**الملحق 4: وصف المادة الدراسية**

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | Computer Skills | | | | **Module Delivery** | | |
| **Module Type** | Basic | | | | * **☒ Theory** * **☐ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | U 103 | | | |
| **ECTS Credits** | 4 | | | |
| **SWL (hr/sem)** | 100 | | | |
| **Module Level** | | 1 | **Semester of Delivery** | | | |  |
| **Administering Department** | |  | **College** | College of Engineering | | | |
| **Module Leader** | Rashayasen@uodiyala.edu.iq | | **e-mail** | Rashayasen@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | assistant lecturer | **Module Leader’s Qualification** | | | |  |
| **Module Tutor** | Name (if available) | | **e-mail** | E-mail | | | |
| **Peer Reviewer Name** | | Name | **e-mail** | E-mail | | | |
| **Scientific Committee Approval Date** | |  | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Objectives**  **أهداف المادة الدراسية** | 1. Training students on the basics of using the computer and providing them with the necessary skills to deal with the computer with high efficiency. 2. Assisting the student in distinguishing and developing his scientific and artistic abilities. 3. Enriching the student's skills to be able to deal with the computer with high efficiency. 4. Providing students with a way to use other modern technologies related to the educational process. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Enabling the student to know the concepts of information technology by learning the basics of the computer. 2. Enabling the student to know about the use of GUI operating systems. 3. Enabling the student to deal with the skills of using the operating system (Windows operating system) through exploring, customizing, and controlling its settings. 4. Enabling the student to work on the word processing program (Microsoft Word). 5. Enabling the student to work on the spreadsheet program (Microsoft Excel). 6. Enabling the student to work on the presentation program (Microsoft PowerPoint). |
| **Indicative Contents**  **المحتويات الإرشادية** | **Indicative content includes the following.**  • Course introduction (4 hrs)  • Working with GUI operating systems with a focus on Microsoft Windows OS (8 hrs)  • Microsoft Office Word (MS Word) (16 hrs)  • Microsoft Office Excel (MS Excel) (16 hrs)  • Microsoft Office PowerPoint (MS PowerPoint) (16 hrs) |
| **Description** | Overview of computers: basic components, applications. GUI operating systems: Microsoft Windows operating system. Microsoft Office Word: getting started with Word, editing a document and formatting text and paragraphs, adding tables and inserting graphic objects, controlling page appearance and proofing a document. Microsoft Office Excel: getting started with Excel, sorting, selecting and subtotaling data, formulas and functions, worksheet formatting and presentation. Microsoft Office PowerPoint: getting started with PowerPoint, developing a PowerPoint presentation, adding graphical elements to your presentation and modifying objects in your presentation, adding graphical elements, tables and charts to your presentation and modifying objects in your presentation, prepare to deliver your presentation. |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | **In this course, students are guided by:**   * Using different examples. * Using different styles of discussion that aim to connect the theoretical and practical sides. * Asking questions and giving exercises that require analysis and conclusions related to lectures. * Encourage students to participate in discussions and do the practical work. * Encourage students to work in groups. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | **64** | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | **4** |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | **36** | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | **2.4** |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | **100** | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | **2** | **10% (10)** | **6 and 12** | **LO #1 to #3 and #4 to #6** |
| **Assignments** | **2** | **10% (10)** | **2 and 13** | **LO #3 to #6** |
| **Projects / Lab.** | **1** | **10% (10)** | **Continuous** | **All** |
| **Report** | **1** | **10% (10)** | **13** | **LO #3, #4 and #6** |
| **Summative assessment** | **Midterm Exam** | **2hr** | **10% (10)** | **9** | **LO #1 - #5** |
| **Final Exam** | **3hr** | **50% (50)** | **16** | **All** |
| **Total assessment** | | | **100% (100 Marks)** |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | Overview of computers and their basic components and applications |
| **Week 2** | Operating computer using GUI operating systems |
| **Week 3** | The basic use of Microsoft Windows operating system |
| **Week 4** | **Microsoft Office Word:** Getting Started with Word |
| **Week 5** | **Microsoft Office Word:** Editing a Document and Formatting Text and Paragraphs |
| **Week 6** | **Microsoft Office Word:** Adding Tables and Inserting Graphic Objects |
| **Week 7** | **Microsoft Office Word:** Controlling Page Appearance and Proofing a Document |
| **Week 8** | **Microsoft Office Excel:** Getting Started with Excel |
| **Week 9** | **Microsoft Office Excel:** Sorting, Selecting and Subtotaling data |
| **Week 10** | **Microsoft Office Excel:** Formulas and Functions |
| **Week 11** | **Microsoft Office Excel:** Worksheet Formatting and Presentation |
| **Week 12** | **Microsoft Office PowerPoint:** Getting Started with PowerPoint |
| **Week 13** | **Microsoft Office PowerPoint:** Developing a PowerPoint Presentation, Adding Graphical Elements to Your Presentation and Modifying Objects in Your Presentation |
| **Week 14** | **Microsoft Office PowerPoint:** Adding Graphical Elements, tables and charts to Your Presentation and Modifying Objects in Your Presentation |
| **Week 15** | **Microsoft Office PowerPoint:** Prepare to deliver your presentation |
| **Week 16** | **Preparatory week before the final exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** | Introduction to the lab and get started with use of computer |
| **Week 2** | Basic use of Windows operating system |
| **Week 3** | General view of Windows OS tools with a focus on Microsoft Office tools |
| **Week 4** | **Microsoft Office Word:** Getting Started with Word |
| **Week 5** | **Microsoft Office Word:** Editing a Document and Formatting Text and Paragraphs |
| **Week 6** | **Microsoft Office Word:** Adding Tables and Inserting Graphic Objects |
| **Week 7** | **Microsoft Office Word:** Controlling Page Appearance and Proofing a Document |
| **Week 8** | **Microsoft Office Excel:** Getting Started with Excel |
| **Week 9** | **Microsoft Office Excel:** Sorting, Selecting and Subtotaling data |
| **Week 10** | **Microsoft Office Excel:** Formulas and Functions |
| **Week 11** | **Microsoft Office Excel:** Worksheet Formatting and Presentation |
| **Week 12** | **Microsoft Office PowerPoint:** Getting Started with PowerPoint |
| **Week 13** | **Microsoft Office PowerPoint:** Developing a PowerPoint Presentation, Adding Graphical Elements to Your Presentation and Modifying Objects in Your Presentation |
| **Week 14** | **Microsoft Office PowerPoint:** Adding Graphical Elements, tables and charts to Your Presentation and Modifying Objects in Your Presentation |
| **Week 15** | **Microsoft Office PowerPoint:** Prepare to deliver your presentation |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | * Joan Lambert and Steve Lambert, Windows 10 step by step, 1st Edition 2015. * Joan Lambert and Curtis Frye, Microsoft Office 2016 step by step, 1st Edition 2015. | Yes |
| **Recommended Texts** | * Michael Miller, ABSOLUTE BEGINNER’S GUIDE TO COMPUTER BASICS, 5th EDITION, QUE Indianapolis, Indiana 46240, 2010. * Paul McFedries, TEACH YOURSELF VISUALLY MICROSOFT WINDOWS 10, ANNIVERSARY | No |
| **Websites** | Microsoft Help, <https://support.microsoft.com/en-us/products>  Learn Microsoft Office, <https://www.goskills.com/Microsoft-Office> | |

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| **Grading Scheme**  **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 |
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| **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. | | | | |

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | ***Digital techniques*** | | | | **Module Delivery** | | |
| **Module Type** | **Core** | | | | * **☒ Theory** * **☒ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | ***EPE 101*** | | | |
| **ECTS Credits** | **6** | | | |
| **SWL (hr/sem)** | **150** | | | |
| **Module Level** | | UGx11 1 | **Semester of Delivery** | | | | 1 |
| **Administering Department** | | Type Dept. Code | **College** | Type College Code | | | |
| **Module Leader** | Zena khamees gurgi | | **e-mail** | Zena.khamees@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Asst. Lect. | **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** | | 01/06/2023 | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Objectives**  **أهداف المادة الدراسية** | 1. To acquire the basic knowledge of Digital techniques levels and application of knowledge to understand digital electronics circuits. 2. Have a thorough understanding of the fundamental concepts and techniques used in digital electronics 3. To understand and examine the structure of various number systems and its application in digital design. 4. The ability to understand, analyze and design various combinational and sequential circuits. 5. Ability to identify basic requirements for a design application and propose a cost effective solution. 6. To prepare students to perform the analysis and design of various digital electronic circuits. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.   1. express basic concepts and logic circuiıts 2. explains number systems and convert number systems. 3. explains logical AND,OR,NOT,NAND,NOR,EX-OR,EX-NOR functions 4. can show the simplification of logical statements 5. explains the simplification of logical statements with using boolean rules and de-morgan thorems 6. writes boolean equation by using truth table and shows its logic circuıts. 7. writes boolean equation by logic circuıts and shows its truth table. 8. explains the simplification of logical statements with karnaugh maps. 9. identifies 10. explains half and full adders 11. explains half and full subtractors 12. identifies combinational circuit 13. explains the working principles of decoder,encoder, 14. recognize 7-segmented displayers 15. explains the working principles of multiplexer and De multiplexer, 16. shows the applications of combinational circuits |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  Part A – number system and simplification of digital circuit design.  **Introduction to digital quantities and System Numbers:** Decimal , Binary , Binary arithmetic , Octal and Hexadecimal Numbers, Conversions of System Numbers, Arithmetic Operations with different number systems, and Signed Numbers. [24 hrs]  **Digital Codes**: Binary coded decimal [BCD], Exc-3 code, Graycodes. [5 hrs]    **Simplification of digital circuit design:** Boolean algebra , De’Morgan theorems , Simplification Using Boolean Algebra, Standard Forms of Boolean Expressions( SOP and POS form), The karnaugh Map (Three, Four and Five- Variable Kamaugh Maps. [25 hrs]  Part B - Combinational Logic  **Functions of Combinational Logic:** Adders, Subtracters, Parallel Binary Adders, multiplier, and Magnitude comparators. [25 hrs].  Encoders, Decoders, Multiplexers, Demultiplexers, Parity Generators/Checkers, and code conversion cuircuits. [25 hrs].  **Flip-Flops:** Latches, Edge-Triggered Flip-Flops and its applications. [5 hrs]. |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | Type something like: The main strategy that will be adopted in delivering this module is to encourage students’ participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 63 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 4 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 87 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 6 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | **150** | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| **Assignments** | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| **Projects / Lab.** | 1 | 10% (10) | Continuous | All |
| **Report** | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| **Summative assessment** | **Midterm Exam** | 2hr | 10% (10) | 7 | LO #1 - #7 |
| **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | Introduction to Digital Techniques and logic gates |
| **Week 2** | General number formula : Binary, octal, decimal, hexadecimal numbers |
| **Week 3** | Conversions of System Numbers |
| **Week 4** | Arithmetic operations with different number systems, complements of number systems, binary codes, BCD codes, Ex-3 code , and gray code. |
| **Week 5** | Boolean algebra , De’Morgan theorems , Simplification Using Boolean Algebra, |
| **Week 6** | Standard Forms of Boolean Expressions( SOP and POS form) |
| **Week 7** | The karnaugh Map (two,Three, Four and Five- Variable Kamaugh Maps) |
| **Week 8** | The karnaugh Map (two, Three, Four and Five- Variable Kamaugh Maps) |
| **Week 9** | Introduction to Combinational Logic circuit and circuit analysis |
| **Week 10** | Adders, Subtractors, Parallel Binary Adders, |
| **Week 11** | Binary multiplier circuits and Magnitude comparators circuit. |
| **Week 12** | Encoders, and Decoders circuits |
| **Week 13** | Multiplexers, and Demultiplexers circuits. |
| **Week 14** | Parity Generators/Checkers and design of code conversion circuits. |
| **Week 15** | Flip-Flops:(Latches, Edge-Triggered Flip-Flops) and it's applications. |
| **Week 16** | **Preparatory week before the final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | Material Covered |
| **Week 1** | Lab 1: Introduction to logic gates |
| **Week 2** | Lab 2: NOR Gate, NAND Gate, and XOR Gate application |
| **Week 3** | Lab 3: Comparator Circuit |
| **Week 4** | Lab 4: Half –Adder |
| **Week 5** | Lab 5: full –Adder Circuit |
| **Week 6** | Lab 6: Half Subtractor |
| **Week 7** | Lab 7: full Subtractor Circuit |
| **Week 8** | Lab 8: Even and odd Parity Generator and Checker Circuit |
| **Week 9** | Lab 9: Code converter Circuits |
| **Week 10** | Lab 10: Encoder Circuit |
| **Week 11** | Lab 11: Decoder Circuit |
| **Week 12** | Lab 12: Multiplexer Circuit |
| **Week 13** | Lab 13 :De - Multiplexer Circuit. |
| **Week 14** | Lab 14 :Introduction to Flip- Flop |
| **Week 15** | Lab 15 : Flip- Flop application Circuits |
| **Week 16** | Preparatory week before the final Exam |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | Digital Fundamentals, Thomas .L. Floyd, Pearson international edition. | Yes |
| **Recommended Texts** | Digital Design, M. Morris. Mano, Pearson prentice Hall . | No |
| **Websites** |  | |

