ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications
(CE)

14032204-4 – Electronic Circuits

Course Specifications

Institution	Date of Report
Umm Al-Qura University	17/04/2016
College/Department **College of Computer & Information Systems**	

A. Course Identification and General Information

1. Course title and code: **Electronic Circuits - 14032204-4**			
2. Credit hours 4			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) **Computer Engineering**			
4. Name of faculty member responsible for the course **Dr. Faisal Al-Osaimi**			
5. Level/year at which this course is offered **Level 5**			
6. Pre-requisites for this course (if any) **General Physics II and Circuit Theory**			
7. Co-requisites for this course (if any) N/A			
8. Location if not on main campus **Al-Abidiyah Umm Al Qura University - Makkah Al Mukarramah**			
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 background of basic electronic devices and their operation with numerous examples of applications. The concepts of basic electronic devices available today, their theory of operation Typical device characteristics and A number of typical applications.
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. Involving students in presentation of advanced topics in Electronics to know current research in the field. 2. Lecture slides and tutorials, animations to further clarify the theoretical concepts 3. Use of Multisim, PSpice for simulating different circuits' analysis problems.

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 Theory	1,2	3
Diodes	3,4,5	3
Diode Devices	6,7	3
Transistor	8,9,10	3
DC and AC Analysis	11,12	3
Field-Effect Transistor	13,14,15	3

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	45			105
Credit	3		1			4

3. Additional private study/learning hours expected for students per week.	8hrs

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

Course Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning, assessment, and teaching.

The ***National Qualification Framework*** provides five learning domains. Course learning outcomes are required. Normally a course has should not exceed eight learning outcomes which align with one or more of the five learning domains. Some courses have one or more program learning outcomes integrated into the course learning outcomes to demonstrate program learning outcome alignment. The program learning outcome matrix map identifies which program learning outcomes are incorporated into specific courses.

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. **Fourth**, if any program learning outcomes are included in the course learning outcomes, place the @ symbol next to it.

Every course is not required to include learning outcomes from each domain.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Synthesize basic electronic devices and their operation with numerous examples of applications	1. Assignments and their solutions, so that student can manage their problems 2. Open-communication with students – show willingness to assist and take questions from students and clarify explanations in the class 3. Students presentations on different topics in Electronics. 4. Practical problems using Multisim, Pspice.	1. Exercises & Home works, Quizzes, Midterm, Project, Final Exam 2. Review outputs from the assignments in the computer lab and also from their assignments
1.2	Understanding and implementing the concepts of basic electronic devices available today.		
1.3	Analyzing and evaluating typical device characteristics, device specifications and a number of typical applications.		
2.0	**Cognitive Skills**		
2.1	Ability to solve problems	1. Assignments. 2. Lab	1. Mid and Final Exams 2. Labs Exams
2.2	Ability to apply knowledge to real world logic problems and identify faults		
2.3	Ability of deduction and inference.		
2.4	Ability of analysis and design		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Understand and communicate to others the importance and relevance of statistics in the modern world	1. Numerical Assignments 2. Labs 3. Students Presentations 4. Practical hardware problems to enable students to understand the components	• Written Examinations • Assignments • Quizzes • Class work and lab work • Classroom interactions
3.2	Be an independent learner, able to acquire further knowledge with some guidance or support.		
3.3	Participate in group discussions		
3.4	Manage time and meet deadlines.		
4.0	**Communication, Information Technology, Numerical**		
4.1	Lab work will improve their circuit designing and analytical skills	1. Written Examinations 2. Assignments 3. Quizzes	1. Assignments, exams, reports, presentations and quizzes will test their analytic skills and communication skills 2. Class discussions should indicate a student's prowess in responding
4.2	Assignments, exams, reports, presentations and quizzes will test their analytic skills and communication skills		
5.0	**Psychomotor**		
5.1	Electronic Circuit designing is used in the course for psychomotor skill.	The students are encouraged to design and apply different electronic circuit techniques to	The psychomotor skills developed in this course are assessed by assignments, presentations and project.

		develop psychomotor skills.	
5.2			

Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
Knowledge	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
Cognitive Skills	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
Interpersonal Skills & Responsibility	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
Communication, Information Technology, Numerical	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize
Psychomotor	demonstrate, show, illustrate, perform, dramatize, employ, manipulate, operate, prepare, produce, draw, diagram, examine, construct, assemble, experiment, and reconstruct

Suggested ***verbs not to use*** when writing measurable and assessable learning outcomes are as follows:

Consider	Maximize	Continue	Review	Ensure	Enlarge	Understand
Maintain	Reflect	Examine	Strengthen	Explore	Encourage	Deepen

Some of these verbs can be used if tied to specific actions or quantification.

