**Course Description Form**

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| 1. Course Name:
 |
| Electronic III |
| 1. Course Code:
 |
| WBM-32-06  |
| 1. Semester / Year:
 |
| 2nd Semester / 2024 |
| 1. Description Preparation Date:
 |
|  19/3/2024 |
| 1. Available Attendance Forms:
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| Weekly (Theoretical) |
| 1. Number of Credit Hours (Total) / Number of Units (Total)
 |
| 45 Hrs. Theoretical /3 Units |
| 1. Course administrator's name (mention all, if more than one name)
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| Name: Marwan Shaiban Email: marwanshaiban899@gmail.com |
| 1. Course Objectives
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| **Course Objectives** | Oscillators are electronic circuits that generate a signal output without requiring an input signal. Several types of basic oscillator circuits use both discrete transistors and reference amplifiers as the advance gain element. Also, the popular 555 timer integrated circuit, in terms of oscillator applications, the operation of a sinusoidal oscillator is based on the principle of positive feedback, where a portion of the output signal is fed back to the input in such a way that it enhances itself and thus maintains a continuous output signal. |
| 1. Teaching and Learning Strategies
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| **Strategy** | 1. The student learns to describe the principles of operation of the oscillator.2. The student will learn to discuss the principle of feedback oscillators based on describing and analyzing the feedback process to the resident coordinator of the oscillators.3. The student will learn to describe and analyze the business letter feedback process for oscillators4. The student will learn to discuss and analyze the 555 timer and its use in the oscillator.5. The student will learn to explain and analyze the operation of Class A amplifiers6. The student will learn to explain and analyze the operation of type B and class AB power amplifiers7. The student will learn to explain and analyze the operation of Class C power amplifiers8. The student will learn to troubleshoot power amplifiers.9. The student should link theoretical and practical ideas.10. The student will learn to use the above techniques in designing and inventing a new biomedical device.11. Knowing most of the engineering applications of the above vocabulary and how to benefit from them and employ them correctly in the field of biomedical engineering. |
| 1. Course Structure
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| **Week**  | **Hours**  | **Required Learning Outcomes**  | **Unit or subject name**  | **Learning method**  | **Evaluation method**  |
| 1 | 3 | frequency response, Sinusoidal, Wien bridge, Oscillator and circuit. | The student learns the response and frequency of sinusoidal oscillators, their types, and the circuits for eachoscillator | Theoretical  | Daily test and oral questions |
| 2 | 3 | Phase shift oscillator, Shaping of frequency response, and Ramp generator | The student learns other types of oscillators and their uses | Theoretical  | Daily test and oral questions |
| 3 | 3 | Hartley oscillator, and crystal oscillator | The student learns other types of oscillators and their uses  | Theoretical  | Daily test and oral questions |
| 4 | 3 | Large signal amplifier (power amplifier). | The student will learn about power amplifiers and their types | Theoretical  | Daily test and oral questions |
| 5 | 3 | Power amplifier classification, class A, class B, class A-B and class C. | The student learns power amplifiers and their classifications according to...Efficiency | Theoretical  | Daily test and oral questions |
| 6 | 3 | The properties of Power amplifiers, theory of classification. | The student learns the properties of power amplifiers and the theoretical basis of classifications  | Theoretical  | Daily test and oral questions |
| 7 | 3 | Transformer coupled stage | The student will learn to use the coupled transformer method in power amplifiers | Theoretical  | Daily test and oral questions |
| 8 | 3 | Direct coupled type, Transformer coupled type. | The student will learn the method of direct coupling in coupled transformers | Theoretical  | Daily test and oral questions |
| 9 | 3 | Transformer-coupled, class B push pull, linear amplifier. | The student will learn to use the direct coupling method in type B amplifiers | Theoretical  | Daily test and oral questions |
| 10 |  | Multivibrator: MTV’s using transistor | The student will learn about multiple oscillators using transistors | Theoretical  | Daily test and oral questions |
| 11 |  | Astable MTV, andMono stable MTV. | For the student to learn the stable and single multivibrators and the difference between them | Theoretical  | Daily test and oral questions |
| 12 |  | Design of the circuit, bistable MTV using op-amp | The student will learn to design multivibrator circuits of all types, especially dual ones | Theoretical  | Daily test and oral questions |
| 13 |  | Design of the circuit, A stable MTV using op-amp | The student will learn to design multivibrator circuits of all types, especially stable ones, using (operational) signal modulators. | Theoretical  | Daily test and oral questions |
| 14 |  | . Monostable MTV using op-amp | The student learns to design single vibrator circuits using (operational) signal modulators. | Theoretical  | Daily test and oral questions |
| 15 |  | Transmission matrix. | The student will learn to use the designed circuits and analyze them through electronic arrays. | Theoretical  | Daily test and oral questions |
| 1. Course Evaluation
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| 1- Weekly exams2- Monthly exams3- Participations inside the class4-present the seminars5- Writing reports |
| 1. Learning and Teaching Resources
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| Thomas L. Floyd , “ Electronic Devices ”, Pearson Education © 2018. | * + - 1. Thomas L. Floyd , “ Electronic Devices ”, Pearson Education © 2018.
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| Electronic Devices and Circuit Theory, Eleventh Edition, Robert L. Boylestad. | Electronic Devices and Circuit Theory, Eleventh Edition, Robert L. Boylestad. |
| Thomas L. Floyd , “ Electronic Devices ”, Pearson Education © 2018. | Thomas L. Floyd , “ Electronic Devices ”, Pearson Education © 2018. |
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