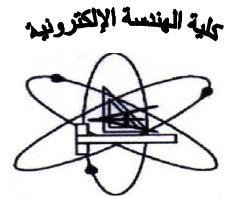


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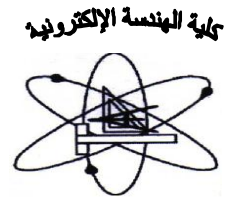


Department offering the program: Electronics and Electrical Communications Engineering
Department offering the course: Electronics and Electrical Communication Engineering

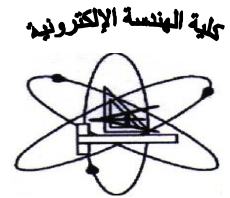
Course Specification

1. Course Basic Information		
Code: ECE 223	Title: Electronic Circuits	Academic year: 2015-2016 Level (2) – Semester (2nd)
Department requirement	Teaching hours: Lecture [2] Tutorial [1] Lab [] Practice[2]	

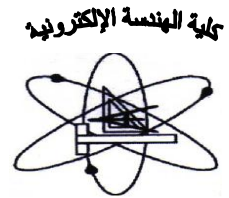
2.Course Objectives	<ol style="list-style-type: none"> 1. To provide students different methods and techniques required to model and analyze the electronic circuits. 2. To acquire students the skills to find the equivalent circuit, the voltage gain, the current gain, the input impedance, and the output impedance. 3. To teach students multi-stage amplifier using BJT and JFET transistors. 4. To give students knowledge about power amplifier classes and the amplifier frequency response. 5. To provide students with different types of oscillators and tuned amplifiers. 6. To provide students with some op-amp applications. 	
3.Intended learning outcomes:	Course ILOs	
ARS		
A- Knowledge and understanding	A.1 Explain concepts and theories of mathematics and science, appropriate to electronic circuits.	A.1.1 Explain concepts and theories of mathematics appropriate to analyzing multi-stage amplifiers. A.1.2 Explain concepts and theories of mathematics appropriate to amplifiers frequency response. A.1.3 Explain concepts and theories of science appropriate to oscillators and tuned amplifiers.
	A.4 Demonstrate principles of design including elements design, process and/or a system related to electronic circuits.	A.4.1 Demonstrate principles of design of power amplifier different classes. A.4.2 Demonstrate principles of design of multi-stage amplifiers using BJT and JFET transistors. A.4.3 Demonstrate principles of design of oscillators and tuned amplifiers. A.4.4 Demonstrate principles of design of op-amp circuits.
	A.5 Demonstrate methodologies of solving engineering problems, data collection, and interpretation.	A.5.1 Demonstrate methodologies of solving power amplifiers problems. A.5.2 Demonstrate methodologies of solving multi-stage amplifiers problems. A.5.3 Demonstrate methodologies of solving oscillators and tuned amplifiers problems A.5.4 Demonstrate methodologies of solving amplifier frequency response problems.



B- Intellectual skills	<p>B.1 Select appropriate mathematical and computer-based methods for modeling and analyzing problems.</p> <p>B.5 Assess and evaluate the characteristics and performance of components, systems and processes.</p>	<p>B.1.1 Select appropriate mathematical methods for modeling and analyzing electronic circuits problems.</p> <p>B.1.2 Select appropriate mathematical methods for analyzing multi-stage amplifier circuits.</p> <p>B.1.3 Select appropriate mathematical methods for analyzing power amplifiers.</p> <p>B.1.4 Select appropriate mathematical methods for analyzing simple BJT and JFET bias circuits and find the Q-point.</p> <p>B.5.1 Assess and evaluate the characteristics and performance of multi-stage amplifiers using BJT and JFET transistors.</p> <p>B.5.2 Assess and evaluate the characteristics and performance of power amplifiers.</p> <p>B.5.3 Assess and evaluate the characteristics and performance of oscillators and tuned amplifiers.</p> <p>B.5.4 Assess and evaluate the characteristics and performance of op-amps circuits and components.</p>
C- Professional skills	<p>C.1 Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.</p> <p>C.6 Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to electronic circuits and develop required computer programs.</p>	<p>C.1.1 Apply knowledge of mathematics, design, and engineering practice integrally to solve multi-stage amplifiers and power amplifier problems.</p> <p>C.1.2 Apply knowledge of mathematics, design, and engineering practice integrally to solve Oscillators, tuned amplifiers, and op-amp problems.</p> <p>C.6.1 Use a wide range of analytical tools, and techniques to model and analyze different electronic circuits.</p> <p>C.6.2 Use a wide range of analytical tools, and techniques to find out Equivalent circuit, the voltage gain, the current gain, the input impedance and the output impedance of the circuit</p> <p>C.6.3 Use a wide range of analytical tools, techniques to analyze Multi-stage amplifiers, and Power amplifiers.</p> <p>C.6.4 Use a wide range of analytical tools, techniques to analyze Oscillators, tuned amplifiers and Op-amp circuits.</p>



