MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | Subsurface Geology | | | | **Module Delivery** | | |
| **Module Type** | Core | | | | * **☒ Theory** * **☒ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | GEO32120 | | | |
| **ECTS Credits** | 5 | | | |
| **SWL (hr/sem)** | 125 | | | |
| **Module Level** | | III | **Semester of Delivery** | | | | Six |
| **Administering Department** | | Geophysics | **College** | College of Geophysics and Remote Sensing | | | |
| **Module Leader** | Dr. Rami M. Idan | | **e-mail** | [Ramisc3@kus.edu.iq](mailto:Ramisc3@kus.edu.iq) | | | |
| **Module Leader’s Acad. Title** | | Assistant Professor | **Module Leader’s Qualification** | | | | Petroleum geology |
| **Module Tutor** | Null | | **e-mail** |  | | | |
| **Peer Reviewer Name** | | Null | **e-mail** |  | | | |
| **Scientific Committee Approval Date** | | 16 / 6 / 2023 | **Version Number** | | | 2 | |

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| **Relation with other Modules**  **العلاقة مع المواد الدراسية الأخرى** | | | |
| **Prerequisite module** | General Geology | **Semester** | Two |
| **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** | This module deals with the principles of self-potential, accurate and normal electrical inductive focusing methods, sonic log and cross-charts. NMR measurements, some technical measurements such as dip meter and methods of their conduction, the most important results obtained by such measurements and methods for their interpretation |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | • Develop an understanding of how to evaluate a variety of subsurface maps including fault, structure, and isochore maps.  • Understand the types of questions to ask when reviewing interpretations, maps and prospects.  • Evaluate the 3-D viability of an interpretation, map or prospect.  • Evaluate whether the resources or reserves attributed to a completed interpretation or map are under or over estimated.  • Determine whether an interpreter has applied sound, industry accepted, geoscience principles and methods to generate an interpretation, map or prospect. |
| **Indicative Contents**  **المحتويات الإرشادية** | Through explanations and applications, using display screens, and presenting scientific films that explain the reality of what happens in nature. |

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| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | Class Lecture  Laboratory  Practical Training  Tutorial  Seminar |

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| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 64 |  |  |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 61 |  |  |
| **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) |  |  |
| **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** |
|  | Introduction to subsurface geology |
|  | Data Acquisition: satellite and remote data |
|  | Data Acquisition: Seismic and well log data |
|  | Data Acquisition: Outcrop data |
|  | Exam |
|  | Subsurface Mapping |
|  | Subsurface Environments |
|  | Compaction throw depth |
|  | Porosity throw depth |
|  | Permeability throw depth |
|  | Exam |
|  | Mechanism of Migration part ONE |
|  | Mechanism of Migration part TWO |
|  | Petrophysical and Reservoir Evaluation |
|  | Exam |
|  | **Preparatory week before the final Exam** |

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| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
|  | - log correlations |
|  | -cross section determines using well data |
|  | - determination of fluids using well logs ( three parts) |
|  | - cross section determination using well logs |
|  | - cross section determination- missing beds |
|  | -cross sections determination- fault |
|  | -cross sections determination- fault- missing beds |

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| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | Selley, R. C., and Sonnenberg, S. A., 2015. Elements of Petroleum Geology. Third edition. Pp 515. | Y |
| **Recommended Texts** | • Tearpock, D. J., Bischke, R. E., 1990. Applied Subsurface Geological Mapping. Hall PTR, Pp 648.  • Mark J. Osborne, Richard E. Swarbr. “Mechanisms for Generating Overpressure in Sedimentary Basins: A Reevaluation: Reply.” AAPG Bulletin 85 (2001): n. pag. Crossref. Web.  • Gluyas, Jon and Swarbrick, Richard, 2004. Petroleum geoscience, Blackwell Science Ltd. Pp 349.  • 5- Brown, A., 2004, Interpretation of three-dimensional seismic data; AAPG Memoir 42, 534 p. | y |
| **Websites** | <http://www.gly.uga.edu/railsback/PGSG/PGSGmain.html> | |

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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. | | | | |