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| **Grading Scheme**  **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 |
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| **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. | | | | |

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Electrical Engineering Fundamentals I** | | | | **Module Delivery** | | |
| **Module Type** | **Core** | | | | * **☒ Theory** * **☒ Lecture** * **☒ Lab** * **☒ Tutorial** * **☒ Practical** * **☐ Seminar** | | |
| **Module Code** | **EPE 103** | | | |
| **ECTS Credits** | **8** | | | |
| **SWL (hr/sem)** | **200** | | | |
| **Module Level** | | UGx11 1 | **Semester of Delivery** | | | | 1 |
| **Administering Department** | | Type Dept. Code | **College** | Type College Code | | | |
| **Module Leader** | Name: Yasir Ghazi Rashid | | **e-mail** | E-mail: yasserghazee\_enge@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Asst. Lect. | **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** | | 01/06/2023 | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Objectives**  **أهداف المادة الدراسية** | 1. This course deals with the basic concept of electrical circuits. 2. This is the basic subject for all electrical and electronic circuits. 3. To understand voltage, current and power from a given circuit. 4. To develop problem solving skills and understanding of circuit theory through the application of techniques. 5. To understand Kirchhoff's current and voltage Laws problems. 6. To perform mesh and Nodal analysis. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Recognize how electricity works in electrical circuits. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Discuss the reaction and involvement of atoms in electric circuits. 5. Describe electrical power, charge, and current. 6. Define Ohm's law. 7. Identify the basic circuit elements and their applications. 8. Discuss the operations of sinusoid and phasors in an electric circuit. 9. Discuss the various properties of resistors, capacitors, and inductors. 10. Explain the two Kirchoff's laws used in circuit analysis. 11. Identify the capacitor and inductor phasor relationship with respect to voltage and current. |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  **Part A - Basic Concepts**  Introduction, Systems of Units, Charge and Current, Voltage, Power and Energy, Circuit Elements [18 hrs]  **Part B - Basic Laws**  Ohm’s Law, Nodes, Branches, and Loops, Kirchhoff’s Laws, Series Resistors and Voltage Division, Parallel Resistors and Current Division, Wye-Delta Transformations. [15 hrs]  **Part C - Methods of Analysis**  Nodal Analysis, Nodal Analysis with Voltage Sources, Mesh Analysis, Mesh Analysis with Current Sources [12 hrs]  **Part D - Circuit Theorems**  Superposition, Source Transformation, Thevenin’s Theorem, Norton’s Theorem, Maximum Power Transfer [24 hrs]  Revision problem classes [6 hrs] |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **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 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. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 109 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 7 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 91 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 6 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | **200** | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5 and 12 | LO #1, #4 and #8, #11 |
| **Assignments** | 2 | 10% (10) | 3 and 13 | LO #3, #4 and #10, #14 |
| **Projects / Lab.** | 1 | 10% (10) | Continuous | All |
| **Report** | 1 | 10% (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) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | * Electrical Engineering: An Overview |
| **Week 2** | * The International System of Units conversions (metric prefixes) * Free electrons, electric charge & types of electric materials * Definition of: electric current, electric current flowing through a conductor |
| **Week 3** | * Definition of electric voltage * Polarity of electric voltage across an element * The difference between electric potentials and electric voltage * Linear elements: resistances, conductance, capacitances, and inductances * Definition of: Power and energy, Sources (Independent Source & Dependent Source) |
| **Week 4** | * Ohm’s Law * Definition of: Nodes, Branches, and Loops |
| **Week 5** | * Series & parallel connections of resistors * Series Resistors and Voltage Division * Parallel Resistors and Current Division |
| **Week 6** | * Short and Open Circuits * Wye-Delta Transformations |
| **Week 7** | Kirchhoff’s Laws |
| **Week 8** | **Mid-term Exam** |
| **Week 9** | Methods of Analysis: Nodal Analysis |
| **Week 10** | Methods of Analysis: Mesh Analysis |
| **Week 11** | Circuit Theorems: Superposition, Source Transformation |
| **Week 12** | Circuit Theorems: Source Transformation |
| **Week 13** | Circuit Theorems: Thevenin’s Theorem |
| **Week 14** | Circuit Theorems: Norton’s Theorem, Derivations of Thevenin’s and Norton’s Theorems |
| **Week 15** | Circuit Theorems: Maximum Power Transfer Theorem |
| **Week 16** | **Preparatory week before the final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: Introduction to Lab. Equipment's |
| **Week 2** | Lab 2: How to measure DC Voltage with a voltmeter (analog and digital) |
| **Week 3** | Lab 3: How to measure DC Current with an ammeter (analog and digital) |
| **Week 4** | Lab 4: How to measure Resistor with an ohmmeter (analog and digital) |
| **Week 5** | Lab 5: How to measure power with a wattmeter (analog and digital) |
| **Week 6** | Lab 6: How to use Avometer |
| **Week 7** | Lab 7: Resistor Color Code |
| **Week 8** | Lab 8: Ohm's Law |
| **Week 9** | Lab 9: Series, parallel and series- parallel circuits |
| **Week 10** | Lab 10: Wye-Delta Transformations |
| **Week 11** | Lab 11: Kirchhoff’s Voltage and Current Laws |
| **Week 12** | Lab 12: Superposition theorems |
| **Week 13** | Lab 13: Thevenin’s & Norton’s theorems |
| **Week 14** | Lab 14: Maximum Power Transfer Theorem |
| **Week 15** | **Final Exam** |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | * Theraja, B. L. **A Textbook of Electrical Technology-Volume I (Basic Electrical Engineering)**. Vol. 1. S. Chand Publishing, 2005. * 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. * Nilsson, James William, **Electric circuits**, Pearson Education India, 2008. | No |
| **Websites** | <https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering> | |

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| **Grading Scheme**  **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 |
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| **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. | | | | |

