Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications
(CS)
Course Specifications

Institution: University of Dammam Date: 10/11/2014

College/Department : College of Science / Department of Physics

A. Course Identification and General Information

1. Course title and code:Electronics1/ PHYS307
2. Credit hours: 3(Lecture) + 2 (Lab)
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs): Bachelor in science / College of Science
4. Name of faculty member responsible for the course: **A specific team from the Physics Department**

5. Level/year at which this course is offered: Level 5
6. Pre-requisites for this course (if any): General Physics2(PHY132)
7. Co-requisites for this course (if any): NA
8. Location if not on main campus: College of Science, Arriyan.
9. Mode of Instruction (mark all that apply) a. traditional classroom Yes What percentage? 30 % b. blended (traditional and online) No What percentage? 50 % c. e-learning No What percentage? 0% d. correspondence No What percentage? 0% f. other Yes What percentage? 20% Comments: Used the Cooperative Education and interactive learning

B Objectives

1. What is the main purpose for this course?

On completion of the course, the students will be able to:

- Recognize the basic principles AC and DC current.
- Know how to deal with networks and electrical circuits.
- Use theorems to analyze networks.
- Know the general characteristics of the semiconductors.
- Explain the principles of diode operation.
- Recognize the basic structure of the transistor and the types.
- Gain practical experience through achieve some experiments related to the course.

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)

- Lectures and power point presentation.
- Self learning.
- Open discussions.
- Group work.
- Black Board.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

Course LOs #	1. Topics to be Covered		
	List of Topics	No. of Weeks	Contact hours
1a	Introduction. Generating AC Voltages. Voltage and Current Conventions for AC Frequency, Period, Amplitude, and Peak Value Angular and Graphic Relationships for Sine Waves Voltage and Currents as Functions of Time	1	3
2a	Phasors AC Waveforms and Average Value Effective Values	1	3
3a	33.2 Resistors in an AC Circuit 33.3 Inductors in an AC Circuit 33.4 Capacitors in an AC Circuit 33.5 The RLC Series Circuit 33.6 Power in an AC Circuit 33.7 Resonance in a Series RLC Circuit	1	3
4a	Resistance of Conductors Resistance of Wires Color Coding of Resistors Ohm's Law Voltage Polarity and Current Direction Power	1	3
5a	Series Circuits Kirchhoff's Voltage Law Resistors in Series Voltage Sources in Series Interchanging Series Components The Voltage Divider Rule Circuit Ground Parallel Circuits Kirchhoff's Current Law Resistors in Parallel Voltage Sources in Parallel Current Divider Rule Analysis of Parallel Circuits	1	3
6a	The Series-Parallel Network Analysis of Series-Parallel Circuits Applications of Series-Parallel Circuits Constant-Current Sources Source Conversions Current Sources in Parallel and Series	1	3
7a	Superposition Theorem Thévenin's Theorem Norton's Theorem	1	3
8a	1.3 Semiconductor Materials 3 1.4 Energy Levels 6 1.5 Extrinsic Materials—*n*- and *p*-Type 7	1	3
9a	1.6 Semiconductor Diode 10 1.7 Resistance Levels 17	1	3

10a	1.8 Diode Equivalent Circuits 1.9 Diode Specification Sheets 1.12 Semiconductor Diode Notation 1.14 Zener Diodes 35Equation. 2.2 Load-Line Analysis 2.3 Diode Approximations 2.4 Series Diode Configurations with DC Inputs	1	3
11a	2.6 AND/OR Gates *2.7 Sinusoidal Inputs; Half-Wave Rectification* BJT Transistors: construction, bias, operation. Other types of transistors	1	3
12a	Review		

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	36	NA	NA	NA	NA	36
Credit	36	NA	NA	NA	NA	36

