Ministry of Higher Education and Scientific Research - Iraq
University of Tikrit
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **HUMAN RIGHT AND DEMOCRACY**<br>**حقوق الانسان و ديمقراطية** | | | **Module Delivery** | |
| **Module Type** | **SUPPLEMENT** | | | **محاضرات نظرية** | |
| **Module Code** | **ENG-101** | | | | |
| **ECTS Credits** | 2 | | | | |
| **SWL (hr/sem)** | 50 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Min number of students** | 15 | | **Max number of students** | 100 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Ahmed Hussein Khunfas | | **e-mail** | sabahmahdi@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | MSc | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | Ahmed Hussein Khunfas | | **e-mail** | ahmed.husain@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | لايوجد | **Semester** | - |
| **Co-requisites module** | لايوجد | **Semester** | - |

| Module Aims, Learning Outcomes, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | **1-القدرة على ادراك المفهوم الاساسي لحقوق الانسان والطفل والديمقراطية.**<br>**2- القدرة على فهم الاصول التاريخية للمفهومين. ومعرفة ايجابيات وسلبيات حقوق الانسان والديمقراطية.**<br>**3- الاطلاع على حقوق الانسان والطفل والديمقراطية في الاسلام.**<br>**4- التعرف على مصادر حقوق الانسان والطفل وخصائص وسمات الديمقراطية.**<br>**5ـــمعرفة اثر التطور التكنولوجي على حقوق الانسان والطفل والديمقراطية.**<br>**6-التطرق لمفاهيم ذات صلة بالمصطلحين مثل ( العولمة، مؤسسات المجتمع المدني ، الانتخابات والاستفتاء ، الحكم الرشيد ، الجرائم الانسانية، الدستور).**<br>**7-الاطلاع على الضمانات التي تكفل حقوق الانسان والطفل وتكفل النظام الديمقراطي والحقوق والحريات العامة.** |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | **1- التعرف على المصطلحات ذات الصلة بمفهوم حقوق الانسان والطفل والديمقراطية.**<br>**2- التعرف على اهم الحقوق التي كفلها الإسلام للإنسان والطفل واستثمارها في معالجة الآفات والحالات السلبية التي تغزو المجتمعات في العصر الحالي .**<br>**الاستفادة من مزايا الديمقراطية ومكوناتها في معالجة التذبذب وعدم الاستقرار في المجتمع والحفاظ على الاستقرار والسلم المجتمعي.**<br>**3- الاطلاع على المواثيق الدولية المختصة بمجالات حقوق الانسان والطفل الصادرة عن المنظمات الدولية وجمعية الأمم المتحدة.**<br>**4- الاستفادة من تجارب الاخرين (الدول المتقدمة في مجالات حقوق الانسان والطفل والديمقراطية).**<br>**5- اللمام بالقوانين والدساتير الدولية والإقليمية والمحلية المختصة بقضايا حقوق الانسان والحريات العامة والديمقراطية.**<br>**7- التعرف على جرائم الإبادة الجماعية والجرائم الإنسانية ومدى تأثيرها على مفهوم حقوق الانسان والطفل والديمقراطية.** |
| **Indicative Contents**<br>المحتويات الإرشادية | **يتضمن المحتوى الارشادي مايأتي:**<br>**1- حقوق الانسان والطفل والديمقراطية في الحضارات القديمة والإسلام (8 ساعات).**<br>**2- مصادر حقوق الانسان العالمية والمحلية، خصائص وسمات الديمقراطية (4 ساعات).**<br>**3- ضمانات حقوق الانسان العالمية والمحلية وضمانات النظام الديمقراطي (4 ساعات).**<br>**4- حقوق الانسان والطفل والديمقراطية واثر التقدم التكنولوجي عليهما (4 ساعات).**<br>**5- العولمة ، مؤسسات المجتمع المدني ، الانتخابات والاستفتاء، الدستور(4 ساعات)**<br>**6- الجرائم الإنسانية وانواعها ، الحكم الرشيد ، (2 ساعة).**<br>**7- الوثائق الدولية الخاصة بحقوق الطفل والديمقراطية المعاصرة (4 ساعات).** |
| **Course Description** | **حقوق الانسان: هي حقوق يتمتع بها جميع مكونات البشر لمجرد اننا من ابناء البشر, وهذه الحقوق متأصلة في جميع البشر مهما كان عرقهم او جنسهم او قوميتهم او مذهبهم ولاتمنح من أي دولة، وتتضمن حقوق الانسان والطفل في الحضارات القديمة والاسلام، المواثيق الدولية ، مصادر وضمانات حقوق الانسان ، القوانين والدساتير، مجلس حقوق الانسان، العولمة، التقدم التكنولوجي واثره على حقوق الانسان.** |