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Electrical Engineering Fundamentals II** | | | | **Module Delivery** | | |
| **Module Type** | **Core** | | | | * **☒ Theory** * **☒ Lecture** * **☒ Lab** * **☒ Tutorial** * **☒ Practical** * **☐ Seminar** | | |
| **Module Code** | **EPE 104** | | | |
| **ECTS Credits** | **8** | | | |
| **SWL (hr/sem)** | **200** | | | |
| **Module Level** | | 1 | **Semester of Delivery** | | | | 1 |
| **Administering Department** | | Type Dept. Code | **College** | Type College Code | | | |
| **Module Leader** | Name: Yasir Ghazi Rashid | | **e-mail** | E-mail: yasserghazee\_enge@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Asst. Lect. | **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** | | 01/06/2023 | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | **Electrical Engineering Fundamentals I** | **Semester** | 1 |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Objectives**  **أهداف المادة الدراسية** | 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. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Recognize advantages of use alternating current. 2. Recognize why using Sine Waveform 3. Define inductors and capacitors. 4. How generation of alternating voltages and currents. 5. Recognize Phasor representation of AC quantities. 6. Define Ohm's Law in AC. Circuits. 7. Identify the basic circuit elements and their applications. 8. Explain the two Kirchoff's laws used in circuit analysis. 9. Discuss the Sinusoidal Steady-State Analysis. |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  **Part A - A.C. Fundamentals**  Introduction, Sinusoids, Phasors, Phasor Relationships for Circuit Elements, Root Mean-Square (R.M.S.) & Average Values, Impedance and Admittance, [18 hrs]  **Part B - A.C Circuit**  Introduction, Capacitors, Series and Parallel Capacitors, Inductors, Series and Parallel Inductors, Series A.C. circuits, Parallel A.C. Circuits, Kirchhoff’s Laws in the Frequency Domain, Impedance Combinations. [15 hrs]  **Part C - Sinusoidal Steady-State Analysis**  Nodal Analysis, Nodal Analysis with Voltage Sources, Mesh Analysis, Mesh Analysis with Current Sources, Superposition Theorem, Thevenin and Norton Equivalent Circuits [24 hrs]  **Part D - Frequency Response**  Series Resonance, Parallel Resonance, [6 hrs]  Revision problem classes [6 hrs] |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **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 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. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 109 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 7 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 91 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 6 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | **200** | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5 and 12 | LO #1, #4 and #8, #11 |
| **Assignments** | 2 | 10% (10) | 3 and 13 | LO #3, #4 and #10, #14 |
| **Projects / Lab.** | 1 | 10% (10) | Continuous | All |
| **Report** | 1 | 10% (10) | 14 | LO #5, #8 and #10 |
| **Summative assessment** | **Midterm Exam** | 2hr | 10% (10) | 7 | LO #1 - #7 |
| **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | * Introduction: AC Circuits, A.C. Fundamentals, Types of waveforms |
| **Week 2** | * Definition of: Waveform, Instantaneous value, Cycle, Time period, Frequency, Amplitude, Peak-to-peak value, Phase, Phase angle, Phase difference, Angular Frequency |
| **Week 3** | Root-Mean-Square (R.M.S.) & Average Values |
| **Week 4** | * Capacitors, Series and Parallel Capacitors * Inductors, Series and Parallel Inductors |
| **Week 5** | * A.C. Through Resistance, Inductance and Capacitances |
| **Week 6** | Series A.C. circuits |
| **Week 7** | Parallel A.C. circuits: Vector or Phasor Method, Admittance Method (Y), Complex or Phasor Algebra |
| **Week 8** | **Mid-term Exam** |
| **Week 9** | * Kirchhoff’s Laws in the Frequency Domain * Impedance Combinations * Wye-to-Delta transformations |
| **Week 10** | Sinusoidal Steady-State Analysis: Nodal Analysis, Mesh Analysis |
| **Week 11** | Sinusoidal Steady-State Analysis: Mesh Analysis |
| **Week 12** | Circuit Theorems: Superposition, Source Transformation |
| **Week 13** | Circuit Theorems: Thevenin and Norton Equivalent Circuits |
| **Week 14** | AC Power Analysis: Power Triangle, Power Factor, Complex Power |
| **Week 15** | Frequency Response: Series Resonance, Parallel Resonance |
| **Week 16** | **Preparatory week before the final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: A.C. Measurement Instruments |
| **Week 2** | Lab 2: Introduction to Oscilloscope |
| **Week 3** | Lab 3: Inductors |
| **Week 4** | Lab 4: Capacitors |
| **Week 5** | Lab 5: Ohm's Law in A.C. Circuits |
| **Week 6** | Lab 6: Series and Parallel Combinations |
| **Week 7** | Lab 7: Wye-Delta Transformations |
| **Week 8** | Lab 8: Kirchhoff’s Laws in the Frequency Domain |
| **Week 9** | Lab 9: Superposition theorems |
| **Week 10** | Lab 10: Thevenin’s theorems |
| **Week 11** | Lab 11: Norton’s theorems |
| **Week 12** | Lab 12: Power in AC circuit |
| **Week 13** | Lab 13: Series Resonance |
| **Week 14** | Lab 14: Parallel Resonance |
| **Week 15** | **Final Exam** |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | * Theraja, B. L. **A Textbook of Electrical Technology-Volume I (Basic Electrical Engineering)**. Vol. 1. S. Chand Publishing, 2005. * 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. * Nilsson, James William, **Electric circuits**, Pearson Education India, 2008. | No |
| **Websites** | <https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering> | |

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| **Grading Scheme**  **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 |
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| **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. | | | | |

MODULE DESCRIPTION

وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **English language I** | | | | **Module Delivery** | | |
| **Module Type** | Basic | | | | * **Theory** * **Lecture** * **Tutorial** * **Practical** * **Seminar** | | |
| **Module Code** | U-104 | | | |
| **ECTS Credits** | 2 | | | |
| **SWL (hr/sem)** | 50 | | | |
| **Module Level** | | UGI | **Semester (s) offered** | | | | 1 |
| **Administering Department** | |  | **College** | Engineering | | | |
| **Module Leader** | Inst. Mohammed E. Alwan | | **e-mail** | Essa9781@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Instructor | **Module Leader’s Qualification** | | | | MA |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | |  | **e-mail** |  | | | |
| **Review Committee Approval** | |  | **Version Number** | | | 1.0 | |

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| **Relation With Other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | --- | **Semester** | --- |
| **Co-requisites module** | None | **Semester** | ---- |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر** | | | |
| **Module Aims**  **أهداف المادة الدراسية** | The module aims to develop the students’ English skills in reading, writing, listening and speaking. | | |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Read and understand simple texts in English. 2. Answer simple comprehension questions and match sentences about texts. 3. Reconstruct texts by reordering sentences. 4. Understand the main idea of a text. 5. Identify specific information in a text. 6. Writing and paraphrasing paragraphs. | | |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  i) Grammar has a core place in language teaching and learning.  ii) A wide variety of practice tasks in all the four skills are essential to language learning.  iii) Everyday expressions, particularly of spoken English, also need a place in the syllabus. These can be functional, social, situational or idiomatic. | | |
| **Course Description** | Each unit is organized to enhance students’ basic knowledge of vocabulary and grammar through reading texts. The students will learn how to form simple sentences and use them in real life situations as well as in writing different assignments. By the end of the course, students will be able to produce basic sentences and communicate in simple real-life situations. | | |
| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | | | |
| **Strategies** | Headway's trusted methodology combines solid grammar and practice, vocabulary development, and integrated skills with communicative role-plays and personalization.  Authentic material from a variety of sources enables students to see new language in context, and a range of comprehension tasks, language and vocabulary exercises, and extension activities practice the four skills. 'Everyday English' and 'Spoken grammar' sections practice real-world speaking skills, and a writing section for each unit at the back of the book provides models for students to analyze and imitate. | | |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل**  **In class lectures 26**  **In class tests 5**  **Seminars 2** | 33 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 2 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل**  **Library, dorm, home memorizing 5**  **Preparation for tests 8**  **Homework 4** | 17 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 2 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 50 | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time**  **(hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 5, 10, 12, 15 | All |
| **Assignments** | 6 | 20% (20) | 2, 4, 6, 8, 10, 12 | LO # 1, 3, 4, 5 and 6 |
| **Seminars** | 2 | 5% (5) | Continuous | LO # 1-5 |
| **Summative assessment** | **Midterm Exam** | 2 | 20% (10) | 7 | LO # 1-3 |
| **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | GRAMMAR, READING , MAIN COURSE SPEAKING, LISTENING ,VOCABULARY  am/is/are my/your This is… Introduction dialogues, Everyday English dialogues Introductions, Good morning! Practicing introduction dialogues. People meet each other and introduce someone else. How are you? What’s this in English? Numbers 1-10 and plurals. |
| **Week 2** | He/she/they His/her. Questions Where are they from?, Two people are on holiday in New York. Students ask and answer questions about where people are from. Countries, Numbers 10-20 A set of cities and countries: Brazil, Spain… Adjectives: awful, really good, fantastic, beautiful Nouns: centre, hospital, building, park |
| **Week 3** | Verb to be is recycled and extended to include negative and question forms. We’re in Las Vegas! Roleplay: in a band. An interview with the band Metro 5. Jobs: a nurse, a doctor.. Personal information: surname, first name, address, married … Social expressions: I’m sorry, thanks, please… |
| **Week 4** | Possessive adjectives. Possessive ‘s. Has/ have Adjective + noun Irregular Plurals Paddy McNab and his family, My best friend. The alphabet, On the phone, Saying email addresses. Who are they? Listen and identify the people. The family: mother, son.. Describing a friend: very beautiful, really funny… |
| **Week 5** | Present Simple: I/you/we/they a/an Adjective + noun Colin Brodie from Dundee. Role play: At a party. Where is Colin? Who is he with? At a party: Flavia and Terry are at a party in London. The lexical set of sports/food/drinks. Languages and nationalities. |
| **Week 6** | Present Simple: He/she Question and negatives Adverbs of frequency Prepositions of time Lois Maddox Talking about daily routines, Asking and answering questions about daily routines, Lifestyle questionnaire Listening a phone conversation between Lois and Elliot. Days of the week. The time. Words that go together: watch TV, get up early… |
| **Week 7** | Question words Subject pronouns Object pronouns Possessive pronouns This and that A postcard from San Francisco, A holiday postcard. Describing lifestyles, preferences and places, Roleplay: conversations in town. Listening the requests with Can I……..? Adjectives: lovely, terrible, comfortable, friendly… Opposite adjectives: new/old, big/small Places: chemist, post office |
| **Week 8** | There is /are Prepositions: in, on, under, next to Vancouver-the best city in the world, What to do and where to go. Talking and asking about rooms and furniture, Giving directions. My home town, Steve talks about living in Vancouver. Rooms and furniture: living room, bedroom … In and out of town: beach, mountain, sailing,… |
| **Week 9** | Was/were born Past simple: irregular verbs It’s a Jackson Pollock. Telling a story from pictures, Saying the dates in English. Magalie Dromand, Magalie dromand talks about her family. Saying years People and jobs Irregular verbs Have, do, go: have lunch, do homework, go shopping |
| **Week 10** | Past simple: regular and irregular Questions Negatives Ago Dialogues with simple past. Did you have a good weekend? Asking about holidays, A questionnaire, My last holiday, Roleplay: asking and giving directions. Angie and Rick are at work, Jack and Millie’s holiday. Weekend activities: go to the cinema, have a meal… Time expressions: on Monday, last night… Sports and leisure: tennis, skiing, windsurfing… Play or go: play tennis, go skiing… Seasons: winter, summer… |
| **Week 11** | Can / can’t, Adverbs, Adjective + noun Requests and offers The Internet, What can you do on the internet? Talking about what you can do, Talking about everyday problems, Five people talk about what they do on the internet. Verbs: draw, run, drive… Verb+noun: Listen to the radio, chat to friends Adjective+noun: fast car, busy city, dangerous sport Opposite adjectives: dangerous/ safe, old/modern, old/young. |
| **Week 12** | I’d like, You are what you eat, Discussion-what is a good diet? Conversation with Adam, Shopping: bread, milk, fruit, Please and thank you Some /any, Like and would like People from different parts of the world describe what they eat. Roleplay: Ordering a meal. Birthday wishes, What people want on their birthday. stamps, cheese, ham… Food: cereal, salad, pasta, fish… In a restaurant: menu, starter, desert, soup, salmon |
| **Week 13** | Present continuous, Present simple and present continuous. This week is different, Colin, a millionaire, gives money to homeless teenagers What’s the matter? Why don’t you ….? What is Nigel wearing? Nigel is on holiday, What’s the matter. Colours: blue, red, green… Clothes: jacket, trousers, shoes and socks… Opposite verbs: buy/sell, love/hate, open/close… |
| **Week 14** | Future plans, Revision: question words, tenses. Seven countries in seven days, Life’s big events: three people talk about their family, education, work and ambitions. A mini autobiography. Eddie is talking to a friend about his holiday plans, social expressions Transport: travel by bus, coach, motorbike, plane… Revision |
| **Week 15** | Irregular verbs, phonetic symbols, consonants and vowels. |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** |  |
| **Week 2** |  |
| **Week 3** |  |
| **Week 4** |  |
| **Week 5** |  |
| **Week 6** |  |
| **Week 7** |  |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | New Headway Beginner, by lizand john soars | Yes |
| **Websites** | <https://www.learnenglish.de/>  <https://www.englishgrammar.org/>  <https://www.phrasebank.manchester.ac.uk/> | |

