MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | Resistivity Method | | | | **Module Delivery** | | |
| **Module Type** | Core | | | | * **☒ Theory** * **☒ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | GEO41129 | | | |
| **ECTS Credits** | 6 | | | |
| **SWL (hr/sem)** | 150 | | | |
| **Module Level** | | 4th | **Semester of Delivery** | | | | 1st |
| **Administering Department** | | Geophysics Department | **College** | Remote Sensing and Geophysics College | | | |
| **Module Leader** | Ahmed Srdah Kahdem | | **e-mail** | Ahmed.srdah@yahoo.com | | | |
| **Module Leader’s Acad. Title** | | Lecturer | **Module Leader’s Qualification** | | | |  |
| **Module Tutor** |  | | **e-mail** |  | | | |
| **Peer Reviewer Name** | |  | **e-mail** |  | | | |
| **Scientific Committee Approval Date** | |  | **Version Number** | | |  | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | Fundamentals of Geophysics | **Semester** |  |
| **Co-requisites module** | Electrical Methods | **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-Learn what 2D Resistivity Method.  2- This module aims to provide students with both a theoretical and practical understanding of the principal Resistivity method used to determine remotely the shallow structure and composition of the subsurface Earth..  3- Students will explore applications of Resistivity investigation of the near-surface in archaeology, environmental geology, site investigations.  4- Identify all techniques in these methods. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | By the end of the module students should be able to:   1. Understand the principles, survey design, and interpretation of  2D Resistivity data. 2. Students will explore applications of 2D Resistivity investigation of the near-surface in hydrogeological, mining, geotechnical, archeological, environmental and engineering investigation. |
| **Indicative Contents**  **المحتويات الإرشادية** |  |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students to use the surface geophysical techniques that providing a relatively quick and inexpensive data to characterize the subsurface, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, field work by use of different measuring devices. |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 94 |  |  |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 56 |  |  |
| **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** | Basic principles of 2D Resistivity Method |
| **Week 2** | 2D Resistivity Imaging Technique. |
| **Week 3** | Field Measurement Procedures. |
| **Week 4** | Create 2D Imaging Sequences. |
| **Week 5** | Electrode Arrays Characteristics in 2D Imaging Surveys. |
| **Week 6** | Data Processing. |
| **Week 7** | Data Processing. |
| **Week 8** | 2D imaging model. |
| **Week 9** | Data Interpretation. |
| **Week 10** | Data Interpretation. |
| **Week 11** | 2D Azimuthal Resistivity Imaging Survey. |
| **Week 12** | Field Measurement Procedures |
| **Week 13** | Data Processing of 2D Azimuthal Resistivity Imaging Survey. |
| **Week 14** | Data Interpretation of 2D Azimuthal Resistivity Imaging Survey. |
| **Week 15** | Data Interpretation of 2D Azimuthal Resistivity Imaging Survey. |
| **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** | Problem (1) 2D Imaging Resistivity Measurements |
| **Week 2** | Problem (2) using program RES2DINV. |
| **Week 3** | Problem (3) Data file operations and data format. |
| **Week 4** | Problem (4) Editing the data |
| **Week 5** | Problem (5) Inversion Parameters of 2D Model. |
| **Week 6** | Problem (6) 2D Model Discretization |
| **Week 7** | Problem (7) Displaying the inversion results. |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | Al-Zubedi, A. S., 2015b. Principles of Electrical Resistivity Techniques. LAP LAMBERT Academic Publishing Company, Germany, 147 p.  Loke, M. H., 2020. Tutorial: 2-D and 3D Electrical Imaging Surveys, 221p. | YES |
| **Recommended Texts** | Loke, M. H., 2020. Tutorial: 2-D and 3D Electrical Imaging Surveys, 221p. |  |
| **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. | | | | |