3. Additional private study/learning hours expected for students per week. 4

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

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table).**Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.**Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code#	NQF Learning Domains and Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Know the principles of AC current.	• Lectures	• Assignments • Worksheet
1.2	Know how to use analysis theorems to analyze networks and electric circuits.	• Lectures • Self learning • worksheet	• Quizzes • Assignments

1.3	Recognize the characteristics of semiconductors and their devices.	• Lectures • Self learning	• Quizzes • Assignments
1.4	Recognize the connections and applications of electronic devices; diodes and transistors.	• Lectures • worksheet	• Quizzes • Assignments • Exams
2.0	**Cognitive Skills**		
2.1	Develop skills of the perception, comprehension, analytical thinking of the basics of electricity and electronics.	• Lectures • Self learning	• Assignments • worksheet
2.2	Develop ability to summarize the main ideas contained in the lesson.	• Open discussions. • Group work	• quizzes • Small project
2.3	Gain the skill of explanation the deference between AC and Dc currents.	• Open discussions. • Group work	• presentations
2.4	Employ and modify the literature of some topics in electricity and electronics .	• Self learning • Small project	• presentations
2.5	Develop analyze skills when applying theorems.	•	•
3.0	**Interpersonal Skills & Responsibility**		
3.1	Dealing with others and collaborative work.	• Team work	• worksheet
3.2	Respects the opinions of others, and accepts criticism.	• Open discussions.	• presentations
4.0	**Communication, Information Technology, Numerical**		
4.1	Search about some topics in the basics of electricity, electronics and some applications.	• Search in internet • Team work	• Assignments • Small project
4.2	Communicate with othersvia comments and explanations.	• Team work • discussion	• Interview
4.3	Assigning students work offers a simple scientific idea using Power Point and entered within the evaluation	• Using PC	• presentations

5.0	**Psychomotor**		
5.1	Gain student skill to notice how some electronics devices work in daily life.	• discussion	• Assignments

5.3	Gain student ability to describe and compare the principles of AC, DC currents.	• discussion	• Quizzes

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)

Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)													
	Knowledge				Cognitive Skills				Interpersonal Skills & Responsibility			Communication, Information Technology, Numerical		Psychomotor
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	4.1	4.2	5.0
1a														
2a														
3a														
4a														
5a														
6a														
7a														
8a														
9a														
10a														
11a														

6. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Essay/Written exam	5,10,14	45%
2	Worksheets / Assignments	3,5,7,9,11	6%
3	Homework	Per chapter	4%
4	Activity	During the term	4%
5	Attendance	Each class	1%
6	Final exam	17	40 %
	Total		100%

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)

- Faculty web-page with communication tolls in Black Board.
- 4 office hours/ week.

E Learning Resources

1. List Required Textbooks: 1- Basic Electronics for scientists: James J, Brophy, McGraw-Hill Publishing company. 2- Electronics Guide to Understanding Electricity and Electronics: G. Randy Slone; McGraw-Hill**.**
2. List Essential References Materials (Journals, Reports, etc.):
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) 1. Circuit analysis; Theory and Practice, by Allan H. Robbins 2. Physics for Scientists and Engineers Serway 3. ELECTRONIC DEVICES AND CIRCUIT THEORY Robert Boylestad & Louis Nashelsky
4- List Electronic materials, Web sites, Facebook, Twitter, etc: www.hazemsakeek.com ءايزيفلل يميلعتلا عقولما 1-
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.) Classroom enough for 45 students, Black (white) boards. Projector.
2. Computing resources (AV, data show, Smart Board, software, etc.) Computer.
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

1- Students evaluation in each semester
2- Meeting with students
3- e-suggestions
4- Open door policy

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

Assessment of student achievement statistically by the Office of Quality and Academic Development and implemented by the department.

3 Processes for Improvement of Teaching

1- Studying reports
2- Training of faculty.

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)

1- Taking a sample of assignments and exams to determine validity and reliability (NA)

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

4- Collecting all reports and evaluations at the end of the year for a reviewing purpose.