MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

**Electrical and Magnetic Physics**

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Electrical and Magnetic Physics** | | | | **Module Delivery** | | |
| **Module Type** | C | | | | * **☒ Theory** * **☒ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | GEO1204 | | | |
| **ECTS Credits** | 6 | | | |
| **SWL (hr/sem)** | 150 | | | |
| **Module Level** | | 1st | **Semester of Delivery** | | | | 2nd |
| **Administering Department** | | **Geophysics** | **College** | **Remote sensing & Geophysics** | | | |
| **Module Leader** | **Hind Ibrahim Abdulgafour** | | **e-mail** | [hind.ibrahem.abdulghafoor@kus.edu.iq](mailto:hind.ibrahem.abdulghafoor@kus.edu.iq) | | | |
| **Module Leader’s Acad. Title** | | **Assistant Professor** | **Module Leader’s Qualification** | | | | **PhD** |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | |  | **e-mail** |  | | | |
| **Scientific Committee Approval Date** | | **15/5/2023** | **Version Number** | | |  | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | **Null** | **Semester** |  |
| **Co-requisites module** | **Null** | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  **أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية** | |
| **Module Aims**  **أهداف المادة الدراسية** | 1. Electricity is a noun for a variety of phenomena resulting from the presence and flow of electric charge. 2. To learn the phenomena include lightning and static electricity but contain less familiar concepts such as the electromagnetic field and electromagnetic induction. 3. An electric current is the movement or flow of electrically charged particles, and is usually measured in amperes. An electric field is an effect produced by an electric charge on other charges in its vicinity. 4. Magnetic field physics (or magnetoelectric motion) is the branch of physics that studies the relationship between electricity and magnetism, in which a magnetic field affects an electric charge or an electrically charged particle. 5. A changing magnetic field creates an electric field (this phenomenon is called electromagnetic induction and is the basis for the operation of electric generators, electric motors and transformers |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. To learn the basic principles of electrical and magnetic phenomena of physics. 2. To learn the use laboratory equipment for the purpose of conducting the practical part of the course. 3. How to Use modern learning tools such as the smart board. 4. Using video technology to interpret some practical experiments. 5. Understanding, understanding, analyzing and interpreting work results. 6. Recording scientific notes and realizing work in general. 7. Conducting practical experiments, discussing and interpreting them by the student. |
| **Indicative Contents**  **المحتويات الإرشادية** | 1. Practical application of theoretical information in the form of practical issues. 2. Work in the form of student groups inside the laboratories. 3. Using videos and display screens to clarify and consolidate information for the student. |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | The main strategy that will be focus of the fundamental principles of the phenomena of electric and magnetic physics. Also, How to use laboratory equipment for the purpose of conducting the practical part of the course.  Using modern learning tools such as the smart board. Using video technology to interpret some practical experiments. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 100 |  |  |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 50 |  |  |
| **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) |  |  |
| **Assignments** | 2 | 10% (10) |  |  |
| **Projects / Lab.** | 1 | 10% (10) |  |  |
| **Report** | 1 | 10% (10) |  |  |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) |  |  |
| **Final Exam** | 2hr | 50% (50) |  |  |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | **Electric Charge** |
| **Week 2** | **Coulum’s Law** |
| **Week 3** | **Electric Fields** |
| **Week 4** | **Gauss’ Law** |
| **Week 5** | **Equipotential Surfaces and the Electric Field** |
| **Week 6** | **Electric Potential Energy** |
| **Week 7** | **Magnetic Field** |
| **Week 8** | **Ampere‘s Law** |
| **Week 9** | **Faraday’s Law of Electromagnetic Induction** |
| **Week 10** | **Faraday’s Law of Induction** |
| **Week 11** | **Application of Lenzes Low** |
| **Week 12** | **Magnetic Flux** |
| **Week 13** | **Magnetic force** |
| **Week 14** | **Magnetic Field Of Moving Charge** |
| **Week 15** | **Geophysicists concerns and interested goals in studying the magnetic fields** |
| **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** | **Ohm's law** |
| **Week 2** | **Westin Bridge experience experiment** |
| **Week 3** | **Experiment connecting capacitors (parallel + series)** |
| **Week 4** | **Electrical resonance circuit experiment** |
| **Week 5** | **Faraday's law** |
| **Week 6** | **Experiment with the determination of magnetic flux lines** |
| **Week 7** | **Oersted Lawn Experience** |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | F U N D A M E N TA L S OF P H Y S I C S |  |
| **Recommended Texts** | UNIVERSITY PHYSICS WITH MODERN PHYSICS |  |
| **Websites** | https://www.niehs.nih.gov/health/topics/agents/emf/index.cfm | |

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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. | | | | |