MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | Essential of Geophysics | | | | **Module Delivery** | | |
| **Module Type** | C | | | | * **☒ Theory** * **☒ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | GEO1102 | | | |
| **ECTS Credits** | 5 | | | |
| **SWL (hr/sem)** | 125 | | | |
| **Module Level** | | 1st | **Semester of Delivery** | | | | 2nd |
| **Administering Department** | | Geophysics | **College** | Remote sensing & Geophysics | | | |
| **Module Leader** | Mohammed Khudheir Hummadi | | **e-mail** | mohammed.hummadi@gmail.com | | | |
| **Module Leader’s Acad. Title** | | Lecturer | **Module Leader’s Qualification** | | | | Ph.D |
| **Module Tutor** | Mohammed Khudheir Hummadi | | **e-mail** |  | | | |
| **Peer Reviewer Name** | | MohammedKhudheir | **e-mail** |  | | | |
| **Scientific Committee Approval Date** | | 15/5/2023 | **Version Number** | | |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| **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**  **أهداف المادة الدراسية** | 1. Learn what the Geophysics is. 2. Learn the geophysical methods used in geological survey. 3. Learn the gravity method principles. 4. Learn the magnetic method principles. 5. Learn the electrical method principles. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Understand the basic principles and concepts of geophysics, including the Earth's structure, composition, and physical properties.  2. Demonstrate knowledge of the various methods and techniques used in geophysical exploration, such as seismic, gravity, magnetic, and electrical methods.  3. Analyze and interpret geophysical data to make inferences about subsurface structures and geological features.  4. Apply mathematical and computational skills to solve geophysical problems and analyze data sets.  5. Evaluate the limitations and uncertainties associated with geophysical measurements and interpretations.  6. Demonstrate an understanding of how geophysics is used in various applications, such as mineral exploration, environmental studies, and natural hazard assessments.  7. Communicate effectively about geophysical concepts and findings through written reports, presentations, and visualizations.  8. Apply ethical and professional standards in conducting geophysical research and practice. |
| **Indicative Contents**  **المحتويات الإرشادية** | Assimilation, analysis and interpretation of geophysical methods      Recording scientific notes and realizing work in general      Conducting theoretical experiments, discussing and interpreting them by the student       Focusing on extra-curricular activities to develop students' skills  Scientific trips to research centers specialized in this field |

|  |  |
| --- | --- |
| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | The primary approach employed in the delivery of this module will focus on fostering active student engagement in exercises, alongside the enhancement and broadening of their critical thinking abilities. Achieving this objective will involve a combination of classroom sessions, interactive tutorials, as well as the inclusion of various straightforward experiments, such as engaging sampling activities, designed to captivate the students' interest. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 63 |  |  |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 62 |  |  |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 125 | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | |
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 5 | 10% |  |  |
| **Assignments** | 7 | 10% |  |  |
| **Projects / Lab.** | -- | 10% |  |  |
| **Report** | 6 | 10% |  |  |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) |  |  |
| **Final Exam** | 2hr | 50% (50) |  |  |
| **Total assessment** | | | 100% (100 Marks) |  |  |

|  |  |
| --- | --- |
| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | Definition of Geophysics |
| **Week 2** | principles of geophysics |
| **Week 3** | The Gravity method |
| **Week 4** | Corrections in gravity method |
| **Week 5** | The gravity meter |
| **Week 6** | Examples of gravity survey |
| **Week 7** | The magnetic method |
| **Week 8** | How to survey in magnetic method |
| **Week 9** | Types of magnetometers |
| **Week 10** | The components of magnetic field of the earth |
| **Week 11** | Examples of magnetic survey |
| **Week 12** | The electrical methods |
| **Week 13** | What is the resistivity of subsurface |
| **Week 14** | The applications of electrical survey |
| **Week 15** | Examples of electrical survey |
| **Week 16** | **Preparatory week before the final Exam** |

|  |  |
| --- | --- |
| **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** |  |

|  |  |  |
| --- | --- | --- |
| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | Fundamentals of Geophysics 2nd Edition William Lowrie Swiss Federal Institute of Technology, Zürich 2007 |  |
| **Recommended Texts** | Field Geophysics 3rd Edition John Milsom University College London 2003 |  |
| **Websites** | https://www.usgs.gov/centers/gggsc/science/geophysics | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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. | | | | |