| | |
|---|---|
| | **الديمقراطية: يرجع مصطلح الديمقراطية الى الحضارة اليونانية القديمة وهي عبارة عن مصطلح مكون من مقطعين هما: (Cratia) التي تعني حكم و (Demo) التي تعني الشعب ليصبح المفهوم حكم الشعب ، وتتضمن الديمقراطية التطرق الى مفهومها ومعرفة الجذور التاريخية لها ، المكونات ، الخصائص ، المميزات ، الضمانات ، علاقة الديمقراطية ب ( الدستور ، مؤسسات المجتمع المدني ، حقوق الانسان ، الحكم الرشيد، الانتخابات) ، الديمقراطية المعاصرة** |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | تم وضع استراتيجية التعلم والتعليم من اجل ان يحصل الطالب على معلومات كاملة تغطي المنهج الدراسي المعد للمادة ولكي تتحقق الغاية الاساسية للمنهج الذي ينصب نحو المام وادراك الطالب بالمفاهيم الاساسية لحقوق الانسان والديمقراطية ، والاطلاع على المصادر والضمانات والمواثيق الدولية للمصطلحين من اجل استثمارها في معالجة الظواهر السلبية في المجتمع والحفاظ على الاستقراروالسلم المجتمعي . |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** 30<br>**Exam** 3 | 33 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Memorizing: 5**<br>**home works : 12** | 17 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1.13 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 50 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 4 | 16% (16) | 3, 5, ,7, 9,11,13, | LO #1, 2,3,.....,7 |
| | **Assignments (Homework)** | 2 | 6% (6) | 2, 4, 6, 10,12,14 | LO # 1, 2, 3, .....,7 |
| | **Onsite Assignments** | 2 | 6% (6) | Continuous | 1,2 |
| | **Seminars** | 3 | 12% (12) | Continuous | 1,2,3,4 |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 8 | LO # 1-7 |
| | **Final Exam** | 2 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | الجذور التاريخية لحقوق الانسان والديمقراطية في الحضارات القديمة |
| **Week 2** | حقوق الانسان والطفل والديمقراطية في الاسلام |
| **Week 3** | مصادر حقوق الانسان على المستوى الخارجي الدولي، سمات وخصائص الديمقراطية |
| **Week 4** | مصادر حقوق الانسان على المستوى الداخلي المحلي، مزايا الديمقراطية |
| **Week 5** | ضمانات حقوق الانسان على المستوى المحلي، مكونات الديمقراطية |
| **Week 6** | ضمانات حقوق الانسان على المستوى الدولي، الضمانات التي تكفل النظام الديمقراطي |
| **Week 7** | مجلس حقوق الانسان، الانتخابات واهميتها |
| **Week 8** | امتحان نصف الفصل |
| **Week 9** | التطور التكنولوجي واثره على حقوق الانسان والطفل والديمقراطية |
| **Week 10** | مفهوم العولمة، مؤسسات المجتمع المدني |
| **Week 11** | الحكم الرشيد (المبادئ، المعايير) ، الاستفتاء |
| **Week 12** | الدستور وانواعه |
| **Week 13** | حقوق الطفل في المواثيق والعهود الدولية |
| **Week 14** | الجرائم الانسانية (جرائم الابادة الجماعية) وتأثيرها على حقوق الانسان والطفل والانظمة الديمقراطية |
| **Week 15** | الديمقراطية المعاصرة وحقوق الانسان والطفل ودراسة حالات لأمثلة واقعية حدثت في المجتمعات الدولية والعربية وفي العراق. |
| **Week 16** | امتحان نهاية الفصل |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **كتاب حقوق الانسان والديمقراطية.**<br>**من تأليف :1-ا.د. ماهر صالح علاوي الجبوري، ا.د رياض عزيز هادي ، ا.د. رعد ناجي الجدة، ا.م.د كامل عبد العنكود ، ا.م.د علي عبد الرزاق محمد، ا.د. حسان محمد شفيق، (2009)** | Yes |
| **Recommended Texts** | **1- -الديمقراطية ،من تأليف : تشارلز تيللي ، ترجمة محمد فاضل طباخ ، الهيئة المصرية العامة للكتاب،(2010).**<br><br>**2- كتاب حقوق الانسان الاساسية والدور الامني لحمايتها، المؤلف: الدكتور مبارك علوي محمد،(2019).** | No |
| **Websites** | N/A | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR

# وصف المادة الدراسية

## Module Information

معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **CALCULUS I** | **Module Delivery** | |
| **Module Type** | BASIC | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | MATH-101 | | |
| **ECTS Credits** | 6 | | |
| **SWL (hr/sem)** | 150 | | |
| **Module Level** | 1 | **Semester (s) offered** | 1 |
| **Administering Department** | Civil Engineering | **College** | Engineering |
| **Module Leader** | Dr. Firas H. Jassim | **e-mail** | firasarab@tu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | Anfal Mansur Hameed | **e-mail** | anfal.m.hameed@tu.edu.iq |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | 01/06/2023 | **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, Indicative Contents and Brief Description

| أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | Enable students to develop a comprehensive understanding of the calculus basic fundamentals of derivatives and integrals and their application and how to apply these concepts in science and engineering fields. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Calculate limits, derivatives, and indefinite integrals of various algebraic and trigonometric functions of a single variable.<br>2. Apply the definition of continuity to pure and applied mathematics problems.<br>3. Utilize the definition of the derivative to differentiate various algebraic and trigonometric functions of a single variable.<br>4. Use the properties of limits and the derivative to analyze graphs of various functions of a single variable including transcendental functions.<br>5. Employ the principles of the differential calculus to solve optimization problems, related rates exercises, and other applications.<br>6. Calculate the area of regions in the plane with elementary Riemann sums.<br>7. Utilize the Fundamental Theorem of Calculus and the techniques of integration, including u-substitution, to calculate the area of regions in the plane and the volume and surface area of solids of revolution. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Precalculus and functions (8 hrs)<br>• Limits and continuity (14 hrs)<br>• Derivatives and their applications (16 hrs)<br>• Integral and its applications (16 hrs)<br>• Transcendental Functions, First order differential equation (16 hrs) |
| **Course Description** | This course covers topics of differential and integral calculus including limits and continuity, higher-order derivatives, curve sketching, differentials, definite and indefinite integrals (areas and volumes), and applications of derivatives and integrals. In addition, students review and extend their knowledge of trigonometry and basic analytic geometry. Important objectives of the calculus sequence are to develop and strengthen the students' problem-solving skills and to teach them to read, write, speak, and think in the language of mathematics. In particular, students learn how to apply the tools of calculus to a variety of problem situations. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 60**<br>**tutorial 15**<br>**Exam 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 40**<br>**Preparation for tests 20**<br>**HomeWorks 12** | 72 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

| Module Evaluation<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time (hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 4 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 5, 13 | LO # 1-3 , LO # 4-6 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100%<br>(100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Precalculus |
| **Week 2** | Functions and their graph |
| **Week 3** | Limits and continuity |
| **Week 4** | Limits and continuity, Cont'd |
| **Week 5** | **First exam, Derivatives** |
| **Week 6** | Derivatives Cont'd |
| **Week 7** | Derivatives Cont'd |

| | |
|---|---|
| **Week 8** | Applications of Derivatives |
| **Week 9** | Integrals |
| **Week 10** | Integrals Cont'd |
| **Week 11** | Applications of Definite Integrals |
| **Week 12** | Transcendental Functions |
| **Week 13** | **Second Exam, Techniques of Integration** |
| **Week 14** | Techniques of Integration Cont'd |
| **Week 15** | First-Order Differential Equations, Power series |
| **Week 16** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **Calculus and Analytic Geometry, by, Thomas and Finny, 9th edition 1995** | No |
| **Recommended Texts** | **Calculus, Ron Larson, 9th edition, Cengage Learning, ISBN 0547167024** | No |
| **Websites** | None | |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | ENGINEERING DRAWING I | | | **Module Delivery** | |
| **Module Type** | BASIC | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | ENG-101 | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module teachers** | Anwer Sabah Mohhammed | | **e-mail** | dr.anwersabah@tu.edu.iq | |
| **Module Leader's Acad. Title** | **Lecturer** | | **Module Leader's Qualification** | Ph. D. | |
| **Module Tutor** | Mazin Ali Hussein | | **e-mail** | mr.maziali@tu.edu.iq | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | - |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | 1. Define and explain the uses of different drawing equipment.<br>2. Identify the different drawing equipment.<br>3. Layout drawing papers and prepare a title block.<br>4. Practically distinguish the types of dimensioning.<br>5. Carry out geometrical construction of different shapes.<br>6. Carry out isometric and orthographic drawing of objects. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | On completion of this course students will be able to:<br>1. Prepare and understand drawings.<br>2. Identify various curves used in Engineering Drawing and their applications.<br>3. Use the principles of orthographic projections.<br>4. By studying about isometric projections students will be able to visualize three-dimensional objects and that will enable them to design new products.<br>5. Design and fabricate surfaces of different shapes.<br>6. Represent the objects in three dimensional appearances | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Introduction to Drawing Equipment (6hrs)<br>• Engineering operations (18hrs)<br>• Orthographic Projection (18hrs)<br>• Sectional views(18hrs)<br>• Isometric Projections(21hrs)<br>• Dimensioning(9hrs) | | |
| **Course Description** | An engineering drawing course focuses on usage of drawing instruments, lettering, construction of geometric shapes, etc. Students study use of dimensioning, shapes and angles or views of such drawings. Dimensions feature prominently, with focus on interpretation, importance and accurate reflection of dimensions in engineering drawing. Other areas of study in this course may include projected views and development of surfaces. | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and | | |

