MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Module Information**  **معلومات المادة الدراسية** | | | | | | | |
| **Module Title** | **Engineering Geology** | | | | **Module Delivery** | | |
| **Module Type** | **D** | | | | * **☒ Theory** * **☒ Lecture** * **☒ Lab** * **☐ Tutorial** * **☐ Practical** * **☐ Seminar** | | |
| **Module Code** | **CIV002** | | | |
| **ECTS Credits** | **4** | | | |
| **SWL (hr/sem)** | **100** | | | |
| **Module Level** | | UGI | **Semester of Delivery** | | | | 2 |
| **Administering Department** | | CV101 | **College** | Engineering College | | | |
| **Module Leader** | Dr. Junied Aziz Bakr | | **e-mail** | Junied.bakr@uoanabr.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Lecturer | **Module Leader’s Qualification** | | | | Ph.D. |
| **Module Tutor** |  | | **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**  **أهداف المادة الدراسية** | 1. To introduce basic geology and the principles of site investigation to civil engineering students. 2. Students should develop an appreciation of geologic processes and their influence civil engineering works. 3. Acquire knowledge of the most important rocks and minerals and be able to identify them. 4. Interpret geological maps with an emphasis on making construction decisions. 5. Demonstrate an understanding of the relationship between the built environment and its geological substrate and the possible impacts of natural earth hazards on engineered structures. |
| **Module Learning Outcomes**  **مخرجات التعلم للمادة الدراسية** | 1. Demonstrate an understanding of the concepts and language of geology and engineering geology. 2. Demonstrate an understanding of architecture of the earth surface. 3. Demonstrate an understanding of minerals properties. 4. Demonstrate an understanding of Rocks: major rock groups Igneous, sedimentary and metamorphic. 5. Demonstrate an understanding of Engineering Properties of Rocks. 6. Demonstrate an understanding of Structural Geology and Strike and dip, Folds, Faults: types and structures, Joints. 7. Demonstrate an understanding of Topographic and Geologic maps and Ground-water Geology. |
| **Indicative Contents**  **المحتويات الإرشادية** | Indicative content includes the following.  **Chapter one**  Introduction and Overview: engineering geology vs. geology, engineering geology and civil engineering [5 hrs]  **Chapter Two**  Minerals properties: defining of the Minerals, Types of Minerals, the physical and chemical properties of minerals, and the industrial uses of minerals [10 hrs]  **Chapter Three**  Igneous Rock, types of igneous rocks, Texture and composition, and some engineering considerations [5 hrs]  **Chapter Four**  Surface Processes and Sedimentary Rocks: surface processes, chemical weathering, mechanical weathering, the grade of weathering, sediment transport, deposition environment, lithification, sedimentary rocks classification, features of sedimentary rocks, and engineering considerations of sedimentary rocks [15 hrs]  **Chapter Five**  Metamorphic rocks: Types of Metamorphic rocks, Metamorphic processes, Texture of metamorphic rocks, Metamorphic grade, and Engineering considerations of metamorphic rocks [5 hrs]  **Chapter Six**  Engineering Properties of Rocks: rocks properties, failure criteria in rocks, and engineering classification of intact rocks, [5 hrs]  **Chapter Seven**  Structural Geology: Rock Deformation, Folds in rock, Strike and Dip, Rock Fractures, Types of movement along the fault plane, Field recognition of faulting, and Folds and faults combined, [10 hrs]  **Chapter Eight**  Topographic and Geologic maps: topographic maps, constructing contour lines, geological map, and the use of geological map, [15 hrs]  **Chapter Nine**  Ground-water Geology: ground-water, aquifers and aquicludes, groundwater flow, origin of subsurface water, water table (wt), vodase zone, and hydrogeological investigations, [5 hrs] |
|  |  |