**APPENDIX:**

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| **GRADING SCHEME**  **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 | **مقبول بقرار** | (45-49) | More work required but credit awarded |
| **F –** Fail | **راسب** | (0-44) | Considerable amount of work required |
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| Note: | |  |  | |
| NB 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. | | | | |

MODULE DESCRIPTOR

وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Mathematics I** | | | | **Module Delivery** | | |
| **Module Type** | Basic | | | | * **Theory** * **Lecture** * **Tutorial** | | |
| **Module Code** | **E-101** | | | |
| **ECTS Credits** | 6 | | | |
| **SWL (hr/sem)** | 150 | | | |
| **Module Level** | | UGx11 1 | **Semester (s) offered** | | | | 1 |
| **Administering Department** | |  | **College** | Engineering | | | |
| **Module Leader** | Ali Sachit Kaittan | | **e-mail** | alisachit@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | lecturer | **Module Leader’s Qualification** | | | | MSC in Electrical Power |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | |  | **e-mail** |  | | | |
| **Review Committee Approval** | |  | **Version Number** | | | 1.0 | |

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| **Relation With Other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | **None** | **Semester** | - |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر** | | | |
| **Module Aims**  **أهداف المادة الدراسية** | This module aims to provide students with an understanding of, and competence in the use of, mathematical techniques that are relevant to the solution of engineering problems. It will also give students a firm foundation from which to develop solutions to a wider and deeper range of engineering problems that they will encounter throughout their undergraduate engineering program of study. | | |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Preliminaries : Explain mathematical coordinate systems, representing line, slope of line, shifting of lines 2. Vectors: Demonstrate an understanding of vectors in plane and space. 3. Function: Demonstrate an understanding of function and related variables, range and domain of function, types of functions and their graphs. 4. Limits and Continuity: Demonstrate an understanding of the fundamental concepts of calculus including limits, continuity, and differentiability. 5. Derivatives: Apply the techniques of differentiation at different types of functions including transcendental functions 6. Applications of derivatives: Apply the techniques of differentiation to solve problems involving rates of change, linearization, curve sketching, mean value theorem and Initial value problem. 7. Complex numbers: Demonstrate an understanding of complex numbers with basic operations and their mathematical and graphical representations including Euler's Formula | | |
| **Indicative Contents**  **المحتويات الإرشادية** | The topics listed under the indicative content below are the underpinning areas of knowledge and understanding that will be obtained from successful completion of the module. The mathematical topics are illustrated in the context of relevant engineering scenarios.   * **Preliminaries** Cartesian coordinates, polar coordinates, slope of lines, angle of inclination. * **Functions**, types of functions, graph of the functions, domain and range of function * **Review of trigonometric function:** graph of trigonometric function, range and domain of trigonometric functions, identities. * **Limits and Continuity:** Properties, limits involving infinity, continuity. * **Transcendental functions**: Inverse function, graph of inverse function, Logarithmic and exponential functions, inverse trigonometric functions, hyperbolic functions, inverse hyperbolic functions. * **Derivatives:** Definition, rules of derivative, Implicit differentiation, L hospital’s rule, derivative of inverse functions * **Applications of derivatives:** rate of change problems, Relative maximum and relative minimum, Curve sketching with 1st and 2nd derivative, Linearization, Mean value theorem, Initial value problem,. * **Complex numbers:** Basic definitions. The geometric representations of the complex numbers**,** argand diagram,Basic operations with complex numbers, Euler's Formula * **Vectors**: Introduction to vectors | | |
| **Course Description** | This course lays the foundation for a robust understanding of mathematical concepts that underpin the various disciplines within engineering. It covers a breadth of topics ranging from coordinate systems, slopes of lines, and angles of inclination to the introduction of two- and three-dimensional coordinate systems. A focus is also given to the understanding and manipulation of functions, including domain and range determination and function composition. The course incorporates a substantial overview of trigonometry, limits, continuity, derivatives, including their applications in real-world engineering contexts in addition to complex numbers and their mathematical representation. By the end of the course, students will have a sound understanding of these principles, preparing them for more advanced engineering courses in their respective fields. | | |
| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | | | |
| **Strategies** | Begin In Mathematics I, then employ a range of teaching strategies to ensure first-year engineering students fully grasp the various mathematical concepts. Instructional methods include interactive lectures, where core mathematical principles are explained in detail, and practical problem-solving sessions to provide hands-on learning experiences. Collaborative group work encourages peer-to-peer learning and reinforces understanding through shared insights. Regular formative assessments will be conducted to monitor students' understanding of the material, and feedback will be promptly given to guide their learning process. Instructors will maintain office hours for personalized support, and online resources will be available to supplement classroom instruction. Emphasis will be placed on relating mathematical concepts to real-world engineering applications to make the learning experience more relevant and engaging. These strategies aim to develop students' critical thinking skills, enhance their problem-solving abilities, and prepare them for advanced engineering studies. | | |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل**  **In class lectures 53**  **In class tests 10**  **Tutorial 15** | 78 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 5.6 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل**  **Assignment 20**  **Preparation for tests 20**  **Homework 32** | 72 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 5.1 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 150 | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time**  **(hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 3,5, 10, 12, 14 | LO #1, 2, 3, 4 ,5 and 7 |
| **Assignments** | 6 | 20% (20) | 4, 8, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| **Summative assessment** | **Midterm Exam** | 2 | 20% (20) | 7 | LO # 1,4 |
| **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | Cartesian coordinates, slope of lines, angle of inclination, functions, types of functions, graph of the functions, domain and range, identifying functions, Circles and parabolas |
| **Week 2** | Introduction to vectors |
| **Week 3** | •Preliminaries  Sum, differences, products and quotients of Composite functions, shifting a graph of a function, scaling and reflecting a graph of a function, Absolute value |
| **Week 4** | •Review of trigonometric function  graph of trigonometric function, range and domain, identities |
| **Week 5** | •Limits and Continuity  Properties, limits involving infinity, continuity |
| **Week 6** | •Transcendental functions  Inverse function, graph of inverse function, Logarithmic and exponential functions, trigonometric functions , inverse trigonometric functions, hyperbolic functions, inverse hyperbolic functions |
| **Week 7** | •Derivatives  Definition, rules of derivative, slopes , tangent lines, chain rule, derivative of trigonometric functions, Implicit differentiation, L hospital’s rule |
| **Week 8** | derivative of inverse trigonometric functions, derivative of exponential and logarithmic functions |
| **Week 9** | •Applications of derivatives  Speed and acceleration, Relative maximum and relative minimum |
| **Week 10** | Curve sketching with 1st and 2nd derivative |
| **Week 11** | Linearization |
| **Week 12** | rate of change problems |
| **Week 13** | Mean value theorem -Initial value problem |
| **Week 14** | Complex numbers**:** Basic definitions. The geometric representations of the complex numbers**,** argand diagram |
| **Week 15** | Basic operations with complex numbers, Euler's Formula |
| **Week 16** | **Final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** |  |
| **Week 2** |  |
| **Week 3** |  |
| **Week 4** |  |
| **Week 5** |  |
| **Week 6** |  |
| **Week 7** |  |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | George B. Thomas and Ross L. Finney, “Calculus and Analytic Geometry, Addison- Wesley | Yes |
| **Recommended Texts** | Thomas Calculus, by George B.Thomas,Jr,Elevnth Edition Media Upgrade 2008 | Yes |
| **Websites** |  | |

**APPENDIX:**

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| **GRADING SCHEME**  **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 | **مقبول بقرار** | (45-49) | More work required but credit awarded |
| **F –** Fail | **راسب** | (0-44) | Considerable amount of work required |
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| Note: | |  |  | |
| NB 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. | | | | |

MODULE DESCRIPTOR

وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Mathematics II** | | | | **Module Delivery** | | |
| **Module Type** | Basic | | | | * **Theory** * **Lecture** * **Tutorial** | | |
| **Module Code** | E 102 | | | |
| **ECTS Credits** | 6 | | | |
| **SWL (hr/sem)** | 150 | | | |
| **Module Level** | | UGx11 1 | **Semester (s) offered** | | | | 2 |
| **Administering Department** | |  | **College** |  | | | |
| **Module Leader** | Ali Sachit Kaittan | | **e-mail** | alisachit@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | |  | **Module Leader’s Qualification** | | | |  |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | |  | **e-mail** |  | | | |
| **Review Committee Approval** | |  | **Version Number** | | | 1.0 | |