| | |
|---|---|
| | demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 30**<br>**Lab 45**<br>**Exam 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Reports 30**<br>**Preparation for tests 12**<br>**Homework 30** | 72 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 30% (30) | all | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 10% (10) | All | LO # 1, 2, 3, 4, 5 and 6 |
| **Summative assessment** | **Midterm Exam** | 2 | 30% (30) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 30% (30) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Introduction to engineering drawing |
| **Week 2** | Primary elements of drawings |
| **Week 3** | Engineering operations(line bisection and division) |
| **Week 4** | Engineering operations(polygon ) |
| **Week 5** | Engineering operations (ellipse) |

| | |
|---|---|
| **Week 6** | Engineering operations (Tangency and loci applications) |
| **Week 7** | *Dimensioning* |
| **Week 8** | Sections and Sectional views |
| **Week 9** | Sections and Sectional views |
| **Week 10** | Orthographic Projections |
| **Week 11** | Orthographic Projections |
| **Week 12** | Oblique Projection |
| **Week 13** | Isometric Projections |
| **Week 14** | Isometric Projections |
| **Week 15** | Isometric Projections |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | |
| **Week 2** | |
| **Week 3** | |
| **Week 4** | |
| **Week 5** | |
| **Week 6** | |
| **Week 7** | |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Engineering Drawing, Abdul-Rassul Abdul-Hussain, University of Technology, 1986. | Yes |
| **Recommended Texts** | SIMMONS, C., MAGUIRE, D., PHELPS, N., 20**21**. Manual of engineering Drawing Technical product specification and Documentation to British and International Standards, **4** ed, Elsevier Ltd:Oxford<br>REDDY, K. , 2008. Textbook of Engineering Drawing. 2ed, Adithya Art Printers:Hyderabad<br>SHAH, M. B. , RANA, B. C. , 2007. Engineering Drawing. 2ed, Dorling Kindersley(India) Pvt. Ltd :India | No |
| **Websites** | المواقع الألكترونية ذات العلاقة بالاختصاص | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **ENGINEERING MECHANICS I** | | | **Module Delivery** | |
| **Module Type** | BASIC | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | ENG-102 | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Min number of students** | 15 | | **Max number of students** | 100 | |
| **Administering Department** | Mechanical Engineering | | **College** | Engineering | |
| **Module Leader** | Ahmed Faaiq Sultan | | **e-mail** | ahmed.f.sultan@tu.edu.iq | |
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | Ph. D. | |
| **Module Tutor** | Mohammed Khaleel Ibrahim | | **e-mail** | mohammed.k.ibrahim@tu.edu.iq | |
| **Peer Reviewer Name** | Dr. Ahmed Faaiq Sultan | | **e-mail** | Ahmed.f.sultan@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

<table>
<tr><th colspan="4">Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى</th></tr>
<tr><td>Prerequisite module</td><td>None</td><td>Semester</td><td>1,2</td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</td><td>-</td></tr>
<tr><th colspan="4">Module Aims, Learning Outcomes, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر</th></tr>
<tr><td colspan="2">Module Aims<br>أهداف المادة الدراسية</td><td colspan="2">1) To provide definition of force and moment vectors and give necessary vector algebra<br>2) To explain the concept of equilibrium of particles and rigid bodies in plane and 3D space<br>3) To give information about support types and to give ability to calculate support reactions<br>4) To explain the equilibrium of structures and internal forces in trusses, and frames<br>5) To give information about distributed loads<br>6) To explain centroid of bodies and Figures.<br>7)To provide information on moment of inertia</td></tr>
<tr><td colspan="2">Module Learning Outcomes<br><br>مخرجات التعلم للمادة الدراسية</td><td colspan="2">1) Use both conceptual and numerical techniques to solve engineering problems.<br>2) Analyze and develop free-body diagrams for any system of forces in two and three dimensions.<br>3) Understand and use the general idea of equilibrium of a particle.<br>4) Understand and use the general ideas of force system resultants.<br>5) Determine the moment of a force about an arbitrary point and/or axes<br>6) Analyze the equilibrium of rigid bodies under any system of forces.<br>7) Analyze trusses, beams, frames, and machines.<br>8) Calculate center of gravity, centroids, and moments of inertia.<br>9) Apply friction forces and analyze their different applications.</td></tr>
<tr><td colspan="2">Indicative Contents<br>المحتويات الإرشادية</td><td colspan="2">Indicative content includes the following.<br><br>• Force Vectors (8 hrs)<br>• Force System Resultants (8 hrs)<br>• Equilibrium of a Rigid Body (8 hrs)<br>• Friction (8 hrs)<br>• Center of Gravity and Centroid (6 hrs)<br>• Moments of Inertia and virtual work (8 hrs)<br>• Structure (trusses and Frames) (10 hrs)</td></tr>
<tr><td colspan="2">Course Description</td><td colspan="2">The course covers the following topics; statics of particles: forces in plane, forces in space, equilibrium, moment of a force, moment of a couple, equivalent systems of forces on rigid bodies, equilibrium in two dimensions,</td></tr>
</table>

| | |
|---|---|
| | equilibrium in three dimensions, distributed forces: centroids and center of gravity, analysis of structures: trusses, frames and machines, internal forces in beams and cables, friction, moments of inertia of areas, moments of inertia of masses. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 60**<br>**Exam 3**<br>**practical 15** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 13**<br>**Prepartion for tests 14**<br>**Homeworks 20** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.13 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation

| تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time (hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments (Homework)** | 5 | 10% (10) | 2, 4, 6, 8, 10 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 4 | 8% (8) | Continuous | |
| | **Discussions** | 6 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-5 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| **Delivery Plan (Weekly Syllabus)**<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **week1** | General principles, Principles of statics, vectors |
| **Week 2** | Planar forces, resultant of a force system |
| **Week 3** | Planar forces, resultant of a force system |
| **Week 4** | The free body diagram, definition of moment, moment of a couple |
| **Week 5** | The free body diagram, definition of moment, moment of a couple |
| **Week 6** | Equilibrium in 2-D, free body diagrams, equations of equilibrium |
| **Week 7** | Midterm exam |
| **Week 8** | Equilibrium in 3-D, free body diagrams, equations of equilibrium |
| **Week 9** | STRUCTURES Trusses and frames |
| **Week 10** | STRUCTURES Trusses and frames |
| **Week 11** | Center of mass, Gravity and centroid |
| **Week 12** | Centroids of Lines, Areas, and Volumes |
| **Week 13** | Moments of inertia |
| **Week 14** | Moments of inertia |
| **Week 15** | Friction (dry friction) |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Engineering Mechanics-Statics, J.L.Meriam, L.G.Kraige, Wiley, 5th Edition, 2003, ISBN: 0-471-26607-8** | Yes |
| **Recommended Texts** | **Engineering Mechanics-Statics, Hibbeler, R.C.13th Edition, Pearson Prentice Hall, 2016, ISBN 978-0-13-31892-2."** | yes |
| **Websites** | N/A | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Departments of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | WORK SHOP | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **ENG-106** | | | | |
| **ECTS Credits** | 4 | | | | |
| **SWL (hr/sem)** | 100 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Administering Department** | **All Departments** | | **College** | **Engineering** | |
| **Module Leader** | **Abd fares Ali** | | **e-mail** | **abdfaris@tu.edu.iq** | |
| **Module Leader's Acad. Title** | **Lecturer** | | **Module Leader's Qualification** | **MSC.** | |
| **Module Tutor** | **Mahmoud Shukri Dirar** | | **e-mail** | mahmoed_alosi@yahoo.com | |
| **Peer Reviewer Name** | **Abbas Ali & Qais k. Shaakir** | | **e-mail** | Kanoosh.abbasali@tu.edu.iq / qshaakir@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | - |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Theoretical and practical training in which the student is scientifically and technically established with the most necessary skills in the field of engineering technology | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | On completion of this course students will be able to: Knowledge of technical skills in the field of industrial safety, measurement, filing, carpentry, welding, mechanical operation, sanitary engineering and the basics of electrical work | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>● Industrial safety workshop(2 hours)<br>● Measurement &Marking workshop(3 hours )<br>● Filing workshop (10 hours )<br>● Carpentry workshop(10 hours )<br>● Welding workshop(10 hours )<br>● Casting workshop(10 hours )<br>● Machining workshop(10 hours )<br>● plumbing workshop(10 hours )<br>● Electrical workshop (10 hours ) | | |
| **Course Description** | The engineering workshop course focuses on identifying risks in the work environment and industrial safety guidelines. And training on how to measure and determine, and the use of filing tools and their work. Learn about the types of wood used in carpentry, the process of shaping it, and the use of carpentry tools and machines. Training in welding work, its types, and the process of joining metals by welding. Training on various casting works and training on mechanical operation, which includes turning, milling, and grinding. Training on pipe knowledge, how to connect, sanitary engineering works, and training on the basics of electrical workshops. | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. | | |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 15**<br>**Lab 45**<br>**Exam 3** | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 3**<br>**Prepartion for tests 4**<br>**Homeworks 30** | 37 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2.46 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 100 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (5) | all | LO #1, 2, 3, and 9 |
| | **Onsite Assignments** | 1 | 2% (2) | | |
| | **Lab** | 2 | 8% (8) | | |
| | **Reports** | 10 | 20% (20) | All | LO # 1, 2, 3, 4, 5 and 9 |
| **Summative assessment** | **Midterm Exam** | 2 | 30% (30) | 7 | LO # 1-5 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | Industrial safety workshop & Measurement and marking workshop |
| **Week 2** | Filing workshop |
| **Week 3** | Filing workshop |
| **Week 4** | Carpentry workshop |
| **Week 5** | Carpentry workshop |
| **Week 6** | Welding workshop |

| | |
|---|---|
| **Week 7** | Welding workshop |
| **Week 8** | plumbing workshop |
| **Week 9** | plumbing workshop |
| **Week 10** | Machining workshop |
| **Week 11** | Machining workshop |
| **Week 12** | Casting workshop |
| **Week 13** | Casting workshop |
| **Week 14** | Electrical workshop |
| **Week 15** | Electrical workshop |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | |
| **Week 2** | |
| **Week 3** | |
| **Week 4** | |
| **Week 5** | |
| **Week 6** | |
| **Week 7** | |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Abd fares ,** Engineering workshops | Yes |
| **Recommended Texts** | Technology of Machine Tools , Steve F. Krar & J. William Oswald ,McGraw-Hill Publishing Company , fourth Edition , 1991 | No |
| **Websites** | | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | CONSTRUCTION MATERIALS I | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | **CIVL- 103** | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Sumaya Asim Hamid | | **e-mail** | ms.sumiyaassaim@tu.edu.iq | |
| **Module Leader's Acad. Title** | Lecture | | **Module Leader's Qualification** | M.Sc. | |
| **Module Tutor** | Sawsan A. Hassan | | **e-mail** | ms.sawsanabdullah@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation with Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | | **Semester** | |
| **Co-requisites module** | | **Semester** | |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | To provide students with physical, mechanical, chemical, and mathematical tools and concepts for understanding construction materials. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | On successful completion of this module, the learner will be able to:<br>1. Calculate standard any construction material properties and classify a type of sample.<br>2. Carry out laboratory tests for preliminary engineering assessment of construction material samples.<br>3. The ability to analyze and examine the raw materials involved in the manufacture of any construction .<br>4. Identify the extent to which construction materials conform to the approved specifications. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | يلي: تتضمن المحتويات الارشادية ما<br>• Characteristics of construction materials and types of forces affecting them. How to calculate the stresses and strains of the material. (4 hours)<br>• Clay bricks (classification of soils in terms of granular gradation and the most important clay minerals) (4 hours)<br>• Stages of manufacturing clay bricks (forming, drying, and burning methods) (4 hours)<br>• Engineering properties of clay bricks (4 hours)<br>• Types of clay bricks (4 hours)<br>• Other types of non-clay bricks (lime-sand bricks, concrete bricks, glass bricks) (6 hours)<br>• Building blocks (stabilized soil blocks, concrete building blocks, thermos-stone blocks) (4 hours)<br>• Types of binders (plaster) (4 hours)<br>• Manufacturing of gypsum and its types according to the Iraqi and British specifications (6 hours)<br>• Gypsum products and additives to gypsum (plaster uses) (4 hours)<br>• Manufacturing and Properties of lime, and its uses in construction, properties of cement and lime (4 hours)<br>• Types of Portland and non-Portland cement. (6 hours)<br>• The effectiveness of pozzolana materials. (2)<br>• The effectiveness of additives materials (4) | | |
| **Course Description** | The aim of this course is to enable the student to: | | |

