive feedback CMOS logic gates, pass transistor logic gates and dynamic logic gates.

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

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

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	.....	.....	.....	60
Credit	3	.....	.....	.....	.....	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	.....	.....	.....
1.4	.....	.....	.....
1.5	.....	.....	.....
1.6	.....	.....	.....
2.0	**Cognitive Skills**		
2.1	An ability to design and conduct experiments, as well as to analyze and interpret data	1.Giving lectures. 2.Solving some case studies related to the course. 3.Homework assignment.	1.Short quizzes in class. 2.Midterm exam. 3.Evaluation of tutorial reports. 4.Final exam
2.2	An ability to identify, formulate, and solve engineering problems	1.Involving students in problem-based and assignment-based activities. 2.Presenting the assignments in the classroom.	1.Using the textbook tasks. 2.Writing learning summaries. 3.Quizzes, Midterm and final exams
2.3	The ability to analyze, design, and implement systems.	1.Involving students in problem-based and assignment-based activities. 2.Presenting the assignments in the classroom.	1.Using the textbook tasks. 2.Writing learning summaries. 3.Quizzes, Midterm and final exams
2.4	.....	.....	.....
2.5	.....	.....	.....
2.6	.....	.....	.....
3.0	**Interpersonal Skills & Responsibility**		
3.1	A recognition of the need for and an ability to engage in life-long learning.	1.Take some exams.	1.Class participation.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
		2.Group discussion. 3.Brainstorming.	2.Performance on quizzes, midterms and final exams. 3.The student writing the notes can be taken as the indicator of how they pay attention to the lectures and classes.
3.2	.....	.....	.....
3.3	.....	.....	.....
3.4	.....	.....	.....
3.5	.....	.....	.....
3.6	.....	.....	.....
4.0	**Communication, Information Technology, Numerical**		
4.1	.....	.....	.....
4.2	.....	.....	.....
4.3	.....	.....	.....
4.4	.....	.....	.....
4.5	.....	.....	.....
4.6	.....	.....	.....
5.0	**Psychomotor**		
5.1	.....	.....	.....
5.2	.....	.....	.....
5.3	.....	.....	.....
5.4	.....	.....	.....
5.5	.....	.....	.....
5.6	.....	.....	.....

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

	Assessment task	Week Due	Proportion of Total Assessment
1	First Mid-Term	6	20%
2	Second Mid-Term	12	20%
3	Final Exam	15	40%

4	Assignments	4 and 9	10%
5	Quiz	5 and 11	10%
6	.....	.....	.....
7	.....	.....	.....
8	.....	.....	.....

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 councelling.
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 :

- **Electronics Devices and Circuits, by Bogart**
- **Electronic Devices and Circuit Theory, 4th Edition by Robert L Boylestad**

3. List Recommended Textbooks and Reference Material :

- www.nptel.ac.in
- .....
- .....

4. List Electronic Materials :

- .....
- .....
- .....

5. Other learning material :

- .....
- .....
- .....

F. Facilities Required

1. Accommodation

- **Lecture room: Available.**
- **Laboratory: available.**.....

2. Computing resources

- **LCD Projector available**
- **Smart Board**.....

3. Other resources

- .....
- .....
- .....

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- **Student's Course Survey is used by Quality Unit in the Department for obtaining students feedback** .....
- .....

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :

- **Visits of colleagues to monitor the teaching process** .....
- .....

3 Processes for Improvement of Teaching :

- **Course Report**
- **Results of students Course survey**
- **Results of teaching evaluation by program instructor**
- **Related workshops and training sessions**

4. Processes for Verifying Standards of Student Achievement

- **A sample of the process of marking is checked by an independent member of teaching staff and thereafter the sum of the marks will be verified**

5 Describe the planning arrangements for periodically reviewing course

effectiveness and planning for improvement :

- **Reviewing Couse Report every semester**
- **Improvement every Year**
- **.....**

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

Course's Coordinator		Department Head	
Name :	.....	***Name :***	.....
Signature :	.....	***Signature :***	.....
Date :	…./ … / …… *H*	***Date :***	…./ … / …… *H*