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| **Relation With Other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | **MATHEMATICS I** | **Semester** | 1 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر** | | | |
| **Module Aims**  **أهداف المادة الدراسية** | This module aims to provide students with an understanding of, and competence in the use of, mathematical techniques that are relevant to the solution of engineering problems. It will also give students a firm foundation from which to develop solutions to a wider and deeper range of engineering problems that they will encounter throughout their undergraduate engineering program of study. | | |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Integration: Demonstrate an understanding of the fundamental concept of integration and antiderivative including types of integrations 2. Integration and transcendental functions: Extend the concept of integration to cover the integration of different types of transcendental functions 3. Numerical integration: Explain the fundamentals of numerical integration focusing on trapezoidal rule and Simpson’s rule**.** 4. Methods of integration: Apply the techniques of integration to evaluate the integrals that cannot be solved directly. 5. Application of definite integrals: Extend the concept of integration to solve several problems involving area, volume, length of curve, surface area by revolution, center of mass and moment of inertia. 6. Area with polar coordinates: Demonstrate an understanding of polar coordinate system and its difference with Cartesian coordinate system, graphing and problems solution of such system. 7. Matrix: Explain the concept of matrix in mathematics, matrix algebra and solution of system of linear equations. | | |
| **Indicative Contents**  **المحتويات الإرشادية** | The topics listed under the indicative content below are the underpinning areas of knowledge and understanding that will be obtained from successful completion of the module. The mathematical topics are illustrated in the context of relevant engineering scenarios.   * **Integration:** Definition, antiderivative, definite and indefinite integral**.** * **Integration and transcendental functions:** integration oftrigonometric and inverse trigonometric functions, integration of exponential and logarithmic functions, Integration of hyperbolic and inverse hyperbolic functions. * **Numerical integration:** Introduction, trapezoidal rule and Simpson’s rule**.** * **Methods of integration:** Substitution method, integration by parts**,** Trigonometric substitution method**,** integration by partial fraction**.** * **Application of definite integrals:** Area**,** Volume**,** Lengths of curves in the plane**,** Areas of surfaces of revolution, Center of mass, moment of inertia**.** * **Area of polar coordinates**: Definition, polar equation, relating polar and Cartesian coordinates, Graph in polar coordinates, applications using polar coordinate system * **Matrix:** definition, matrix algebra, Determinant of matrix, Grammar’s rule, Inverse of matrix, Gauss Elimination Method | | |
| **Course Description** | This course discuss the foundation for a robust understanding of mathematical concepts that underpin the various disciplines within engineering. It covers the integration and its types followed by methods of integration. The concept of numerical integration is also highlighted. Students will be able to utilize integration to solve several problems such as area between curves and volume by revolution. A focus is also given to the understanding of polar coordinate system and how to graph the curves and solve difficult integral in an easy way using such system. Matrix topic is also covered in this course so the students will be able to solve system of linear equations using matrix in different approaches. By the end of the course, students will have a sound understanding of these principles, preparing them for more advanced engineering courses in their respective fields | | |
| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | | | |
| **Strategies** | Begin In Mathematics II, then employ a range of teaching strategies to ensure first-year engineering students fully grasp the various mathematical concepts. Instructional methods include interactive lectures, where core mathematical principles are explained in detail, and practical problem-solving sessions to provide hands-on learning experiences. Collaborative group work encourages peer-to-peer learning and reinforces understanding through shared insights. Regular formative assessments will be conducted to monitor students' understanding of the material, and feedback will be promptly given to guide their learning process. Instructors will maintain office hours for personalized support, and online resources will be available to supplement classroom instruction. Emphasis will be placed on relating mathematical concepts to real-world engineering applications to make the learning experience more relevant and engaging. These strategies aim to develop students' critical thinking skills, enhance their problem-solving abilities, and prepare them for advanced engineering studies. | | |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل**  **In class lectures 53**  **In class tests 10**  **Tutorial 15** | 78 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 5.6 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل**  **Assignment 20**  **Preparation for tests 30**  **Homework 22** | 72 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 5.1 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 150 | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time**  **(hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 3,5, 10, 12, 14 | LO #1, 2, 3, 4 ,5 and 7 |
| **Assignments** | 6 | 20% (20) | 4, 8, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| **Summative assessment** | **Midterm Exam** | 2 | 20% (20) | 7 | LO # 1,4 |
| **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | **Integration:**  Definition, antiderivative, definite and indefinite integral |
| **Week 2** | **Integration and transcendental functions:**  (trigonometric and inverse trigonometric functions, exponential and logarithmic functions) |
| **Week 3** | **Integration and transcendental functions:**  Integration and transcendental functions (hyperbolic and inverse hyperbolic functions) |
| **Week 4** | * **Numerical integration**   Introduction, trapezoidal rule and Simpson’s rule |
| **Week 5** | * **Methods of integration**   Substitution method, integration by parts |
| **Week 6** | * **Methods of integration**   Trigonometric substitution method |
| **Week 7** | * **Methods of integration**   Integration by partial fraction method**.** |
| **Week 8** | * **Application of definite integrals**   Areas under the curve, area between curves, |
| **Week 9** | * **Application of definite integrals**   Volume by revolution |
| **Week 10** | * **Application of definite integrals**   Length of curve in the plane**,** Area of surface of revolution |
| **Week 11** | * **Application of definite integrals**   Center of mass, moment of inertia |
| **Week 12** | * **Application of definite integrals**   Area by polar coordinates |
| **Week 13** | * **Matrix**   Definition, matrix algebra |
| **Week 14** | * **Matrix**   Determinant of matrix, Grammar’s rule |
| **Week 15** | * **Matrix**   Inverse of matrix, Gauss Elimination Method |
| **Week 16** | **Final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** |  |
| **Week 2** |  |
| **Week 3** |  |
| **Week 4** |  |
| **Week 5** |  |
| **Week 6** |  |
| **Week 7** |  |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | George B. Thomas and Ross L. Finney, “Calculus and Analytic Geometry, Addison- Wesley | Yes |
| **Recommended Texts** | Thomas Calculus, by George B.Thomas,Jr,Elevnth Edition Media Upgrade 2008 | Yes |
| **Websites** |  | |

**APPENDIX:**

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| **GRADING SCHEME**  **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 | **مقبول بقرار** | (45-49) | More work required but credit awarded |
| **F –** Fail | **راسب** | (0-44) | Considerable amount of work required |
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| Note: | |  |  | |
| NB 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. | | | | |

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Electronic Physics** | | | | **Module Delivery** | | |
| **Module Type** | **Core** | | | | * **☒ Theory** * **☒ Lecture** * **☐ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | **EPE 107** | | | |
| **ECTS Credits** | 6 | | | |
| **SWL (hr/sem)** | 150 | | | |
| **Module Level** | |  | **Semester of Delivery** | | | |  |
| **Administering Department** | | Type Dept. Code | **College** | Type College Code | | | |
| **Module Leader** | Hassan Jasim Mohammed | | **e-mail** | hassanjasim@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Assist. Professor | **Module Leader’s Qualification** | | | | Ph.D. |
| **Module Tutor** | Name (Hassan Jasim Mohammed) | | **e-mail** | hassanjasim@uodiyala.edu.iq | | | |
| **Peer Reviewer Name** | | Name | **e-mail** | E-mail | | | |
| **Scientific Committee Approval Date** | | 01/010/2023 | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Objectives**  **أهداف المادة الدراسية** | 1. To develop problem solving skills and understanding of electronics theory through the application of techniques. 2. To understand Atomic structures and energy level. 3. To understand voltage, current and electronics device from a given circuit. 4. This course deals with the basic concept of semiconductors materials. 5. This is the basic subject for all semiconductors and electronic circuits. 6. To understand diode circuit and semiconductor problems.   . |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.   1. Recognize base of Atomic structures . 2. List the various terms associated with electronics. 3. Summarize what is meant by a basic Energy Levels and Atomic Structure. 4. Describe the Electrical Conduction in Metals. 5. Describe electrical power, charge, and current. 6. Discuss Mobility and Conductivity, Energy Distribution of Electrons,. 7. Identify the basic Semiconductors Materials. 8. Discuss the ( Si , Ge and Compound Semiconductors ) , Extrinsic Semiconductors. 9. Discuss the various properties Semiconductor p – n Junction. 10. Explain the Current – Voltage Characteristics , Charge Control   Description of a Diode.   1. Identify the Other types of semiconductor diodes . 2. Half wave and Full wave rectifier ,clipping and clamping circuit. |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  Atomic Theory  Atom, Models, Wave Nature of Light, Dual Nature of Matter, Wave Function,  Heisenberg’s Uncertainty Principle, Energy – Band Theory of Metals, Insulators and  Semiconductors, Crystal Structure,Ionic,Covalent and Metallic Bonding, Energy  Hand of Crystals. Internal Structure of Materials Cell, Packing Miller Indices,  Crystal Planes and Directions, Braggs Law and x – ray Diffraction Electronic  Ballistics. [15 hrs]  Mobility and Conductivity, Energy Distribution of Electrons, Fermi Level, Work  Function. [10 hrs]  Semiconductors Materials ( Si , Ge and Compound Semiconductors ) , Extrinsic  Semiconductors , Fermi – Level in SemiConductor , Diffusion and Carrier Life Time  , Hall Effect. [15hrs]  p-n Junction in Equilibrium , Current – Voltage Characteristics , Charge Control  Description of a Diode Transition and Diffusion Capacitances , Diode Switching  Times , Diode Models , Small – Signal Model and Load Line Concept , Introduction  to Heterojunctions and Double Heterojunctions [15 hrs]  Varactor Diode, Tunnel Diode, Photodiode and Photovoltaic (Solar) Cell, Light –  Emitting Diode, Principle and Operation of Semiconductor Laser. Electronic  Ballistics Semiconductor Diode. [10hrs]  Half wave and Full wave rectifier ,clipping and clamping circuit.[10hrs] |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | Type something like: The main strategy that will be adopted in delivering this module is to encourage students’ participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 48 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 3 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 102 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 7 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | **150** | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| **Assignments** | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| **Projects/seminar** | 1 | 10% (10) | Continuous | All |
| **Report** | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| **Summative assessment** | **Midterm Exam** | 2hr | 10% (10) | 7 | LO #1 - #7 |
| **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | The Atom, Models, Wave Nature of Light, Dual Nature of Matter, Wave Function, Heisenberg’s Uncertainty Principle. |
| **Week 2** | Energy – Band Theory of Metals, Insulators and Semiconductors, Crystal Structure, Ionic. |
| **Week 3** | Covalent and Metallic Bonding, Energy Hand of Crystals. Internal Structure of Materials Cell. |
| **Week 4** | Packing Miller Indices, Crystal Planes and Directions, Braggs Law and x – ray Diffraction Electronic Ballistics. |
| **Week 5** | Mobility and Conductivity. |
| **Week 6** | Energy Distribution of Electrons, Fermi Level, Work Function. |
| **Week 7** | Introduction Semiconductors Materials ( Si , Ge and Compound Semiconductors ). |
| **Week 8** | Extrinsic Semiconductors , Fermi – Level in Semiconductor. |
| **Week 9** | Diffusion and Carrier Life Time , Hall Effect . |
| **Week 10** | p-n Junction in Equilibrium , Current – Voltage Characteristics. |
| **Week 11** | Charge Control Description of a Diode Transition and Diffusion Capacitances , Diode Switching  Times. |
| **Week 12** | Diode Models , Small – Signal Model and Load Line Concept. |
| **Week 13** | Varactor Diode, Tunnel Diode, Photodiode and Photovoltaic (Solar) Cell, Light – Emitting Diode. |
| **Week 14** | Principle and Operation of Semiconductor Laser. Electronic Ballistics Semiconductor Diode. |
| **Week 15** | Half wave and Full wave rectifier ,clipping and clamping circuit. |
| **Week 16** | **Preparatory week before the final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** |  |
| **Week 2** |  |
| **Week 3** |  |
| **Week 4** |  |
| **Week 5** |  |
| **Week 6** |  |
| **Week 7** |  |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | Introduction to physical Electronics By: Bill Wilson | Yes |
| **Recommended Texts** | فيزياء الالكترونيات ,د .صبحي سعيد | No |
| **Websites** | https://www..edouniversity.edu.ng/oer/lecturenotes/electricalelectronic-engineering | |