| | |
|---|---|
| | - Describe factors that control the properties of construction materials.<br>- List methods of determining the properties of construction materials. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching strategy is designed to: Carefully cover the basic material in the lectures, apply the concepts through students conducting laboratory experiments, allowing students sufficient time to understand and comprehend the material by reading and applying a large number of carefully selected examinations, assigning students with homework and preparing reports for the examinations they take This is done for additional practice and familiarity and understanding of construction material details. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** 30<br>**Lab** 30<br>**Exam** 3 | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing** 30<br>**Preparation for tests** 22<br>**Reports** 10 | 62 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.13 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 4 | 12% (12) | 4,6,8,10 | 1,2,3,4 |
| | **Assignments** | 3 | 6% (6) | 8, 10, 12 | 1,2,3 |
| | **Seminars** | 3 | 6% (6) | Continuous | 1,2,3,4,5,6,7 |
| | **Reports** | 4 | 16% (16) | Continuous | 1,2,3,4 |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Classification of engineering materials and their properties |
| **Week 2** | Mechanical properties of the material (types of forces) hooks law, strain, stresses |
| **Week 3** | Exercises on the mechanical properties of matter |
| **Week 4** | Clay bricks (classification of soils in terms of granular gradation and the most important clay minerals) |
| **Week 5** | Stages of making clay bricks (forming, drying, and burning methods) and their properties |
| **Week 6** | Other types of non-clay bricks (lime-sand bricks, concrete bricks, glass bricks) |
| **Week 7** | Building blocks (stabilized soil blocks, concrete building blocks, thermo-stone blocks) |
| **Week 8** | Midterm exam |
| **Week 9** | Types of binders (plaster) |
| **Week 10** | Manufacturing of Gypsum and its types according to the Iraqi and British specifications |
| **Week 11** | Properties of lime, and its uses in construction, properties of cement and lime |
| **Week 12** | Types of Portland and non-Portland cement |
| **Week 13** | The effectiveness of pozzolana |
| **Week 14** | Types of additives and their function |
| **Week 15** | Usage of additives in construction materials |
| **Week 16** | **Final Exam** |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week 1** | Lab 1: Introduction to construction material testing, fundamental of writing report. |
| **Week 2** | Lab2: Test of shape, dimensions and type of the brick, such as being solid or hollow test |
| **Week 3** | Lab3: compressive strength of clay brick test |
| **Week 4** | Lab4: Water absorption clay brick test |
| **Week 5** | Lab5: fluorescence tests |
| **Week 6** | Lab6: Water absorption of concrete block test |
| **Week 7** | Lab7: Compressive strength of concrete block test |
| **Week 8** | Lab8: Shape and dimension of concrete block test |
| **Week 9** | Lab9: Midterm exam |
| **Week 10** | Lab10: Fineness of Gypsum Test |

| | |
|---|---|
| **Week 11** | Lab11: Consistency of Gypsum Test |
| **Week 12** | Lab12: Sitting Time of Gypsum Test |
| **Week 13** | Lab13: Compressive strength Test |
| **Week 14** | Lab 14: Density of Gypsum Test |
| **Week 15** | Final Exam |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | فحص المواد البنائية – يوسف الدواف | Yes |
| **Recommended Texts** | **Concrete Technology by M. Nouri. Khalaf & Hana Abed Yousif** | No |
| **Websites** | | |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work is required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
University of Tikrit
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | اللغة العربية | | | **Module Delivery** | |
| **Module Type** | غير أساسية(داعمة) | | | محاضرات نظرية | |
| **Module Code** | ENG-113 | | | | |
| **ECTS Credits** | 2 | | | | |
| **SWL (hr/sem)** | 50 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Min number of students** | 15 | | **Max number of students** | 100 | |
| **Administering Department** | Chemical Engineering | | **College** | Engineeeing | |
| **Module Leader** | Wasna younis Abdullah | | **e-mail** | Wasna.y.abdullah@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | MSc | |
| **Module Tutor** | None | | **e-mail** | | |
| **Peer Reviewer Name** | Ahmed Hussein khunfas | | **e-mail** | Ahmed.husain@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | لايوجد | **Semester** | 1 |
| **Co-requisites module** | لايوجد | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | **1-تطوير المهارات اللغوية وحفظ بعض السور القرآنية وتعزيز حب اللغة لدى الطلبة.**<br>**2-فهم كيفية تطبيق القواعد اللغوية في الحياة اليومية، ومعرفة المصطلحات اللغوية في مجالات الهندسة والعلوم.**<br>**3-أهمية اللغة العربية في مجالات الحياة اليومية**<br>**4-استخدام القواعد اللغوية في كتابة التقارير والأبحاث العلمية بشكل صحيح.**<br>**5ـــتعزيز التعلم الذاتي والاستقلالية في التعلم وتشجيع الطلاب على أخذ مبادرة في تعلم اللغة العربية.** | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | **1- فهم القواعد اللغوية وعلامات الترقيم وحفظ السور القرآنية.**<br>**2-تطوير المحصلة اللغوية لدى الطلبة من خلال تعلم الشعر والقواعد اللغوية بشكل صحيح.**<br>**3-تغطية معظم المواضيع اللغوية التي يحتاجها المهندس في مسيرته العملية**<br>**4-التدرب على الحفظ والنطق الصحيح لبعض السور القرآنية بالإضافة إلى التدرب على قراءة الشعر العربي وتعلم واستخدام قواعد اللغة العربية**<br>**5- الممارسات المتكررة لشرح المادة النظرية واستخدام الآلات والوسائل الحديثة بشرح المادة مع ضمان ملائمة المادة النظرية للاحتياجات الواقعية** | | |
| **Indicative Contents**<br>المحتويات الإرشادية | **يتضمن المحتوى الارشادي مايأتي:**<br>**1-سورة الضحى (3 ساعة).**<br>**2-قصة ذي القرنين (3 ساعات).**<br>**3-قصة النبي موسى عليه الصلاة والسلام مع سيدنا الخضر (4 ساعات).**<br>**4-معلقة عمرو بن كلثوم (4 ساعات).**<br>**5-قصيدة المتنبي شعب بوان( 4 ساعات).**<br>**5-قصيدة محمد مهدي الجواهري يا دجلة الخير) (4ساعات).**<br>**6-أنواع الهمزات (4 ساعات).**<br>**7-علامات الترقيم (4 ساعات).** | | |
| **Course Description** | **اللغة العربية: هي ما نطق به العرب، أو هي لغتهم، وهي اللغة السامية التي حفظت وجودها، وهي لغة عالمية وإنسانية حية تتميز بنظام صوتي وصرفي ونحوي وتركيبي، ولألفاظها مدلولات مختلفة، فهي اللسان الذي تكلمه العرب، ونزل به القرآن الكريم الذي لا يمكن فهمه إلا من خلال فهم اللغة العربية.** | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |

| | |
|---|---|
| **Strategies** | ان استراتيجية التعلم هي أسلوب تعليمي يعتد على إعادة تنظيم المعلومات وتكييفها بطريقة تمكن من الوصول إلى معلومات جديدة، وتتميز هذه الاستراتيجية بأنها تجعل الطالب نشطاً وايجابياً ودورنا يتمثل في دور الموجه والمرشد والمخطط وهذا يُمكّن من اكتشاف المعرفة بسلاسة من قبل الطلاب. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 30**<br>**Exam 3** | 33 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library 5**<br>**Home works 12** | 17 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 50 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 3, 5, ,7, 9,11,13, | LO #1,2,3,4,5,6,7 |
| | **Assignments (Homeworks)** | 3 | 15% (15) | 2, 4, 6, 10,12,14 | LO # 1,2,3,4,5,6,7 |
| | **Home works** | 2 | 6% (6) | Continuous | 1,2,3,4 |
| | **Seminars** | 3 | 9% (9) | Continuous | 2,4 |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 8 | LO # 1-7 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | سورة الضحى |
| **Week 2** | قصة ذي القرنين |
| **Week 3** | قصة النبي موسى عليه الصلاة والسلام مع سيدنا الخضر عليه السلام |
| **Week 4** | معلقة عمرو بن كلثوم |
| **Week 5** | قصيدة المتنبي شعب بوان |
| **Week 6** | قصيدة محمد مهدي الجواهري يا دجلة الخير |
| **Week 7** | همزة القطع وهمزة الوصل |
| **Week 8** | امتحان نصف الفصل |
| **Week 9** | الهمزة المتوسطة والهمزة المتطرفة |
| **Week 10** | علامات الترقيم |
| **Week 11** | كتابة الضاد والظاء |
| **Week 12** | الفعل الصحيح |
| **Week 13** | الفعل المعتل |
| **Week 14** | اسم الفاعل |
| **Week 15** | اسم المفعول |
| **Week 16** | امتحان نهاية الفصل |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **اللغة العربية لأقسام غير الاختصاص** | Yes |
| **Recommended Texts** | **التفسير الوسيط أ.د. وهبة الزحيلي**<br>**المنهاج في القواعد والإعراب: محمد الأنطاكي** | No |
| **Websites** | N/A | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | COMPUTER I | | | **Module Delivery** | |
| **Module Type** | SUPPLEMENT | | | ☒ Theory<br>☒ Lecture<br>☒ Lab<br>☒ Tutorial<br>☒ Practical<br>☒ Seminar | |
| **Module Code** | ENG-104 | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Mutafa Dheyaa Othman | | **e-mail** | Mustafa.Al-Mashaykhi@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistance Lecturer | | **Module Leader's Qualification** | Msc. | |
| **Module Tutor** | Omar Taher Nafe'e | | **e-mail** | Mr.omertaher@tu.edu.iq | |
| **Peer Reviewer Name** | Dr. Jalal N. Abdulbaqi | | **e-mail** | Jalal.abdulbaqi@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| **Relation With Other Modules**<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | - |

| Co-requisites module | None | Semester | - |
|---|---|---|---|

## Module Aims, Learning Outcomes, Indicative Contents and Brief Description

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر

| | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | The aim of this module is to provide students with a comprehensive understanding of the key concepts and principles of computer science. Through the study of topics such as history, data representation, computer components, algorithms, programming languages, operating systems, applications, internet and networking, and cybersecurity, students will gain a broad understanding of the field of computer science and how it has evolved over time. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | 1. Describe the historical development of computer science and its impact on society.<br>2. Understand the various methods of data representation and manipulation.<br>3. Identify the components of a computer and their functions.<br>4. Design and implement algorithms for a range of problems.<br>5. Understand the principles of programming languages and apply them to develop software.<br>6. Understand the structure and functions of operating systems.<br>7. Identify and analyze a range of applications of computer science.<br>8. Understand the principles of internet and networking technologies.<br>9. Identify and analyze various cybersecurity threats and methods of prevention. |
| **Indicative Contents**<br>المحتويات الإرشادية | - History introduction: Evolution of computer science, pioneers and important milestones<br>- Data representation: Binary numbers, hexadecimal, character sets, ASCII and Unicode<br>- Computer components: CPU, memory, input/output devices, storage devices<br>- Algorithms: Definition, representation, complexity, searching, sorting, optimization<br>- Programming languages: Syntax, semantics, variables, functions, control structures, abstraction<br>- Operating systems: Structure, file systems, process management, memory management<br>- Applications: Databases, artificial intelligence, computer graphics, human-computer interaction<br>- Internet and networking: Protocols, network architectures, security, privacy<br>- Cybersecurity: Threats, attacks, prevention, detection, mitigation |

| | |
|---|---|
| **Course Description** | This course offers students a comprehensive exploration of the fundamental concepts and principles that underpin the field of computer science. By delving into various subjects including the historical development of computing, data representation, computer components, algorithms, programming languages, operating systems, applications, internet and networking, and cyber-security, students will develop a well-rounded understanding of the discipline. By examining the evolution of computer science over time, students will acquire a broad perspective on the field and its significance in contemporary society. Through a combination of theoretical knowledge and practical applications, this module equips students with the necessary foundation to pursue further studies or careers in computer science. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The module will use a range of learning and teaching strategies, including:<br>- **Lectures**: To provide students with an overview of the main concepts and principles.<br>- **Labs**: To provide students with hands-on experience of programming, algorithms, and data representation.<br>- **Assignments and Quizzes**: To provide students with opportunities to apply their knowledge and skills to real-world problems and check their understanding. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 17**<br>**Preparation for tests 15**<br>**Home works 15** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| Formative assessment | Quizzes | 2 | 10% (10) | 2, 4, 6, 10 | LO #1, 3, 5 and 6 |
| | Assignments | 2 | 15% (15) | 3, 5, 13, 14 | LO # 2, 4, 7 and 8 |
| | Lab | 14 | 15% (15) | Continuous | |
| Summative assessment | Midterm Exam | 1.5 | 10% (10) | 7 | LO # 1-5 |
| | Final Exam | 3 | 50% (50) | 16 | All |
| Total assessment | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| Week 1 | History introduction: Evolution of computer science, pioneers and important milestones |
| Week 2 | Data representation: Binary numbers, hexadecimal, character sets, ASCII and Unicode |
| Week 3 | Computer components: CPU, memory, input/output devices, storage devices |
| Week 4 | Algorithms: Definition, representation, complexity, searching, sorting, optimization |
| Week 5 | Programming languages I |
| Week 6 | Programming languages II |
| Week 7 | Midterm |
| Week 8 | Operating systems I |
| Week 9 | Operating systems II |
| Week 10 | Applications I: Information Systems |
| Week 11 | Applications II: artificial intelligence |
| Week 12 | Applications III: computer graphics, human-computer interaction |
| Week 13 | Networking |
| Week 14 | Internet |
| Week 15 | Cybersecurity: Threats, attacks, prevention, detection, mitigation |
| Week 16 | Final Exam |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Computer Operating System (e.g. Microsoft Windows) |
| **Week 2** | Lab 2: Document Processing I (e.g. Microsoft Word) |
| **Week 3** | Lab 3: Document Processing II (e.g. Microsoft Word) |
| **Week 4** | Lab 4: Data Processing I (e.g. Microsoft Excel) |
| **Week 5** | Lab 5: Data Processing II (e.g. Microsoft Excel) |
| **Week 6** | Lab 6: Presentation Slides I (e.g. Microsoft PowerPoint) |
| **Week 7** | Lab 7: Presentation Slides II (e.g. Microsoft PowerPoint) |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Computer Science Illuminated, by Dale, N and Lewis, J, 7th Ed, Jones & Bartlett Learning, 2020** | No |
| **Recommended Texts** | - | - |
| **Websites** | - | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F –** Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
Tikrit University
College of Engineering
Civil Engineering Department

