

ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

**Course Specifications
(CS)**

Course Specifications

Institution : Najran University	Date of Report: 20/4/1436
College/Department : College of Science and Arts Sharorah / Department of Computer Science.	

A. Course Identification and General Information

1. Course title and code:			
Title: Electric and Electronic Circuits		Code: 201ENG-3 (٢٠١ هـ-٣)	
2. Credit hours 3 Credit Hours			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Title : Computer Science Program			
4. Name of faculty member responsible for the course Dr\ Abdulaziz Saleh Yselem Bin-Habtoor.			
5. Level/year at which this course is offered 2 nd Level (1st semester of the 1st year)			
6. Pre-requisites for this course (if any) 101CS-4 (Introduction To Computers)			
7. Co-requisites for this course (if any)			
8. Location if not on main campus ▪ Main Campus and Female Branch: College of Science and Arts, Border District-King Abdul Aziz Road, Sharourah			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	100 %
b. Blended (traditional and online)	<input type="checkbox"/>	What percentage?	
c. e-learning	<input type="checkbox"/>	What percentage?	
d. Correspondence	<input type="checkbox"/>	What percentage?	
f. Other	<input type="checkbox"/>	What percentage?	
Comments: All courses taught in accordance with the Traditional classroom pattern as well as the department starts to formulate some e-learning courses in addition with taken into consideration the possibilities of applying long distance learning through the Internet in future			

B Objectives

1. What is the main purpose for this course?

The main purpose for this course can be summarized in the following points

- Memorize the fundamentals of basic DC and AC circuit elements
- Analyze DC and AC circuits
- Design electric circuits and analyze the performance results.

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)

DC Circuits: circuit variables, dc circuit elements, circuit analysis, maximum power transfer and superposition. AC circuits: AC circuit components and simple AC circuit analysis. Diodes: diode structures, diode circuits, diode clippers /limiter, diode clippers, and diode rectification circuits. Transistors: bipolar junction transistors, n-p-n structures, p-n-p structures, modes of operations, CB, CE, CC configuration, transistor circuits and applications, transistor switching. Field effect transistors FET. Opto electronic devices: photodiodes, LED, semiconductor lasers.

1 Topics to be Covered

Topic	No of Weeks	Contact hours
Introduction to Electric & Electronic Circuits Units associated with basic electrical quantities DC Circuits: (dc circuit elements, Ohms law and its applications), Power Transfer	1.5	3
Resistance , capacitance, inductance	1	2
Circuit Analysis: Kirchhoff's Current Law (KCL. Kirchhoff's Voltage Law (KVL)	1	2
Thévenin's Theorems and Norton's Theorems	1.5	3
Superposition Principles Nodal Analysis and Mesh Analysis	1.5	3
AC Circuits (ac circuit components, circuit analysis, RMS value.....)	2	4
Mid term Exam	0.5	1
Diodes (characteristics, diode circuits, diode applications: Half –wave rectifier, Bridge full-wave rectifier, clippers/limiters, Clippers)	2	4
Transistors (bipolar junction NPN, PNP, modes of operations, CB, CE, CC configuration, dc analysis of transistor)	2	4
Field effect transistors (FET), Transistor Circuits and applications.	1	2

Opto electronic devices: photodiodes, LED, semiconductor lasers	1	2
---	---	---

1 Topics to be Covered		
Topic	No of Weeks	Contact hours
Electrical Circuits Simulation using Multisim, Electronics Workbench: An Introduction	1	2
Electric Circuit Fundamentals: Ohm's law, Resistors, Color Codes & Power Rating	1	2
Kirchhoff's Current Law (KCL. Kirchhoff's Voltage Law (KVL)	1	2
Series & Parallel Circuits Voltage Divider & Current Divider Rules	1	2
Superposition Theorem	1	2
Thevenin's Theorem and Norton's theorem.	1	2
The Oscilloscope and Function Generator	1	2
Sinusoidal AC Analysis	1	2
Diode Characteristics	1	2
Mid term Practical Test	1	2
Clipper/limiter circuits	1	2
Clamper circuit	1	2
Transistor characteristics	1	2
Transistor configurations (CE, CB, CC)	1	2