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| **Grading Scheme**  **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. | | | | |

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **WORKSHOPS SKILLS** | | | | **Module Delivery** | | |
| **Module Type** | **BASIC** | | | | * **☐ Theory** * **☐ Lecture** * **☐ Lab** * **☐ Tutorial** * **☒ Practical** * **☐ Seminar** | | |
| **Module Code** | **EPE 102** | | | |
| **ECTS Credits** | **3** | | | |
| **SWL (hr/sem)** | **75** | | | |
| **Module Level** | | UGx11 2 | **Semester of Delivery** | | | | 1 |
| **Administering Department** | | Type Dept. Code | **College** | Type College Code | | | |
| **Module Leader** | Yasseen Alwan Jaddoa | | **e-mail** | yasseenalwan\_eng@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | lecturer | **Module Leader’s Qualification** | | | | MSc. |
| **Module Tutor** | Name (if available) | | **e-mail** | E-mail | | | |
| **Peer Reviewer Name** | | Name | **e-mail** | E-mail | | | |
| **Scientific Committee Approval Date** | | 01/06/2023 | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Objectives**  **أهداف المادة الدراسية** | **أ- الاهداف المعرفية**  **1**- أفهام وتعليم الطالب مفاهيم ومبادى مادة الورش الهندسية العامة .  **2**- تمكين الطلبة من الحصول على المعرفة والفهم الكامل لكافة مهارات الورش الهندسية .  **3**- افهام الطالب وتعريفه بكافة المهارات نظريا وعمليا وتعريفه بكافة أجزاء الماكنة التي يتم تطبيق المهارة بالإضافة الى التطبيق العملي على الماكنة لكل طالب ولكافة المهارات.  **4**- تمكين الطلبة من الحصول على المعرفة والفهم لكل أجزاء الماكنة وفائدة كل جزء .  **5**- تمكين الطلبة من الحصول على المعرفة والفهم على تشخيص انواع الاعمال التي تنجزها كل ماكنة وطريقة العمل عليها .    **ب – الأهداف المهاراتية الخاصة بالبرنامج**  **1** -شرح المهارات بالتفصيل وتطبيقها على الماكنة عمليا والتاكيد على الطلبة بضرورة الالتزام بقواعد السلامة المهنية.  **2** -تزودهم بمعلومات وطرق حل المشاكل العملية المتعلقة بجميع المهارات.  **3** -يتم عرض مواضيع كافة المهارات نظريا.  **4** -يتم التركيز على العملي في المهارات وضرورة مشاركة الطالب في العملي. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | **مخرجات التعلم للمادة الدراسية**  **1-** بناء الطالب علميا وعمليا وتأهيله للعمل في مجال تقنيات الهندسة.  **2**- بناء وإعداد الطالب نفسيا ليقوم بدوره كمهندس يعتمد عليه في هذا المجال.  **3**- بناء طلبة قادرين على التنافس مع مهندسين اخرين لفرص العمل و الحصول على المقاعد المطلوبة في اكمال دراسات عليا.  **4**- قابلية التقديم لاختبارات خارجية من قبل هيئات محليةأو أقليمية أو عالمية لغرض اكمال الدراسة او التعيين.  **5**- حث الطالب على الإبداع والتفكير في مشاريع التخصص ومواكبة التطور الحاصل في هذا المجال.  **6**- تزويد الطلبة بمهارات علمية وعملية ومهارات ذاتية تمكنه من حل المشاكل العملية والتعامل معها بمفاهيم علمية. |
| **Indicative Contents**  **المحتويات الإرشادية** | **المحتويات الإرشادية**  **اولا-: السلامة المهنية.**  يتم تعريف الطالب بقواعد وإجراءات السلامة المهنية لجميع المهارات وجميع الأقسام لاجل سلامة المستخدم من مخاطر التعامل مع هذه الأدوات والمكائن (3 ساعات).  **ثانيا-: مهارة القياسات**.  شرح نظري لمهارة القياسات وتعريف الطالب بجميع العدد والأدوات المستخدمة في عملية القياس بالتفصيل ومن ثم يتم التطبيق العملي لمهارة القياسات حيث يقوم كل طالب باجراء عملية القياس لمختلف الأدوات إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (6ساعات)  **ثالثا:- مهارة اللحام** .  شرح نظري لمهارة اللحام وتعريف الطالب بجميع العدد والأدوات المستخدمة في عملية اللحام وشرع طرق اللحام بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بعملية اللحام وذلك لاكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (6ساعات).  **رابعا:- مهارة البرادة** .  شرح نظري لمهارة البرادة وتعريف الطالب بجميع العدد والأدوات المستخدمة في عملية البرادة وشرع طرق البرادة بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بعملية البرادة يدويا وذلك لاكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (6ساعات).  **خامسا:- مهارة السباكة** .  شرح نظري لمهارة السباكة وتعريف الطالب بجميع العدد والأدوات المستخدمة في عملية السباكة وشرع طرق السباكة بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بعملية السباكة يدويا وذلك لاكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (6ساعات)  **سادسا:- مهارة التفريز** .  شرح نظري لمهارة التفريز وتعريف الطالب بجميع أجزاء ماكنة التفريزاضافة الى العدد والأدوات المستخدمة في عملية التفريز وشرع طرق التفريز بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بالعمل على ماكنة التفريز وتنفيذ التمارين المختلفةعلى الماكنة وذلك من اجل اكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (6ساعات).  **سابعا:- مهارة التجليخ** .  شرح نظري لمهارة التجليخ وتعريف الطالب بجميع أجزاء ماكنة التجليخ اضافة الى العدد والأدوات المستخدمة في عملية التجليخ وشرع طرق التفريز بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بالعمل على ماكنة التفريز وتنفيذ التمارين المختلفةعلى الماكنة وذلك من اجل اكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (6ساعات).  **ثامنا:- مهارة الخراطة** .  شرح نظري لمهارة الخراطة وتعريف الطالب بجميع أجزاء ماكنة الخراطة اضافة الى العدد والأدوات المستخدمة في عملية الخراطة وشرع طرق الخراطة بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بالعمل على ماكنة الخراظة وتنفيذ التمارين المختلفةعلى الماكنة وذلك من اجل اكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (6ساعات).  **تاسعا:- مهارة التأسيسات الكهربائية** .  شرح نظري لمهارة التأسيسات الكهربائيةوتعريف الطالب بجميع العدد والأدوات المستخدمة في عمليات التأسيسات الكهربائية وشرع طرق التأسيسات الكهربائي إضافة الى التطبيق العملي حيث يقوم كل طالب بالعمل على ربط الدوائر الكهربائية المختلفة وذلك من اجل اكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (6ساعات). |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | **\* امتحانات يومية باسئلة عملية وعلمية.**  **\*درجات مشاركة لاسئلة المنافسة الصعبة بين الطلاب .**  **\* وضع درجات للواجبات البيتية والتقاريرالمكلفة بهم.**  **امتحانات فصلية للمنهج الدراسي اضافة الى امتحان نصف السنة والامتحان النهائي.\*** |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 48 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 3 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 27 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 2 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | **75** | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| **Assignments** | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| **Projects /** | 1 | 10% (10) | Continuous | All |
| **Report** | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| **Summative assessment** | **Midterm Exam** | 2hr | 20% (20) | 7 | LO #1 - #7 |
| **Final Exam** | 3hr | 30% (30) | 16 | All |
|  | **practical** | 1hr | 10%(10) |  |  |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | شرح نظري وعملي لمبادئ السلامة المهنية وبيان خطورة عدم الالتزام بها على حياة الطالب. |
| **Week 2** | شرح نظري لمهارة القياسات وتعريف جميع العدد والأدوات المستخدمة في القياس. |
| **Week 3** | تطبيق عملي لمهارة القياسات. |
| **Week 4** | شرح نظري لمهارة اللحام وتعريف جميع العدد والأدوات المستخدمة في عملية اللحام. |
| **Week 5** | تطبيق عملي لمهارة اللحام. |
| **Week 6** | شرح نظري لمهارة البرادة وتعريف جميع العدد والأدوات المستخدمة في عملية البرادة. |
| **Week 7** | تطبيق عملي لمهارة البرادة. |
| **Week 8** | شرح نظري لمهارة السباكة وتعريف جميع أجزاء فرن السباكة. |
| **Week 9** | تطبيق عملي لمهارة السباكة. |
| **Week 10** | شرح نظري لمهارة التفريز وتعريف الطالب بجميع أجزاء ماكنة التفريز. |
| **Week 11** | تطبيق عملي لمهارة التفريز. |
| **Week 12** | شرح نظري لمهارة التجليخ وتعريف الطالب بجميع أجزاء ماكنة التجليخ. |
| **Week 13** | تطبيق عملي لمهارة التجليخ. |
| **Week 14** | شرح نظري لمهارة التاسيسات الكهربائية مع التطبيق العملي. |
| **Week 15** | شرح نظري لمهارة الخراطة وتعريف الطالب بجميع أجزاء ماكنة الخراطة. |
| **Week 16** | تطبيق عملي لمهارة الخراطة. |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** | التعريف بمبادئ السلامة المهنية. |
| **Week 2** | شرح مهارة القياسات. |
| **Week 3** | شرح مهارة اللحام. |
| **Week 4** | شرح مهارة البرادة. |
| **Week 5** | شرح مهارة السباكة |
| **Week 6** | شرح مهارة التجليخ. |
| **Week 7** | شرح مهارة الخراطة والتفريز. |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | MECH6014 - Mechanical Workshop Practice Tarafdar, J.C. and Raliya, R., “The Nanotechnology”, Published by Scientific Publisher (SP), India, (2012). | Yes |
| **Recommended Texts** | MECH6028 - Mechanical Workshop Practice 2 - CIT Modules | No |
| **Websites** | <https://www.coursera.org/browse/workshop-and-engineering/workshop> - | |

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| **Grading Scheme**  **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 |
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| **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. | | | | |

MODULE DESCRIPTOR

وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Engineering Drawing** | | | | **Module Delivery** | | |
| **Module Type** | Basic | | | | * **☐ Theory** * **☐ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | EPE 106 | | | |
| **ECTS Credits** | 4 | | | |
| **SWL (hr/sem)** | 100 | | | |
| **Module Level** | | UGx11 1 | **Semester (s) offered** | | | | 2 |
| **Administering Department** | | Electronics Engineering | **College** | Engineering | | | |
| **Module Leader** | Yaser I. Jasem | | **e-mail** | Yaser\_ij@uodiyala.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Assist. Proff. | **Module Leader’s Qualification** | | | | MS.c. |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | |  | **e-mail** |  | | | |
| **Review Committee Approval** | |  | **Version Number** | | | 1.0 | |

