Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

COURSE SPECIFICATION

Course Specification

Institution: Umm Al-Qura University

Department: Computer Engineering Department

A. Course Identification and General Information

1. Course title and code: Circuit Theory - II – 14034209-3

2. Credit hours: 04

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. Abdellaif Semeia

5. Level/year at which this course is offered Level 05

6. Pre-requisites for this course (if any) Circuit Theory – I Engineering Maths – I

7. Co-requisites for this course (if any) N/A

8. Location if not on main campus Umm Al-Qura University – Abadia Campus

B Objectives

1. Summary of the main learning outcomes for students enrolled in the course.

   - Understanding of circuit response of second order networks, resonant circuits.

   - Understanding of transformed networks, Fourier series analysis.

   - Understanding of passive filters design and analysis, OPAMP applications, active filters.

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

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
Resonant Circuits & AC steady-state		
Developing differential-equation models for linear circuits		
Natural and Step Response of RLC Circuits		
Introduction to the Laplace Transform		
Applications of Laplace Transform to Circuit Analysis		
Frequency Selective Circuits		
Designing applications using Operational Amplifiers		
Active Filter Circuits		
Fourier Series		
N-port networks		

2. Course components (total contact hours per semester):				
Lecture: 48 contact Hrs	Tutorial: N/A	Laboratory: 48 contact Hrs.	Practical/Field work/Internship: N/A	Other: N/A

3. Additional private study/learning hours expected for students per week. (This should be an average: for the semester not a specific requirement in each week)

An average student is expected to learn 08 hours per week other than class teaching.

4. Development of Learning Outcomes in Domains of Learning

For each of the domains of learning shown below indicate:

- 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 to be used in the course to evaluate learning outcomes in the domain concerned.

a. Knowledge

(i) Description of the knowledge to be acquired

This course provides an understanding of circuit in the response of second order networks, resonant circuits frequency domain using transformation methods; transformed networks, Fourier series analysis, Passive filters design and analysis, Op-Amp applications and design, active filters, N-port networks.

(ii) Teaching strategies to be used to develop that knowledge

Classroom lectures, power point slides and individual attention is used to develop knowledge of the course.

(iii) Methods of assessment of knowledge acquired

Assessment methods include final exam, mid-term, quizzes, assignments, project & presentations.

b. Cognitive Skills

(i) Description of cognitive skills to be developed

This course will develop the ability to understand circuit structure their applications and passive and active filters analysis, Fourier series analysis and N-port networks.

(ii) Teaching strategies to be used to develop these cognitive skills

Practical examples and open ended tasks are used to develop cognitive skills in the students.

(iii) Methods of assessment of students cognitive skills

Cognitive skills are assessed by using assignments, quizzes and project

c. Interpersonal Skills and Responsibility

(i) Description of the interpersonal skills and capacity to carry responsibility to be developed

In this course project is assigned to the students which is a group activity and play important role to improve students' interpersonal skills and personal and social responsibility.

(ii) Teaching strategies to be used to develop these skills and abilities

Group assignments and project are given to develop these skills.

(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility

Assessment of students' interpersonal skills is performed by taking exam, report and presentation.

d. Communication, Information Technology and Numerical Skills

(i) Description of the skills to be developed in this domain.

To develop skills in this domain circuit designing is given to the students.

(ii) Teaching strategies to be used to develop these skills

Students' are advised to solve assignments and project reports as per standard format to develop writhing skills and presentations are arranged to give them chance to develop communication skills.

(iii) Methods of assessment of students numerical and communication skills

To assess the students numerical and communication skills tests and conducted and presentations are arranged. Some of the marks are allocated for standard presentation.

e. Psychomotor Skills (if applicable)

(i) Description of the psychomotor skills to be developed and the level of performance required

Circuit designing is used in the course for psychomotor skill.

(ii) Teaching strategies to be used to develop these skills

The students design different circuits designing techniques to develop psychomotor skills.

(iii) Methods of assessment of students psychomotor skills

The psychomotor skills developed in this course are assessed by assignments, presentations and Project.

5. Schedule of Assessment Tasks for Students During the Semester			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	Quizzes		
2	Mid Term		
3	Assignments		
4	Project		
5	Final Exam		

D. Student Support

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

For individual student consultations and academic advice teaching staff is expected to be available 06 hours per week

E. Learning Resources

1. Required Text(s)   Nilsson & Riedel "Electric Circuits", 10th Edition, Pearson, 2015
2. Essential References   Robert Boylestad, "Introductory Circuit Analysis", 12th Edition., Pearson, 2014.
3. Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)   N/A

4. Electronic Materials, Web Sites etc
 	
   i.   http://utwired.engr.utexas.edu/rgd1/
   ii.   http://www.irf.com/technical-info/guide/circuit.html
   iii.   http://www.circuit-magic.com/laws.htm
   iv.   http://www.zen22142.zen.co.uk/adt.htm
   v.   http://www.physics.uoguelph.ca/tutorials/ohm/

5. Other learning material such as computer-based programs/CD, professional standards/regulations   National Instruments Multisim 11.0 is required.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Lecture rooms, laboratories, etc.)   Lecture room and laboratory are required with multimedia projector.
2. Computing resources   Sufficient numbers of computers and National Instruments Multisim 11.0 is required.
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

    To improve effectiveness of teaching student feedback is obtained in the form of assignments, tests, quizzes, attendance etc.

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

    The evaluation of teaching is performed by the department using student survey.

3. Processes for Improvement of Teaching

    The process for improvement of teaching is based on result of student survey and result of student outcomes. Individual attention is provided to weak students.

4. Processes for Verifying Standards of Student Achievement (eg. 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)

    N/A

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

    The course effectiveness is reviewed for planning and improvement on annual basis.