**Course description form**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. **Course Name** | | | | | | | | |
| **Electrical Engineering Fundamentals II** | | | | | | | | |
| 1. **Course Code** | | | | | | | | |
| **EPE 104** | | | | | | | | |
| 1. **Semester/Year** | | | | | | | | |
| Spring Semester/First Year | | | | | | | | |
| 1. **The date this description was prepared** | | | | | | | | |
| 17 / 9 / 2023 | | | | | | | | |
| 1. **Available forms of attendance** | | | | | | | | |
| Face-to-Face theoretical lectures | | | | | | | | |
| 1. **Number of study hours (total) / number of units (total)** | | | | | | | | |
| 175/7 | | | | | | | | |
| 1. **Name of the course administrator** | | | | | | | | |
| Name: Assist. Prof. Wisam Najem Email: [wiasm\_alobaidee1@uodiyala.edu.iq](mailto:wiasm_alobaidee1@uodiyala.edu.iq) | | | | | | | | |
| 1. **Course objectives** | | | | | | | | |
| 1. This course deals with the basic concept of AC electrical circuits. 2. To understand ac voltage and current from a given circuit. 3. To understand Root Mean-Square (R.M.S.) & Average Value 4. To understand ac power Average power, Reactive power, Complex power. 5. To analysis the RL, RC, RLC circuit analysis 6. To perform mesh and Nodal analysis in AC circuit. 7. To develop problem solving skills and understanding of circuit theory through the application of techniques. | | | | **Objectives of the study subject** | | | | |
| 1. **Teaching and learning strategies** | | | | | | | | |
| **1.** **Behavior management**  Behavior management strategies foster an atmosphere of mutual respect, reduce disruptive behavior, and ensure students have an equal opportunity to fulfill their potential in the classroom. It's crucial to provide them with both a positive and productive learning environment. Examples include establishing a reward system with an interactive chart where students move up or down depending on their performance and behavior in class.  **2. Blended learning**  With a blended learning teaching strategy, technology is incorporated with traditional learning. This allows students to work at their own pace, research their ideas and become more physically engaged during lessons. Examples include providing interactive tablets or whiteboards with engaging activities and posting classwork online for easier access.  **3. Cooperative learning**  Group work is a cooperative learning strategy that allows students with various learning levels to work together. By encouraging them to express their own ideas and listen to others' ideas as a group, you help students develop communication and critical thinking skills. Examples include solving math puzzles together, performing skits as a team or working on group presentations.  **4. Formative assessment**  A formative assessment is used periodically to monitor student learning incrementally. This can more effectively measure the process of learning as opposed to end-of-unit tests and can help you to improve your teaching methods throughout the year. Examples of this teaching strategy include self-evaluation exercises and summarizing a topic in multiple ways.  **5. Student-led teaching**  The student-led teaching strategy lets students become teachers. In a classroom with learners at different levels, you can better engage those learning faster by showing them how to teach and give feedback to their peers. They may team-teach or work in groups to teach a new topic. Examples include letting a student teach an entire lesson or having advanced writers lead a peer-editing session as well as provide constructive criticism. | | | **The Strategy** | | | | | |
| 1. **Course structure** | | | | | | | | |
| **Evaluation method** | **Learning method** | **Required learning outcomes** | | | | **Name of the unit or topic** | **Hours** | **Week** |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Understanding electric circuits | | | | Introduction | 5 | 1 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Understanding Definition and terminologies | | | | Definition and terminologies | 5 | 2 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Studying r.m.s and average values | | | | Root-Mean-Square (R.M.S.) & Average Values | 5 | 3 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Studying the capacitors and inductors | | | | Capacitors and Inductors | 5 | 4 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Studying A.C. circuit through various elements | | | | A.C. Through Resistance, Inductance and Capacitances | 5 | 5 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Studying series circuits | | | | Series A.C. circuits | 5 | 6 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Studying parallel circuits | | | | Parallel A.C. circuits | 5 | 7 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Studying circuits laws | | | | Kirchhoff’s Laws | 5 | 8 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Studying circuits combinations | | | | Impedance Combinations Wye-to-Delta transformation | 5 | 9 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Understanding analysis methods of electrical circuits | | | | Sinusoidal Steady-State Analysis: Nodal Analysis | 5 | 10 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Understanding analysis methods of electrical circuits | | | | Sinusoidal Steady-State Analysis: Mesh Analysis | 5 | 11 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Understanding analysis methods of electrical circuits | | | | Circuits Theorem: Superposition and Source Transformation | 5 | 12 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Understanding analysis methods of electrical circuits | | | | Circuits Theorem: Thevenin and Norton Equivalent Circuits | 5 | 13 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Studying power analysis in electrical circuits | | | | AC Power Analysis: Power Triangle, Power Factor and Complex Power | 5 | 14 |
| Daily, oral, monthly, written examinations and reports | Whiteboard and Data show | Understanding frequency response analysis of electrical circuits | | | | Frequency Response: Series and Parallel Resonance | 5 | 15 |
| 1. **Course Evaluation** | | | | | | | | |
| Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc. | | | | | | | | |
| 1. **Learning and teaching resources** | | | | | | | | |
| * "Fundamentals of Electric Circuits", Charles K. Alexander, Matthew N. O. Sadiku, 4th ed. * "A Textbook of Electrical Technology", B.L. Theraja and A.K. Theraja, 2005 * Boylestad, R. L. " Introductory Circuit Analysis", 4th Edition, Charles E. Merill Publishers. | | | | | Required textbooks (methodology, if any) | | | |
| * Lectures presented by the Lecturer * Books available in the college library | | | | | Main references (sources) | | | |
|  | | | | | Recommended supporting books and references (scientific journals, reports....) | | | |
| Check scientific websites to see the latest developments | | | | | Electronic references, Internet sites | | | |