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| **Relation With Other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** | - |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر** | | | |
| **Module Aims**  **أهداف المادة الدراسية** | Engineering drawing is the principal method of communication for engineers, the objective is to introduce the students, to the techniques of constructing the various types of polygons, curves and scales.  In addition to engineering drawing, students become familiar with the AutoCAD user interface. Understand the fundamental concepts and features of AutoCAD. Use the precision drafting tools in AutoCAD to develop accurate technical drawings—present drawings in a detailed and visually impressive manner. | | |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | At the end of this course the students will be able to:  1- Get information about the important tools for engineering drawing. This will give student basic knowledge of technical drawings professions and means of communications to others.  2- Learning how to draw the shapes, angels and lines and others which is essential for engineer  3- Develop student’s imagination and ability to represent the shape size and specifications of physical objects.  4- Understand the main idea of using dimension for engineering drawing  5- Familiarize with different drawing equipment, technical standards and procedures for construction of geometric figures. This will give students ability to draw three-dimension objects on the paper and to draw the pectoral drawings.  6- Explain the principle of projection and sectioning  7- Utilize the power and precision of AutoCAD as a drafting and design tool used in the mechanical design and manufacturing industries.  8- Apply basic CAD concepts to develop and construct accurate 2D geometry through creation of basic geometric constructions.  9- Create, manipulate and edit 2D drawings and figures.  10- Apply elements of mechanical drafting such as layers, dimensions, drawing formats, and 2D figures in projects. | | |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.   * Paper size, Lettering & title blocks * Orthographic projection * Isometric and oblique projection * Perspective drawing * Basic geometrical solids * Development of surfaces * **Creating Basic Drawings** * Manipulating Objects * Implementing Drawing Organization and Inquiry Commands * Altering Objects * Annotate a Drawing * Dimension Drawings * Hatching Objects * Creating Additional Drawing Objects and working on Projects * Plotting the Drawing Output | | |
| **Course Description** | This course introduces students to the introduction to the drawing tools and how to use them, lines drawing, Basic engineering processes, Composition of the engineering drawings, Letters, numbers, dimensions, Projection, Sectioning, Isometric drawing.  Understand the fundamental concepts and features of AutoCAD. Use the precision drafting tools in AutoCAD to develop accurate technical drawings. Present drawings in a detailed and visually impressive manner. Develop a level of comfort and confidence with AutoCAD through hands-on experience. | | |
| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | | | |
| **Strategies** | Begin to establish a strong conceptual understanding of the principles of engineering drawing. Use the reality of work examples and measurements to help students relate abstract concepts to the planning. Encourage discussions and questions to clear up any misconceptions. In addition, provide students with the tool to deal with schematic problems. Encourage active participation and group discussions to enhance critical thinking and problem-solving skills. Guide students through the problem-solving process and provide constructive feedback. | | |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل**  **In class lectures**  **Lab**  **Practical**  **In class tests**  **Final Exam** | 48 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 3.2 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل**  **Library, dorm, home memorizing**  **Preparation for tests**  **Homework** | 52 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 3.5 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 100 | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time**  **(hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 15% (15) | 5, 12 | LO #1, 2, 3,7,8 and LO# 4,5,6,9,10 |
| **Assignments** | 6 | 5% (5) | 7, 12 | LO # 7, 8 and LO# 9,10 |
| **Homework** | 2 | 20% (20) | Continuous |  |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO #1, 2, 3,4,7,8 and LO# 4,5,6,9,10 |
| **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | - Definition of tools and how to use them,  - Introduction  1. Status Bar and Command Prompt  2. AutoCAD Commands  3. Dynamic Input  4. Menus, Ribbons, and Toolbars  5. Cursor and Colors  6. Undo and Redo |
| **Week 2** | - Initial principles of drawing,  - Drawing Aids  1. Open Existing Drawings  2. Creating a New Drawing  3. Saving Drawings  **4.** Exiting AutoCAD |
| **Week 3** | - Letters and numbers,  5. SNAP Command  6. Grid Command  7. Running Object Snaps  8. Osnap Settings  **9.** UNITS Command |
| **Week 4** | - Dimensions,  - Draw Commands  1. Line Command  2. Cartesian Coordinate System  3. Orthogonal Lines  **4.** Polar Tracking |
| **Week 5** | - Line drawing,  - 5. Circles  6. Arc Command  7. Polyline Command  **8.** Explode Command |
| **Week 6** | - Line drawing,  9. Rectangle  10. Ellipse |
| **Week 7** | - Engineering operations,  - Edit Commands  1. The Move Command  2. The Copy Command  3. The Offset Command  4. The Extend Command  **5.** Trim Command |
| **Week 8** | - Engineering operations,  6. The Erase Command  7. The Zoom Command  8. The Pan Command  9. The Mirror Command  10. The Rotate Command  **11.** The Scale Command |
| **Week 9** | - Projection drawing,  12. The Break Command  13. The Stretch Command  **14.** The Explode Command |
| **Week 10** | - Projection drawing,  15. The Fillet Command  16. The Chamfer Command  17. The Array Command  **18.** The Lengthen Command |
| **Week 11** | - Projection drawing,  - Dimensions  1. Linear Dimensions |
| **Week 12** | - Drawing of sectional Views,  2. Aligned Dimensions  **3.** Radial Dimensions |
| **Week 13** | - Drawing of sectional Views,  4. Angular Dimensions  **5.** Continued and Baseline Dimensions |
| **Week 14** | - Isometric,  6. Modifying Dimensions |
| **Week 15** | - Isometric,  7. Dimension Styles  \* Creating |
| **Week 16** | **Final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** |  |
| **Week 2** |  |
| **Week 3** |  |
| **Week 4** |  |
| **Week 5** |  |
| **Week 6** |  |
| **Week 7** |  |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | 1. Parkinson, A.C., 1961. A First Year Engineering Drawing  2. J Luzadder, W., 1965. Fundamentals of Engineering Drawing, by Warren J. Luzadder. Prentice-hall.  3. Text book 1: James A. Leach, “AutoCad 2002 companion”, 2003.  4. Text book 2: AutoCAD 2D Tutorials, AutoCAD 2013, By Kristen S. Kurland, 2012. | Yes |
| **Recommended Texts** | 3. Text book 3: 2D\_AutoCAD. | Yes |
| **Websites** |  | |

**APPENDIX:**

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| **GRADING SCHEME**  **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 | **مقبول بقرار** | (45-49) | More work required but credit awarded |
| **F –** Fail | **راسب** | (0-44) | Considerable amount of work required |
|  |  |  |  |  |
| Note: | |  |  | |
| NB 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. | | | | |

