

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| Module Information | | | |
|------------------------------------|---------------------|-------------------------------|---|
| معلومات المادة الدراسية | | | |
| Module Title | Electricity | | Module Delivery |
| Module Type | Core | | <input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar |
| Module Code | UOMU031012 | | |
| ECTS Credits | 7 | | |
| SWL (hr/sem) | 175 | | |
| Module Level | 1 | Semester of Delivery | 1 |
| Administering Department | Type Dept. Code | College | Type College Code |
| Module Leader | د. دعاء جعفر ضياء | e-mail | duaa.jafer.dheaa@uomus.edu.iq |
| Module Leader's Acad. Title | | 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 | | Version Number | 1.0 |

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

| | | | | |
|----------------------|------|--|----------|--|
| Prerequisite module | None | | Semester | |
| Co-requisites module | None | | Semester | |

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

| Module Aims, Learning Outcomes and Indicative Contents | |
|--|---|
| أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
| Module Aims أهداف المادة الدراسية | |
| Module Learning Outcomes مخرجات التعلم للمادة الدراسية | <p>1-Acquired nerve impermeability, anaerobic artery and anaerobic artery methods.</p> <p>2- Explain what is meant by ejaculation, anal plucking, annul, anorth thub, and a look at the plucking of the thub</p> <p>3- Doctor, I felt a wound in my antrum, and I started to recover.</p> |
| Indicative Contents المحتويات الإرشادية | <p>Indicative content includes the following.</p> <p><u>Part A - Circuit Theory</u></p> <p>DC circuits – Current and voltage definitions, Passive sign convention and circuit elements, Combining resistive elements in series and parallel. Kirchhoff's laws and Ohm's law. Anatomy of a circuit, Network reduction, Introduction to mesh and nodal analysis. [15 hrs]</p> <p>AC circuits I – Time dependent signals, average and RMS values. Capacitance and inductance, energy storage elements, simple AC steady-state sinusoidal analysis. [15 hrs]</p> <p>AC Circuits II - Phasor diagrams, definition of complex impedance, AC circuit analysis with complex numbers. [10 hrs]</p> <p>RL, RC and RLC circuits - Frequency response of RLC circuits, simple filter and band-pass circuits, resonance and Q-factor, use of Bode plots, use of differential equations and</p> |

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| | <p>their solutions. Time response (natural and step responses). Introduction to second order circuits. [15 hrs]</p> <p>Revision problem classes [6 hrs]</p> <p><u>Part B - Analogue Electronics</u></p> <p>Fundamentals</p> <p>Resistive networks, voltage and current sources, Thevenin and Norton equivalent circuits, current and voltage division, input resistance, output resistance, coupling and decoupling capacitors, maximum power transfer, RMS and power dissipation, current limiting and over voltage protection. [15 hrs]</p> <p>Components and active devices – Components vs elements and circuit modeling, real and ideal elements. Introduction to sensors and actuators, self-generating vs modulating type sensors, simple circuit interfacing. [7 hrs]</p> <p>Diodes and Diode circuits – Diode characteristics and equations, ideal vs real. Signal conditioning, clamping and clipping, rectification and peak detection, photodiodes, LEDs, Zener diodes, voltage stabilization, voltage reference, power supplies. [15 hrs]</p> |
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| <h3 style="text-align: center;">Learning and Teaching Strategies</h3> <h4 style="text-align: center;">استراتيجيات التعلم والتعليم</h4> | |
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| Strategies | <p>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 type of simple experiments involving some sampling activities that are interesting to the students.</p> |

| <h3 style="text-align: center;">Student Workload (SWL)</h3> <h4 style="text-align: center;">الحمل الدراسي للطالب</h4> | | | |
|---|----|-----------------------------|---|
| Structured SWL (h/sem) | 86 | Structured SWL (h/w) | 4 |

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| الحمل الدراسي المنتظم للطالب خلال الفصل | | الحمل الدراسي المنتظم للطالب أسبوعيا | |
| Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل | 64 | Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2 |
| Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

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

| Delivery Plan (Weekly Syllabus) | |
|---------------------------------|--|
| المنهاج الاسبوعي النظري | |
| | Material Covered |
| Week 1 | Electric charge & coulomb law |
| Week 2 | Electric field |
| Week 3 | Gauss law |
| Week 4 | Relationship between gauss law & coulomb law |
| Week 5 | Electric field & potential |

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| Week 6 | Electric potential energy |
| Week 7 | First Exam |
| Week 8 | Capacitance |
| Week 9 | Calculating Capacitance |
| Week 10 | Resistance |
| Week 11 | Current |
| Week 12 | Current density |
| Week 13 | Ohms law |
| Week 14 | Second Exam |
| Week 15 | Potential difference and Calculating the current |
| Week 16 | |

Delivery Plan (Weekly Lab. Syllabus)

المنهج الاسبوسي للمختبر

| | Material Covered |
|---------------|---------------------------|
| Week 1 | Electric potential energy |
| Week 2 | First Exam |
| Week 3 | Capacitance |
| Week 4 | Calculating Capacitance |
| Week 5 | Resistance |
| Week 6 | Current |
| Week 7 | Current density |

Learning and Teaching Resources

مصادر التعلم والتدریس

| | Text | Available in the Library? |
|--------------------------|---|----------------------------------|
| Required Texts | - | Yes |
| Recommended Texts | DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents. | No |

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|-----------------|---|
| Websites | https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering |
|-----------------|---|

| 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.