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **CALCULUS II** | | | **Module Delivery** | |
| **Module Type** | BASIC | | | **Theory**<br>**Tutorial** | |
| **Module Code** | **MATH-102** | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 2 | |
| **Min number of students** | 15 | | **Max number of students** | 100 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Firas Hazim Jassim | | **e-mail** | firasarab@tu.edu.iq | |
| **Module Leader's Acad. Title** | Lecture. | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Anfal Mansoor Hameed | | **e-mail** | anfal.m.hameed@tu.edu.iq | |
| **Peer Reviewer Name** | Prof. Dr. Raad H. Irzooqi | | **e-mail** | Dr.raadhoobi@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | Calculus I | **Semester** | 1 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | 1) Be able to calculate the tangent and normal vectors.<br>2) Be able to apply differential operators to scalar and vector fields.<br>3) Be able to determine the limit and continuity of a functions of two variables.<br>4) Be able to determine the domain, codomain, range of functions of two or more variables, to do algebraic operations between them and sketch their graphs.<br>5) Be able to evaluate the derivatives of functions ot two or more variables.<br>6) Be able to solve simple real problems related to derivatives of functions of two or three variables.<br>7) Be able to solve problems related to integral of functions of two or three variables.<br>8) Be able to understand that the modulus of a complex number is equal to the square root of the sum of the squares of the real and imaginary parts of the number. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 10) Understanding of the concepts of vectors in space and vector valued functions.<br>11) Ability to compute derivatives and integrals of vector-valued functions and solve related problems with various applications. Evaluate the behaviors and graphs of functions<br>12) Ability to compute multiple integrals and use them in various applications ability to compute multiple integrals and use them in various applications.<br>13) Understanding of the concepts of calculus of multi-dimensional quantities and solve related problems with various applications.<br>14) Ability to identify, formulates, and solves engineering problems.<br>15) Understanding that the modulus of a complex number is equal to the square root of the sum of the squares of the real and imaginary parts of the number. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Vectors (16 hrs)<br>• Function of Two and more Variables and Their Derivatives (20hrs)<br>• Multiple Integral (20hrs)<br>• Complex Number (16hrs) | | |

| | |
|---|---|
| **Course Description** | A continuation of Calculus I. This is a study of multivariable calculus including vector-valued functions and the calculus of curves in space, differential calculus of multivariate functions, and integral calculus of multivariate functions, spherical and cylindrical coordinates, line and surface integrals. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** **72**<br>**In class tests** **6** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**dorm, home memorizing** **40**<br>**Prepartion for tests** **20**<br>**Homeworks** **12** | 72 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 24% (24) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments (Homeworks)** | 6 | 16% (16) | 2, 4, 6, 10, 12, 14 | LO # 1, 2, 3, 4, 5 and 6 |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 8 | LO # 1-6 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Vectors , Vector in Space |
| **Week 2** | Dot and Cross Products on Vectors |
| **Week 3** | Equations for Lines and Planes in Space |
| **Week 4** | Function of Two and more Variables and Their Derivatives |
| **Week 5** | Partial Derivatives , Chain Rules |
| **Week 6** | Gradient and Directional Derivatives |
| **Week 7** | Applications of Partial of Derivative (maximum, minimum and saddle point) |
| **Week 8** | **Midterm exam** |
| **Week 9** | Double integral |
| **Week 10** | Double integral in polar coordinates |
| **Week 11** | Changing Cartesian integrals into Polar integrals |
| **Week 12** | Triple integral (Rectangular, Cylindrical and Spherical) |
| **Week 13** | Complex Number , Addition, Subtraction, Multiplication and Division |
| **Week 14** | Polar representation of Complex Number |
| **Week 15** | Complex Number |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Calculus and analytical geometry, George B. Thomas Jr.; Addison – Wesley publishing company, 7th edition, 1988.** | Yes |
| **Recommended Texts** | **- Calculus; James Stewart, 10th edition, 2003.** | No |
| **Websites** | N/A | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
University of Tikrit
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | ENGLISH LANGUAGE | | | **Module Delivery** | |
| **Module Type** | SUPLEMENT | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Project**<br>**Seminar** | |
| **Module Code** | ENG-107 | | | | |
| **ECTS Credits** | 2 | | | | |
| **SWL (hr/sem)** | 50 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 2 | |
| **Min number of students** | 15 | | **Max number of students** | 100 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Ahmed Subhi Abdulla | | **e-mail** | Ahmedsubhi1981@tu.edu.iq | |
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | MSc | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | Saba A. Gheni | | **e-mail** | ghenis@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | 1,2 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Identify various reading skills and apply them in reading, referencing and summarizing literature on engineering<br>• Identify various skills of technical presentation and apply them in conducting short technical presentations based on information extracted from readings<br>• Identify technical discussion skills and apply these in planning and conducting simulated technical discussions characteristic of those that go on in engineering contexts.<br>• Identify and compare the structures and language characte-ristics of various types of written study and workplace reports characteristic of those produced by engineering students and practicing engineers (e.g., incident reports and progress reports) mainly, and applying this knowledge in writing one of the latter<br>• Develop communication skills through active participation in class and group activities. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Technical presentations (5 hrs)<br>• Conducting technical discussions about engineering projects (5 hrs)<br>• Writing technical documents ( 5 hrs)<br>• Writing business correspondence (5 hrs) | | |
| **Course Description** | This course is designed to provide engineering students with the necessary oral and written skills required for effective communication in academic and workplace contexts, both with experts in their field and lay persons. It begins by introducing them to the principles of good academic practice, which are also | | |

| | |
|---|---|
| | presented as a model for ethical workplace practice, and thus help them to avoid issues such as plagiarism. The main part then leads on to developing research and summarizing skills that form the basis for the later activities. Students next learn to apply these skills to conducting technical presentations, as well as in group discussions that culminate in project planning activities. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** **15**<br>**In class tests** **2** | 32 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2.1 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing** **8**<br>**Preparation for tests** **6**<br>**HomeWorks** **2**<br>**Project** **2** | 18 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1.2 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 50 | | |