D- General skills	D.2 Work in stressful environment and within constraints.	D.2.1 Work in stressful environment and within constraints in solving electronic circuit problems, and writing reports.
	D.3 Communicate effectively.	D.3.1 Communicate effectively, clearly and use the appropriate medium, including written, oral, and electronic communication methods in class room and in lecture time.
	D.6 Effectively manages tasks, time, and resources.	D.6.1 Effectively manages tasks, time, and resources in problem solving, research assignments, and exams.
	D.7 Search for information and engage in life-long self-learning electronic circuits.	D.7.1 Search for information and engage in electronic circuit basics and principles life-long self-learning and continue to be motivated to learn new subjects related to electronic circuits design and analysis.
4.Course contents	Multi stages amplifier – Feed back amplifier- oscillators – Power amplifier- High frequency amplifiers - Integrated Circuits amplifier – Wide band amplifier- Operational Amplifiers characteristics- Wave generation and shaping- Application of non-linear circuits- Design of analog electronic circuits- Circuit simulation- Response Syllabus and printed circuit building.	
5.Teaching and learning methods	<ul style="list-style-type: none"> - Lectures - Tutorials - Research assignments 	
6.Teaching and Learning Methods for disable students	<ul style="list-style-type: none"> - Official low cost special classes for developing student skills, arranged by the faculty administration. - Assign a portion of the office hours for those students. - Repeat the explanation of some of the material and tutorials. 	
7.Student assessment		
a- Assessment methods	<ul style="list-style-type: none"> - Weekly sheet exercises at class room. - Quizzes. - Research assignments - Mid-term and final exams. 	
b- Assessment schedule	<ul style="list-style-type: none"> - Exercise sheet: Weekly - Quiz 1: Week <u>no</u> 4 - Mid-term exam: Week <u>no</u> 8 - Quiz 2: Week <u>no</u> 12 - Final-term examination: Week <u>no</u> 16 	
c- Weighting of assessment	<ul style="list-style-type: none"> - Class tutorial and quizzes: 5 % - Mid-term examination: 15 % - Oral Exam : 20% - Final-term examination: <u>60 %</u> 	



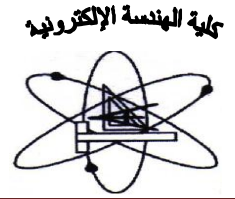
	Total	100 %
1. List of text books and references:		
a- Course notes	- There are lecture notes prepared in the form of a book by course coordinator and authorized by the department.	
b- Text books	- Richard Sponcer, Mohammed Ghausi, Introduction to Electronic Circuit Design: International Edition, Pearson Higher Education, 2003.	
c- Recommended books	[1] Robert L. Boylestad, Louis Nashelsky, Electronic Devices and Circuit Theory, 9 th ed, Prentice Hall, New Jersey, 2006. [2] U. A. Bakshi, A. P. Godse, Electronic Devices and Circuits, 4 th ed, Technical Publications Pune, 2008.	
d- Periodicals, Web sites, etc.	www.aaroncake.net/circuits/ www.electronics-circuit.com/ www.coolcircuit.com/ www.uotiq.org/tec_magaz/volume262008/No2/abstracts/7.pdf www.allaboutcircuits.com/	

Course contents - ILOs Matrix

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Modeling and analysis the electronic circuits	1-2	A.1, A.4	B.1	C.6	D.2,D.3,D.6,D.7
Equivalent circuit - the voltage gain, the current gain, the input impedance and the output impedance of the circuit	3-4	A.4, A.5	B.1, B.5	C.6	D.2,D.3,D.6,D.7
Multi-stage amplifiers - Power amplifier classes - Amplifiers frequency response	5-7	A.1, A.4, A.5	B.1,B.5	C.1, C.6	D.2,D.3,D.6,D.7
Oscillators and tuned amplifiers	9-11	A.1, A.4,	B.5	C.1, C.6	D.2,D.3,D.6,D.7
Op-AMP applications	12-14	A.1, A.4, A.5	B.5	C.1, C.6	D.2,D.3,D.6,D.7

Teaching and learning methods - ILOs Matrix

Teaching and learning methods	A. Knowledge & understanding	B. Intellectual skills	C. Professional & practical skills	D. General & transferable skills
Lectures	A.1, A.4, A.5	B.1, B.5	C.1, C.6	D.3
Tutorials	A.1, A.4, A.5	B.1, B.5	C.1, C.6	D.2, D.3,D.6
Research assignments	A.1, A.4, A.5	B.1, B.5	C.1, C.6	D.2,D.6,D.7



Assessment methods - ILOs Matrix

Assessment methods	A. Knowledge & understanding	B. Intellectual skills	C. Professional & practical skills	D. General & transferable skills
Weekly sheet exercises	A.1, A.4, A.5	B.1, B.5	C.1, C.6	D.2,D.3,D.6
Research assignments	A.1, A.4, A.5	B.1, B.5	C.1, C.6	D.2,D.6,D.7
Quizzes	A.1, A.4, A.5	B.1, B.5	C.1, C.6	D.2,D.6
Mid-term and final written exams	A.1, A.4, A.5	B.1, B.5	C.1, C.6	D.2,D.6

Authorized from department board at 15/05/2016

Authorized from college board at 05/06/2016

Course coordinator:

Prof. Saber H. Zein El-dein

Head of Department:

Prof. Fathi El-Sayed Abd El-Samie