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **حقوق الانسان والديمقراطية** | | | | **Module Delivery** | | |
| **Module Type** | B | | | | * **☒ Theory** * **☒ Lecture** * **☐ Lab** * **☐ L Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | U101 | | | |
| **ECTS Credits** | 2 | | | |
| **SWL (hr/sem)** | 50 | | | |
| **Module Level** | | UGx11 | **Semester of Delivery** | | | |  |
| **Administering Department** | | جميع اقسام الكلية | **College** | College of Engineering | | | |
| **Module Leader** |  | | **e-mail** |  | | | |
| **Module Leader’s Acad. Title** | | لجنة حقوق الانسان والديمقراطية | **Module Leader’s Qualification** | | | |  |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | |  | **e-mail** |  | | | |
| **Scientific Committee Approval Date** | | 12/06/2023 | **Version Number** | | |  | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | | | | | | | | | |
| **Module Objectives**  **أهداف المادة الدراسية** | | 1- يتعلم الطالب خلال السنه الدراسية اساسيات حقوق الانسان والديمقراطية ما حقوقه كيف يدافع عنها بالطرق القانونية وماهي ضماناتها الداخلية والدولية.  2-استحصال المعرفة في مجال الديمقراطية وأنواع أنظمتها واثرها على حقوق الانسان .  3-تنمية شخصية الطالب وتعزيز وعيهم في الأنظمة السياسية الديمقراطية وتفاصيلها وكيفية تطبيقها على ارض الواقع واهمية ان يكون فعال في المجتمع من خلال احترامه لحقوق الاخرين ومعرفه ان الحقوق والحريات تنتهي عند بداية حقوقهم وحرياتهم ويؤدي واجباته بدلا من اكتساب الحقوق فقط.  4- تعزيز ثقافة السلام القائمة على العدل والمساواة. | | | | | | | |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | | 1 -تمكين الطالب من معرفة اساسيات الدفاع عن حقوقه وحقوق الاخرين بعد معرفتها ومعرفة أهميتها له وللمجتمع بصورة عامة وأيضا معرفه كل شخص حدود حقوقه وحريته .  ٢- تمكين الطالب في المشاركة السياسية وذلك من خلال معرفته بأهمية مشاركته في الانتخابات وتأثير هذه المشاركة على سير الانتخابات وتشكيل السلطة فيما بعد.  ٣- معرفه الطالب ضمانات حقوقه وحرياته وماهي مصادرها.  ٤ – معرفة الفرق بين الحقوق والحريات.  ٥- تمكين الطالب من معرفة ماهي المفهوم العلمي للديمقراطية وماهي جذورها وانواعها واشكالها.  ٦- يتعلم الطالب كيف يؤثر النظام الديمقراطي على حقوق الانسان وماهي العلاقة بينها.  ٧ – ادارك الطالب ضرورة ان يكون مواطن فعال في المجتمع ايضاً معرفه شروط الناخب وشروط المرشح للانتخابات.  ٨- معرفه أنظمة الانتخابات وايهما افضل.  ٩ – فهم الطالب للقانون الدولي لحقوق الانسان وايضاً معرفة مختصرة عن المنظمات الدولية والية عملها كالأمم المتحدة ومنظمة الصليب الأحمر وغيرها. | | | | | | | |
| **Indicative Contents**  **المحتويات الإرشادية** | | 1 الجزء الأول -تعريف حقوق الانسان وحقوق الانسان في الحضارات القديمة.  (تعريف الحق وتعريف الانسان ومعرفة أهمية حقوق الانسان بالنسبة للإنسان والمجتمع أيضا دراسة حقوق الانسان في الحضارات كالحضارة المصرية والعراقية واليونانية والرومانية)(٤ساعات)  الجزء الثاني معرف حقوق الانسان في الأديان السماوية واهمها الإسلام (٢ساعة)  مصادر حقوق الانسان تتضمن (مصادر دولية كالإعلان العالمي لحقوق الانسان والعهدان الدوليان والمصادر الإقليمية التي تشمل الاتفاقيات الإقليمية كالاتفاقية الاوربية والأمريكية والدستور )(٢ساعة )  ضمانات حقوق الانسان (كالضمانات الدستورية والقانونية )(٢ساعة)  الاتفاقيات الدولية والإقليمية لحقوق الانسان (٢ساعة)  الحريات العامة وانواعها والمقارنة فيما بينها (٢ساعة)  مستقبل حقوق الانسان والعولمة وحقوق الانسان (٢ساعة )  تعريف وتاريخ وأنواع الديمقراطية (دراسة تعريف ونشأة وتطور الديمقراطية مبادئها وانواعها كالديمقراطية المباشرة وغير المباشرة والنام الرئاسي والبرلماني )(٦ساعات )  تعريف الانتخاب وشروطه وأنواع النظم الانتخابية وتعريف المجلس النيابي (٦ساعات )  العلاقة بين الديمقراطية وحقوق الانسان (٢ساعة ) | | | | | | | |
| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | | | | | | | | | |
| **Strategies** | | 1-زيادة وعي الطالب بأهمية معرفه حقوقه وواجباته اتجاه المجتمع وعلاقة حقوق الانسان بالنظام الديمقراطي  2-ثقافة عامة في مجموعة من المجالات ومنها المجال القانوني و السياسي والاجتماعي ورفع ثقة الطالب بنفسه من خلال ربط المادة النظرية بواقع العمل | | | | | | | |
| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا** | | | | | | | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | | | | 33 | | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | | | 2 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | | | | 17 | | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | | | 1.1 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | | | | **50** | | | | | |
| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | | | | | | |
| **As** | | | **Time/Number** | | **Weight (Marks)** | | **Week Due** | **Relevant Learning Outcome** | | |
| **Formative assessment** | **Quizzes** | | 2 | | 15% (10) | | 5 and 10 | LO #1, #2 and #10, #11 | | |
| **Assignments** | | 2 | | 10% (10) | | 2 and 12 | LO #3, #4 and #6, #7 | | |
| **Projects / Lab.** | |  | |  | |  |  | | |
| **Report** | | 1 | | 15% (10) | | 13 | LO #5, #8 and #10 | | |
| **Summative assessment** | **Midterm Exam** | | 2hr | | 10% (10) | | 7 | LO #1 - #7 | | |
| **Final Exam** | | 3hr | | 50% (50) | | 16 | All | | |
| **Total assessment** | | | | | 100% (100 Marks) | |  |  | | |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | محاضرة تعريفية عن المادة واهميتها .. |
| **Week 2** | تعريف الحق والانسان وحقوق الانسان واهمية حقوق الانسان ,حقوق الانسان في الدين الإسلامي والحضارات القديمة. |
| **Week 3** | مصادر حقوق الانسان الدولية والإقليمية والمحلية. |
| **Week 4** | ضمانات حقوق الانسان الدستورية والقانونية وضمانات حقوق الانسان على الصعيد الدولي. |
| **Week 6** | دور المنظمات الإقليمية في حماية حقوق الانسان. |
| **Week 7** | خصائص حقوق الانسان وتعريف الحريات العامة وانواعه والمقارنة بينها وبين الحقوق  القانون الدولي لحقوق الانسان والقانون الدولي الإنساني ومنظمة الصليب الأحمر. |
| **Week 8** | مستقبل حقوق الانسان وسبل تطويرها . |
| **Week 9** | العولمة وحقوق الانسان . |
| **Week 10** | تعريف الديمقراطية وتطورها التاريخي ومبادئها .  الديمقراطية بين العالمية والخصوصية .  اشكال الديمقراطية / الديمقراطية المباشرة. |
| **Week 11** | الديمقراطية شبه المباشرة والديمقراطية التمثيلية / اركان النظام التمثيلي / اشكال النظام التمثيلي. |
| **Week 12** | المجلس النيابي وانواعه / الانتخاب وشروطه / هيئة الناخبين. |
| **Week 13** | تنظيم عملية الانتخاب / تحديد الدوائر الانتخابية / القوائم الانتخابية / المرشحون/ الحملة الانتخابية / التصويت . |
| **Week 14** | نظم الانتخابات. |
| **Week 15** | علاقة الديمقراطية بحقوق الانسان وكيفية التأثير والتأثر فيما بينها. |
| **Week 16** | **الامتحان النهائي** |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | حقوق الانسان والطفل والديمقراطية /تأليف ماهر صالح علاوي ورياض عزيز هادي وعلي عبد الرزاق محمد واخرون / العاتك / بيروت / ٢٠٠٩ | نعم |
| **Recommended Texts** | عباس الدليمي / حقوق الانسان الفكر والممارسة  فخري رشيد ،صلاح ياسين /المنظمات الدولية / العاتك لصناعة الكتاب / بغداد/  عصام العطية / القانون الدولي العام / المكتبة القانونية /بغداد | لا |
| **Websites** |  | |

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| **Grading Scheme**  **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 |
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| **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. | | | | |

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Engineering Mechanics** | | | | **Module Delivery** | | |
| **Module Type** | **Support** | | | | * **☒ Theory** * **☒ Lecture**   **☐ Lab**   * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | **EPE 105** | | | |
| **ECTS Credits** | **5** | | | |
| **SWL (hr/sem)** | **125** | | | |
| **Module Level** | | UGx11 1 | **Semester of Delivery** | | | | 1 |
| **Administering Department** | | EPE | **College** | E | | | |
| **Module Leader** | AHMED M. KHADHIM | | **e-mail** | E-mail | | | |
| **Module Leader’s Acad. Title** | | Professor | **Module Leader’s Qualification** | | | | Ph.D. |
| **Module Tutor** | Name (if available) | | **e-mail** | E-mail | | | |
| **Peer Reviewer Name** | | Name | **e-mail** | E-mail | | | |
| **Scientific Committee Approval Date** | | 01/06/2023 | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | None | **Semester** |  |
| **Co-requisites module** | None | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Objectives**  **أهداف المادة الدراسية** | 1. To develop problem solving skills and understanding principles of static and dynamic mechanics and principles of strength of material and their applications. 2. To understand the basic concepts of Statics: forces, moment of forces, Equilibrium, analysis of trusses, friction, centurions & center of gravity, moment of inertia: parallel Axes Theorem, 2nd moment of area by integration, principles of strength of material, tension & stress. 3. This course deals with the basic concepts of Dynamics: Kinetics of particle, motion types, normal and tangential component of Acceleration, kinetics: force, mass and acceleration, kinetics of particle Newton’s 2nd law. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Enhancing problem solving in static mechanics including friction, truss, and equilibrium. 2. Enhancing students' analytical abilities by giving an introduction to the principles and basics of oscillatory motion, free vibrations, damped vibrations, forced vibrations, harmonic vibration, the critical speed of rotating shafts, systems of one, two, and multiple degrees of freedom. 3. Ability to use the equation of motion to find the natural frequency. 4. Developing skills in using the Lagrange and Rayleigh equation and the energy method to find the equation of motion. 5. The soft skills objectives of the course. |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  Part A - Statics  Force system, unit system, parallelogram law, force components.  Moment of couples, Equilibrium: free body and coplanar system.  Analysis of trusses.  Friction nature of friction, theory of friction, coefficient of friction. [15 hrs].  Centurions & center of gravity, centurions of area Centurions determined by integration, moment of inertia  Parallel Axes Theorem, 2nd moment of area by integration  Moment of inertia of Composite area  Dynamics, Kinetics of particle. [10 hrs]  Part B - Dynamics  Kinetics of particle, Rectilinear motion, Curvilinear motion  Rectangular components of curvilinear motion  Normal and tangential component of Acceleration  kinetics: force, mass and acceleration  kinetics: force, mass and acceleration  kinetics of particle Newton's 2nd law  kinetics of particle Newton's 2nd law. [15 hrs]  Part C- Strength of Material.  Strength of Materials: Hooks law, tension and compression stress  Thin – walled cylinders and spheres  Combined stress (Mohr's circle) shear and normal stress  Stresses in beams (initial principal). [10 hrs] |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | ❖ Weekly lectures included Providing students with the basics and topics related to pre-skills education outcomes to solve practical problems through presentation, lecture or conducting experiments.  ❖ Solving a group of practical and applied examples by the academic staff.  ❖ Through discussion, students participate in solving some practical problems.  ❖ The department's practical laboratories are monitored by the department's academic staff.  ❖ Asking the student to visit the library and the international information network (the Internet) to obtain additional knowledge of the study subjects.  Presenting a seminar (Seminar) by a student in front of his fellow students to enhance his confidence. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 48 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 3 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 77 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 5 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | **125** | | |

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| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5 and 10 | LO #1, #2 and #10, #11 |
| **Assignments** | 2 | 10% (10) | 2 and 12 | LO #3, #4 and #6, #7 |
| **Projects/seminar** | 1 | 10% (10) | Continuous | All |
| **Report** | 1 | 10% (10) | 13 | LO #5, #8 and #10 |
| **Summative assessment** | **Midterm Exam** | 2hr | 10% (10) | 7 | LO #1 - #7 |
| **Final Exam** | 3hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | Force system, unit system, parallelogram law, force + components.  Moment of couples, Equilibrium: free body diagram, coplanar system |
| **Week 2** | Analysis of trusses |
| **Week 3** | Friction nature of friction, theory of friction, coefficient of friction |
| **Week 4** | Centurions & center of gravity, centurions of area |
| **Week 5** | Centurions determined by integration, moment of inertia |
| **Week 6** | Parallel Axes Theorem, 2nd moment of area by integration |
| **Week 7** | Curvilinear motion  Rectangular components of curvilinear motion |
| **Week 8** | Normal and tangential component of Acceleration |
| **Week 9** | kinetics: force, mass and acceleration |
| **Week 10** | kinetics: force, mass and acceleration |
| **Week 11** | kinetics of particle Newton's 2nd law |
| **Week 12** | kinetics of particle Newton's 2nd law |
| **Week 13** | Strength of Materials: Hooks law, tension and compression stress |
| **Week 14** | Thin – walled cylinders and spheres |
| **Week 15** | Stresses in beams (initial principal) |
| **Week 16** | **Preparatory week before the final Exam** |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | Engineering Mechanics By Higdon | Yes |
| **Recommended Texts** | Engineering Mechanics By Meriam | Yes |
| **Websites** | https://www.coursera.org/browse/mechanical\_engineering | |

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| **Grading Scheme**  **مخطط الدرجات** | | | | |
| **Group** | **Grade** | **التقدير** | **Marks %** | **Definition** |
| **Success Group**  **(50 - 100)** | **A -** Excellent | **امتياز** | 90 - 100 | Outstanding Performance |
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| **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. | | | | |