|  |  |
| --- | --- |
| **Learning and Teaching Strategies**  **استراتيجيات التعلم والتعليم** | |
| **Strategies** | Engineering Geology courses require effective learning and teaching strategies to ensure students develop a strong understanding of complex concepts and their practical applications. The range of strategies that can enhance the learning experience for students in engineering geology courses. These strategies include lecture-based teaching, practical applications, problem-solving assignments, group work and discussions, technology integration, field trips and site visits, guest speakers, assessments and feedback, continuous learning, and encouraging self-directed learning. By incorporating these strategies, educators can create an engaging and comprehensive learning environment that equips students with the knowledge, skills, and critical thinking abilities necessary for success in the field of engineering geology. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Module Evaluation**  **تقييم المادة الدراسية** | | | | | | |
| **As** | | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative Assessment** | **Quizzes** | | **5** | **25% (25)** | 3, 6,10,14 | LO #1, 3,5, and 7 |
| **Online Assignments (HomeWorks)** | | **1** | **4% (4)** |  | LO # 4 and 7 |
| **Onsite Assignments (Class Works)** | |  | **5% (5)** |  |  |
| **Report** | |  |  |  | LO # 2,6 and 7 |
| **Lab 15% of the 40** | | **1** | **6% (6)** |  | LO # 1-7 |
| **Summative Assessment**  **60%** | **Midterm Exam** | | **2 hr** | **10% (10)** | 8 |  |
| **Final Exam 50%** | **Theory** | **3 hr** | **40% (40)** | All | All |
| **Lab** |  | **10** |  |  |
| **Total assessment** | | | | **Final Exam** |  |  |
|  | | | | 100% (100 Marks) |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Student Workload (SWL)**  **الحمل الدراسي للطالب** | | | |
| **Structured SWL (h/sem)**  **الحمل الدراسي المنتظم للطالب خلال الفصل** | 78 | **Structured SWL (h/w)**  **الحمل الدراسي المنتظم للطالب أسبوعيا** | 5.2 |
| **Unstructured SWL (h/sem)**  **الحمل الدراسي غير المنتظم للطالب خلال الفصل** | 22 | **Unstructured SWL (h/w)**  **الحمل الدراسي غير المنتظم للطالب أسبوعيا** | 1.5 |
| **Total SWL (h/sem)**  **الحمل الدراسي الكلي للطالب خلال الفصل** | 100 | | |

|  |  |
| --- | --- |
| **Delivery Plan (Weekly Syllabus)**  **المنهاج الاسبوعي النظري** | |
| **Week** | **Material Covered** |
| **Week 1** | Introduction and Overview: engineering geology vs. geology |
| **Week 2** | Minerals properties |
| **Week 3** | Igneous Rock |
| **Week 4** | Surface Processes and Sedimentary Rocks |
| **Week 5** | Surface Processes and Sedimentary Rocks |
| **Week 6** | Metamorphic rocks |
| **Week 7** | Mid-term Exam |
| **Week 8** | Engineering Properties of Rocks |
| **Week 9** | Structural Geology |
| **Week 10** | Structural Geology |
| **Week 11** | Topographic and Geologic maps |
| **Week 12** | Topographic and Geologic maps |
| **Week 13** | Ground-water Geology |
| **Week 14** | Ground-water Geology |
| **Week 15** | Second half term Exam |
| **Week 16** |  |

|  |  |
| --- | --- |
| **Delivery Plan (Weekly Lab. Syllabus)**  **المنهاج الاسبوعي للمختبر** | |
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: Minerals description |
| **Week 2** | Lab 2: Minerals classification |
| **Week 3** | Lab 3: Rocks description |
| **Week 4** | Lab 4: Rocks classification |
| **Week 5** | Lab 5: 6.Volume & Density measurement of rocks |
| **Week 6** | Lab 6 Specific Gravity & porosity measurement of rocks |
| **Week 7** | Lab 7: Uniaxial Compressive Strength |
| **Week 8** | Lab 8: Drawing Engineering Geological Maps |

|  |  |  |
| --- | --- | --- |
| **Learning and Teaching Resources**  **مصادر التعلم والتدريس** | | |
|  | **Text** | **Available in the Library?** |
| **Required Texts** | West, T. R. (1995). Geology Applied to Engineering. 1st  Edition. Waveland Pr Inc. ISBN-13: 978-1577666554. | Yes |
| **Recommended Texts** | Bell, F. G. (2007). Engineering Geology. 2nd Edition. ButterworthHeinemann is an imprint of Elsevier. | Yes |
| **Websites** | https://www.uoanbar.edu.iq/Bank-Section.php | |

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