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| http://euhr.edu.eg/Files/170/Logo.jpg كلية الهندسة بشبرا | Model No.12 Course Specifications : Electronic Circuits 3A |  |
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| **University** : Benha university |

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| **Faculty** : Faculty of Engineering - Shoubra |

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| **Department** : Electrical Engineering Department |

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| **1- Course Data** |
| |  |  |  |  | | --- | --- | --- | --- | | Course Code : ECE312 | Course Title : Electronic Circuits 3A | Study Year : 3rd year communication | | | Specialization : |  | | | | Teaching Hours: | | | | | Lecture : 4 | Tutorial : 2 | Practical : |  | | |

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| **2-  Course Aim** |
| For students undertaking this course, the aims are to: |
| |  | | --- | | 2.1- Explain the basic transistor biasing. | | 2.2- Explain how transistor are modeled with re and hybrid parameters. | | 2.3- Analysis of the transistor circuits at low, medium and high frequencies using bode plots and frequency response. | | 2.4- Explain the operation of power amplifiers, Mixers and modulators. | |

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| **3- Intended Learning Outcomes of Course (ILOS)** |
| |  | | --- | | **a-  Knowledge and Understanding** | | On completing this course, students will be able to: | | |  | | --- | | a- 1- Define concepts and theories of mathematics and sciences, appropriate to electronic circuits. | | a- 4 - Describe principles of design including elements design, process and/or a system related to electronic circuits. | | a- 13 - Explain elementary science underlying electronic engineering systems and information technology. | | a- 15 -Describe principles of analyzing and design of electronic circuits and components. | | |  | | | **b-  Intellectual Skills** |  | | At the end of this course, the students will be able to: |  | | |  | | --- | | b- 3- Think in a creative and innovative way in problem solving and design. | | b- 14 - Plan, conduct and write a report on a project or assignment. | | b- 16 - Synthesize and integrate electronic systems for certain specific function using the right equipment. | |  | |  | | | **c-  Professional Skills** |  | | On completing this course, the students are expected to be able to: |  | | |  | | --- | | c- 3 - Create and/or re-design a process, component or system, and carry out specialized engineering designs. | | c- 5 - Use computational facilities and techniques, measuring instruments, workshops and laboratories equipment to design experiments, collect, analyze, and interpret results. | | c- 16 - Troubleshoot, maintain and repair almost all types of electronic systems using the standard tools. | | c- 17 - Identify appropriate specifications for required devices. | |  | |  | | | **d-  General Skills** |  | | At the end of this course, the students will be able to: |  | | |  | | --- | | d- 2 - Work in stressful environment and within constraints. | | d- 3- Communicate effectively | | d- 6 - Effectively manage tasks, time, and resources. | | d- 12 - Develop skills related to creative and critical thinking as well as problem solving | |  | |  | | |

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| **4- Course Contents** |
| |  |  | | --- | --- | | **No.** | **Topics** | | 1 | DC Biasing BJTs | | 2 | Transistor hybrid parameters | | 3 | BJT transistor modeling | | 4 | BJT small signal analysis | | 5 | BJT frequency response (low frequency response) | | 6 | BJT frequency response (high frequency response) | | 7 | Bode-Plot and frequency response | | 8 | Modulation circuits | | 9 | Mixer circuits | | 10 | Power amplifiers | |

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| **5- Teaching and Learning Methods** |
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| |  | | --- | | 5.1- Lectures | | 5.2- Practical training | | 5.3- Class activity | | 5.4- Assignments | |

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| **6- Teaching and Learning Methods of Disables** |
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| **7- Student Assessment**  **a- Student Assessment Methods** |

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| 1 | Assessment   to assess   knowledge and intellectual skills. |
| 2 | Quizzes   to assess   knowledge, intellectual and professional skills. |
| 3 | Mid-term exam   to assess   knowledge, intellectual, professional and general skills. |
| 4 | Oral Exam   to assess   knowledge and intellectual skills. |
| 5 | Final exam   to assess   knowledge, intellectual, professional and general skills. |