Suggested assessment methods and teaching strategies are:

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Differentiated teaching strategies should be selected to align with the curriculum taught, the needs of students, and the intended learning outcomes. Teaching methods include: lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, guest speakers, memorization, humor, individual presentation, brainstorming, and a wide variety of hands-on student learning activities.

5. 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	Attendance, Participation and Labs Evaluation	Through out Semester	25
2	Quiz	3	10
3	Mid term 1	4	10
4	Home work	Through out semester	5
	Mid Term II	10	10
5	Final Exam	16	40
6	Attendance, Participation and Labs Evaluation	Through out Semester	25
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) **Faculty is available 08 hours per week for student help and consulting.**

E. Learning Resources

1. List Required Textbooks 1. Robert Boylestad and Louis Nashelsky, "Electronic Devices and Circuit Theory" 11th Edition, Prentice Hall, 2013. 2. Digital Integrated Circuits, Thomas DeMassa and zack Ciccone, John Wiley & Sons, 1996 3. Microelectronics, Millman, McGraw-Hill, 1999
2. List Essential References Materials (Journals, Reports, etc.) N/A
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) N/A
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) • http://www.electronics-tutorials.ws/ • http://www.opamp-electronics.com/
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. • Electronics Workbench • PSpice • Multisim

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.) • A Lecture room having Multimedia projector for lectures and students presentation. • Well-equipped lab with kits for practical implementations of electronic circuits • Internet

2. Computing resources (AV, data show, Smart Board, software, etc.) • Computer lab available for practical networking and for simulations. • Students are encouraged to bring in their laptops and use them in solving problems in the class room.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Sufficient number of National Instrument Elvis Boards with computers and components are required.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Course Survey and students Feedback for each learning outcome of the course
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor • Monthly faculty meetings to discuss best practices and issues related to the course
3 Processes for Improvement of Teaching • Departmental Meetings • Faculty Trainings
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) • Departmental Meetings

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

- Departmental Meetings and management meetings

Course Improvement Plan

Six Step Plan for Course Improvement

- ❑ Step 1) Review the minimum, average, and maximum score for each topic (framework objective). Mark each score which is less than 80% (highlight, circle, etc.)
- ❑ Step 2) For each topic marked for analysis, review the current curriculum framework. Reflect on why scores are low in that topic area.
- ❑ Step 3) For each topic marked for analysis, review the lesson plans used to teach the topic. Determine if the lesson plan and the topic are correlated. Reflect on how this topic was taught. What would improve student learning and retention? …a different instructional method? …devoting more time to the topic?
- ❑ Step 4) Decide on the action you can take to enhance teaching and learning in the course. Indicate, in note or narrative form, what action you will take. Communicate this to administrators and colleagues. Lesson plans can be updated to include the improvements/changes that you will utilize for the next school year.
- ❑ Step 5) Make some predictions about how much you believe these improvements and/or changes will affect the student's learning and retention.
- ❑ Step 6) The improvement process is an ongoing activity that should be visited each year. When it comes time for next year's Improvement Plan you can look back at your predictions and determine how well your plan worked.
  - ⇨ Were the resources that you listed as "not available" a stumbling block in making improvement? How can these resources be obtained?
  - ⇨ Have you made significant enough improvements that a principal would consider obtaining those resources in hopes that even more improvement will be made?
  - ⇨ Were you realistic in your goal setting?

Faculty or Teaching Staff: _____

Signature: _____ **Date Report Completed: _____**

Received by: _____ **Dean/Department Head**

Signature: _____ **Date: _____**