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| http://euhr.edu.eg/Files/170/Logo.jpgكلية الهندسة بشبرا  | Model No.12Course 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**  |
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| 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: |
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| 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)**  |
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| **a-  Knowledge and Understanding**  |
| On completing this course, students will be able to: |
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| 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.  |

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| **b-  Intellectual Skills**  |  |
| At the end of this course, the students will be able to: |  |
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| 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.  |

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| **c-  Professional Skills** |  |
| On completing this course, the students are expected to be able to: |  |
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| 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.  |

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| **d-  General Skills**  |  |
| At the end of this course, the students will be able to: |  |
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| 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**  |
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| **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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| 6.1- not found  |

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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** |  |
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| **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  |

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| **c- Weighting of Assessments** |  |
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| **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**  |
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| **a- Course Notes** |
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| 1- Course notes prepared by instructor.  |

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| **b- Books** |
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| 1- Robert L. Boylestad, Electronic devices and circuit theory, 8th Edition , Prentice hall,2001  |

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| **c- Recommended Books** |
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| 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**  |
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| **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** |