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	-	30	-	-	60
Credit	30		15	-	-	45

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

Office hours

4

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	Memorize adequate theory to the basics of electrical and electronic circuit's background.	<ul style="list-style-type: none"> Lectures. discussion 	<ul style="list-style-type: none"> Written tests and final examination. Evaluate the assignments
1.2	Recognize the electrical and electronic circuit components		
1.3	list the methods of analysis of electrical and electronic circuits		
2.0	Cognitive Skills		
2.1	Design of electric and electronic circuit	<ul style="list-style-type: none"> Practical application. discussion Problem Solving 	<ul style="list-style-type: none"> Evaluate the Assignments Witten Tests
2.2	Analyze electrical and electronic circuits using analysis tools		
3.0	Interpersonal Skills & Responsibility		
3.1	The ability to work together and rely on self-shows	<ul style="list-style-type: none"> Group discussion . 	<ul style="list-style-type: none"> Assessment of Tests
3.2	Self-learning ability and personal development skills		
4.0	Communication, Information Technology, Numerical		
4.1	Shows the ability to use modern technologies in writing reports	<ul style="list-style-type: none"> Lectures. Group discussion 	<ul style="list-style-type: none"> Evaluate the assignments
5.0	Psychomotor		
5.1	None		

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, and 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.

5. Schedule of Assessment Tasks for Students During the Semester

No.	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Midterm Exam	8 th week	15
2	Practical Midterm Exam	8 th week	10
3	Alternative methods <ul style="list-style-type: none"> Individual and group assignments Short tests (Quizzes) 	Over the semester	15
4	Attendance and participant	Over the semester	10
5	Final Practical Exam	13 th week	10
6	Final written Exam	Semester end	40

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.

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) 4Office Hours

E. Learning Resources

1. List Required Textbooks <ul style="list-style-type: none">Richard C. Dorf, James A. Svoboda, "Introduction to Electric Circuits", 9th edition Wiley (2013)Floyd T., "electronic-devices", -9th-edition-Printics Hall
2. List Essential References Materials (Journals, Reports, etc.) <p>James W. Nilsson, Susan A. Riedel" ELECTRIC CIRCUITS: 2011, 2008, 2005, 2001, 2000, 1996 Pearson Education, Inc., publishing as Prentice Hall, One Lake Street, Upper Saddle River, New Jersey, 07458.</p>
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) <p>John Bird BSc(Hons), CEng, CSci, CMath, FIET, MIEE, FIIE, FIMA, FCollT," Electrical and Electronic Principles and Technology", Linacre House, Jordan Hill, Oxford OX2 8DP, UK 2007.</p>
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.) <ul style="list-style-type: none">The Classrooms, laboratories size have to be suitable to accommodate all the students enrolled in the course
2. Computing resources (AV, data show, Smart Board, software, etc.) <ul style="list-style-type: none">halls have to be equipped with a data display (data show)
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach

list)

- identify laboratory equipment required depending on the selected topics

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:
✓ Distribution of a questionnaire for students to know how to achieve the goals in the theoretical and practical side.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor:
✓ Discussions with colleagues who specialize in teaching methods and means of learning.
✓ Self-evaluation of the performance of the teacher.
✓ Discussions with other colleagues who taught this course.
3 Processes for Improvement of Teaching
✓ Diagnose weaknesses and turn them into strengths.
✓ Discussions about the decision and methods of teaching
✓ Study the needs of the labor market of college graduates
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)
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Faculty or Teaching Staff: Prof. Dr. Abdulaziz saleh Yselem Bin-Habtoor

Signature: _____

Date Report Completed: 19/4/1436

Received by: _____

Dean/Department Head

Signature: _____

Date: 20/4/1436