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| |  | | --- | |  | |  | |  | | | **b- Assessment Schedule** |  | | |  |  |  | | --- | --- | --- | | **No.** | **Assessment** | **Week** | | 1 | Assessment 1 | 3, 7, 11, 13 | | 2 | Assessment 2 Quizzes | 4, 6, 10, 12 | | 3 | Assessment 3 Mid-term exam | 8 | | 4 | Assessment 4 Oral Exam | 14 | | 5 | Assessment 5 Final exam | 15 | |  | |  | | | **c- Weighting of Assessments** |  | | |  |  | | --- | --- | | **Assessment** | **Weight** | | Mid\_Term Examination | 10 % | | Final\_Term Examination | 60 % | | Oral Examination | 20 % | | Practical Examination | 0 % | | Semester work | 5 % | | Other types of assessment | 5 % | | Total | 100 % | |  | |  | | |

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| **8- List of References** |
| |  | | --- | | **a- Course Notes** | | |  | | --- | | 1- Course notes prepared by instructor. | | | **b- Books** | | |  | | --- | | 1- Robert L. Boylestad, Electronic devices and circuit theory, 8th Edition , Prentice hall,2001 | | | **c- Recommended Books** | | |  | | --- | | 1- Thomas L. Floyd, Electronic devices, 7th Edition, Pearson Education, Limited, 2005 | | |

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| **- Course Coordinator :    Rokaia Mounir Zaki Emam** |
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| **- Head of Department :     سيد أبو السعود سيد ورد** |

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| **University** : Benha university |

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| **Faculty** : Faculty of Engineering - Shoubra |

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| **Department** : Electrical Engineering Department |

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| **Matrix of Knowledge and Skills of the course** |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **NO.** | **Topics** | **week** | **Basic Knowledge** | **Intellectual Skills** | **Professional Skills** | **General Skills** | | 1 | DC Biasing BJTs | 1 | a1,a4 | b3 | c3,c17 | d2,d3 | | 2 | Transistor hybrid parameters | 2 | a1,a4 | b3 | c3,c17 | d2,d3 | | 3 | BJT transistor re modeling | 3 | a1,a4,a15 | b3,b16 | c3,c17 | d2,d3 | | 4 | BJT transistor hybrid model | 4 | a1,a4,a15 | b3,b16 | c3,c5,c17 | d2,d3,d12 | | 5 | Graphical determination and variations of The h-Parameters | 5 | a1,a4 | b3,b16 | c3,c5,c17 | d2,d3,d12 | | 6 | BJT small signal analysis | 6 | a1,a4,a15 | b3,b16 | c3,c5,c17 | d2,d3,d12 | | 7 | BJT frequency response (low frequency response) | 7 | a1,a4 | b3,b16 | c3,c5,c17 | d2,d3,d12 | | 8 | Mid term exam | 8 | a1,a4,a15 | b3,b16 | c3,c5,c17 | d2,d3,d12 | | 9 | BJT frequency response (high frequency response) | 9 | a1,a4 | b3,b16 | c3,c5,c17 | d2,d3,d12 | | 10 | Bode-Plot and frequency  response | 10 | a1,a4 | b3,b16 | c3,c5,c17 | d2,d3,d12 | | 11 | Modulation circuits | 11 | a1,a4,a15 | b3 | c3,c5,c17 | d2,d3 | | 12 | Mixer circuits | 12 | a1,a4,a15 | b3 | c3,c5,c17 | d2,d3 | | 13 | Power amplifiers | 13 | a1,a4,a15 | b3 | c3,c5,c17 | d2,d3 | | 14 | Oral exam | 14 | a1,a4,a13,a15 | b3,b14,b16 | c3,c5,c16,c17 | d2,d3,d6,d12 | | 15 | Final exam | 15 | a1,a4,a15 | b3,b16 | c3,c5,c17 | d2,d3,d6,d12 | |

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| **- Course Coordinator :    Rokaia Mounir Zaki Emam** |

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| **- Head of Department :    سيد أبو السعود سيد ورد** |