# MODULE DESCRIPTION FORM

# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Electric Circuits II** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | ☒ **Theory** | |
| **Module Code** | **EPE 203** | | | ☒ **Lecture** | |
| **ECTS Credits** | **7** | | | ☒ **Lab** | |
| **SWL (hr/sem)** | **175** | | | ☒ **Tutorial** | |
| | | | | ☒ **Practical** | |
| | | | | ☐ **Seminar** | |
| **Module Level** | 1 | | **Semester of Delivery** | 1 | |
| **Administering Department** | Type Dept. Code | | **College** | Type College Code | |
| **Module Leader** | Name: ammar Issa Ismael | | **e-mail** | E-mail: ammarissa@uodiyala.edu.iq | |
| **Module Leader's Acad. Title** | Asst. Prof. | | **Module Leader's Qualification** | M.Sc. | |
| **Module Tutor** | Name (if available) | | **e-mail** | E-mail | |
| **Peer Reviewer Name** | Name | | **e-mail** | E-mail | |
| **Scientific Committee Approval Date** | 01/06/2024 | | **Version Number** | 1.0 | |

| Relation with other Modules<br>العلاقة مع المواد الدراسية الأخرى |
|---|

| | | | |
|---|---|---|---|
| **Prerequisite module** | **Electric Circuits I** | **Semester** | first |
| **Co-requisites module** | None | **Semester** | |

| **Module Aims, Learning Outcomes and Indicative Contents**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | 1. This course deals with the advance of electrical circuits.<br>2. To learn three phases voltage source, phase sequence, line and phase qualities.<br>3. To understand two port system circuits.<br>4. To develop problem solving skills and understanding of circuit application in Laplace through the solving circuit.<br>5. To understand Electric passive Filters<br>6. To perform application of computers in solving circuit problems |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Recognize how solve advance electrical circuits.<br>2. List the various terms associated with electrical circuits.<br>3. Summarize what is meant by applications electric circuit.<br>4. Discuss the reaction and involvement of three phase voltage sources and loads.<br>5. Describe electric passive filters.<br>6. Define Electric Transients.<br>7. Identify the applications circuit elements in S domain.<br>8. Discuss the power calculations and measurements in three phase circuit, the method of symmetrical components.<br>9. Explain the two port network used in circuit analysis.<br>10. Identify the solving circuit problems by computer. |

| | |
|---|---|
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br><br>**Part A – Laplace applications**<br>Electric Transients (Laplace Method) : Applications of Laplace transformation in transient analysis, circuits elements in the S- domain, Laplace equivalent circuits, inverse transformation [18 hrs]<br>**Part B - Electric Filters**<br>Simple passive filter, low – pass, high – pass and band – pass filte. [15 hrs]<br>**Part C - Two – Port Network**<br>Introduction terminal equations, two port parameters (z, y, h and ABCD), equivalent circuits, interconnected two – ports [12 hrs]<br>**Part D – the computer applications**<br>Application of computers in solving circuit problems [24 hrs]<br>Revision problem classes [6 hrs] |

| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | **1. Behavior management**<br>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.<br><br>**2. Blended learning**<br><br>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.<br><br>**3. Cooperative learning**<br><br>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.<br><br>**4. Formative assessment**<br><br>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.<br><br>**5. Student-led teaching**<br><br>The student-led teaching strategy lets students become the teacher. 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. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 82 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3 |

| | |
|---|---|
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | **175** |

## Module Evaluation

تقييم المادة الدراسية

| | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 15% (10) | 5 and 12 | LO #1, #4 and #8, #10 |
| | **Assignments** | 1 | 10% (10) | 3 and 13 | LO #3, #4 and #9, #10 |
| | **Projects / Lab.** | 1 | 10% (10) | Continuous | All |
| | **Home work** | 2 | 5% (10) | 14 | LO #5, #8 and #10 |
| **Summative assessment** | **Midterm Exam** | 2hr | 10% (10) | 8 | LO #1 - #7 |
| | **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | • Electric Transients |
| **Week 2** | • Applications of Laplace transformation in transient analysis, circuits elements in the S- domain |
| **Week 3** | • Laplace equivalent circuits, inverse transformation |
| **Week 4** | • Electric Filters: Simple passive filter, low – pass, high – pass and band – pass filter |

| | |
|---|---|
| **Week 5** | • Three – Phase Networks: Three phases voltage source, phase sequence |
| **Week 6** | • Three phases voltage source, phase sequence, line and phase qualities, analysis of YY, YD |
| **Week 7** | Three phases voltage source, phase sequence, line and phase qualities, analysis of, DY connected circuits |
| **Week 8** | **Mid-term Exam** |
| **Week 9** | Three phases voltage source, phase sequence, line and phase qualities, analysis of, DD connected circuits |
| **Week 10** | power calculations and measurements in three phase circuit, the method of symmetrical components. |
| **Week 11** | Two – Port Network: Introduction terminal equations |
| **Week 12** | parameters (z, and y), equivalent |
| **Week 13** | parameters ( h and ABCD), equivalent |
| **Week 14** | Two port interconnected circuit |
| **Week 15** | Application of computers in solving circuit problems |
| **Week 16** | **Preparatory week before the final Exam** |

## Learning and Teaching Resources

مصادر التعلم والتدريس

| | **Text** | **Available in the Library?** |
|---|---|---|
| **Required Texts** | • C.K. Alexander and M.N.O Sadiku, **Fundamentals of Electric Circuits**, McGraw-Hill Education, Fifth Edition, 2013 | Yes |
| **Recommended Texts** | • Allan H. Robbins and Wilhelm C. Miller, **Circuit analysis: Theory and practice**, Cengage Learning, Fifth Edition, 2013.<br>• Nilsson, James William, **Electric circuits**, Pearson Education India, 2008. | No |
| **Websites** | https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering | |

| Grading Scheme<br>مخطط الدرجات | | | | |
|---|---|---|---|---|
| **Group** | **Grade** | التقدير | **Marks %** | **Definition** |
| **Success Group (50 - 100)** | **A -** Excellent | امتياز | 90 - 100 | Outstanding Performance |
| | **B -** Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | **C -** Good | جيد | 70 - 79 | Sound work with notable errors |
| | **D -** Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| | **E -** Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| **Fail Group (0 – 49)** | **FX –** Fail | راسب (قيد المعالجة) | (45-49) | More work required but credit awarded |
| | **F –** Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.