| **Module Evaluation**<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time (hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | A technical presentation Students will perform various secondary research skills acquired to extract information of an engineering topic from different sources. They will then conduct a short technical presentation based on this information, using the presentation skills learnt |
| **Week 2** | |
| **Week 3** | |
| **Week 4** | Technical discussions and proposal writing Incorporating research results from the previous activities, students will develop a customised solution to address a context-specific problem facing a client's organization. The solution will need to be written in a recognized proposal format (e.g., a blueprint). Each student will craft one section of the document according to her/his role on the project team. Students will also plan and conduct a simulated technical team meeting with the client team to explain and discuss the solution by applying various planning and discussion skills learnt |
| **Week 5** | |
| **Week 6** | |
| **Week 7** | Midterm exam |
| **Week 8** | Conducting technical discussions about engineering projects Students will be guided to identify technical discussion skills through various types of exploratory and/or consciousness-raising activities, such as watching sample discussions and evaluating their effectiveness. They learn how to discuss with a client the customised technical design of a solution that can address a context-specific problem facing the client. They then apply these skills in conducting simulated technical team discussions, according to the roles assigned to them. |
| **Week 9** | |
| **Week 10** | |
| **Week 11** | A technical report Each student produces a technical report by applying the knowledge gained in the related TLAs |
| **Week 12** | |
| **Week 13** | |
| **Week 14** | Writing business correspondence Students will produce a business email, based on the results of the previous activities, and by applying the textual features learnt. |
| **Week 15** | |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Beer, D. & McMurrey, D. 2004, A Guide to Writing as an Engineer (2nd ed), New York: Wiley | No |
| **Recommended Texts** | Borowick, Jerome N., 2002, Technical Communication and its Applications (2nd ed), New Jersey: Prentice-Hall, Inc. | No |
| **Websites** | http://umich.edu/~elements/5e/lectures/index.html | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Civil Engineering Department | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | ENGINEERING DRAWING II | **Module Delivery** | |
| **Module Type** | BASIC | **Theory**<br>**Practical** | |
| **Module Code** | CIVL-105 | | |
| **ECTS Credits** | 5 | | |
| **SWL (hr/sem)** | 125 | | |
| **Module Level** | 1 | **Semester (s) offered** | 2 |
| **Administering Department** | Civil Engineering | **College** | Engineering |
| **Module Leader** | Anwer Sabah Mohhammed | **e-mail** | dr.anwersabah@tu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | Mohammed Khaleel Ibrahim | **e-mail** | Mohammed.k.ibrahim@tu.edu.iq |
| **Peer Reviewer Name** | Adnan Jayed Zedan | **e-mail** | jayedadn@tu.edu.iq |
| **Review Committee Approval** | 01/06/2023 | **Version Number** | 1.0 |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | Engineering Drawing I | **Semester** | 1 |
| **Co-requisites module** | None | **Semester** | - |

| Module Aims, Learning Outcomes, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | 1. Define and explain the uses of different drawing equipment.<br>2. Identify the different drawing equipment.<br>3. Layout drawing papers and prepare a title block.<br>4. Practically distinguish the types of dimensioning.<br>5. Carry out geometrical construction of different shapes.<br>6. Carry out isometric and orthographic drawing of objects. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | On completion of this course students will be able to:<br>1. Prepare and understand drawings.<br>2. Identify various curves used in Engineering Drawing and their applications.<br>3. Use the principles of orthographic projections.<br>4. By studying about isometric projections students will be able to visualize three-dimensional objects and that will enable them to design new products.<br>5. Design and fabricate surfaces of different shapes.<br>6. Represent the objects in three dimensional appearances |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Introduction to Drawing Equipment (12hrs)<br>• Geometrical Construction (24hrs)<br>• Orthographic Projection (18hrs)<br>• Sectional views(12hrs)<br>• Isometric Projections(18hrs)<br>• Dimensioning(6hrs) |
| **Course Description** | An engineering drawing course focuses on usage of drawing instruments, lettering, construction of geometric shapes, etc. Students study use of dimensioning, shapes and angles or views of such drawings. Dimensions feature prominently, with focus on interpretation, importance and accurate reflection of dimensions in engineering drawing. Other areas of study in this course may include projected views and development of surfaces.. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 75**<br>**In class tests** 3 | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 20**<br>**Prepartion for tests 15**<br>**Homeworks 12** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 4, 12 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 30% (30) | 2 - 15 | LO # 1, 2, 3, 4, 5 and 6 |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | Tangency advance |
| **Week 2** | Tangency and loci applications advance |
| **Week 3** | Tangency and loci applications advance |
| **Week 4** | Orthographic Projections advance |
| **Week 5** | Orthographic Projections advance |
| **Week 6** | Orthographic Projections advance |
| **Week 7** | **Midterm Exam** |
| **Week 8** | Sections and Sectional views advance |
| **Week 9** | Sections and Sectional views advance |
| **Week 10** | Isometric Projections advance |

| | |
|---|---|
| **Week 11** | Isometric Projections advance |
| **Week 12** | Isometric Projections advance |
| **Week 13** | |
| **Week 14** | |
| **Week 15** | |
| **Week 16** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Engineering Drawing, Abdul-Rassul Abdul-Hussain, University of Technology, 1986. | Yes |
| **Recommended Texts** | SIMMONS, C., MAGUIRE, D., PHELPS, N., 20**21**. Manual of engineering Drawing Technical product specification and Documentation to British and International Standards, **4** ed, Elsevier Ltd:Oxford<br>REDDY, K. , 2008. Textbook of Engineering Drawing. 2ed, Adithya Art Printers:Hyderabad<br>SHAH, M. B. , RANA, B. C. , 2007. Engineering Drawing. 2ed, Dorling Kindersley(India) Pvt. Ltd :India | No |
| **Websites** | | |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **ENGINEERING MECHANICS** | | | **Module Delivery** | |
| **Module Type** | BASIC | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVIL 102** | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Min number of students** | 15 | | **Max number of students** | 100 | |
| **Administering Department** | Civil Engineering | | **College** | Engineeeing | |
| **Module Leader** | Sabah Mahdi Salih | | **e-mail** | sabahmahdi@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | MSc | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | Dr. Ahmed Faaiq Sultan | | **e-mail** | Ahmed.f.sultan@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | 1,2 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | 1) To explain the equilibrium of structures and internal forces in trusses, and frames<br>2) To give information about distributed loads<br>3) To provide information on moment of inertia<br>4) To explain virtual work concept. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 16) Use both conceptual and numerical techniques to solve engineering problems.<br>17) Analyze trusses, beams, frames, and machines.<br>18) Understand and use the general ideas of internal forces and draw shear and moment diagrams.<br>19) Apply friction forces and analyze their different applications.<br>20) Calculate center of gravity, centroids, and moments of inertia.<br>21) Understand methods of virtual work | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Trusses and Frames (16 hrs)<br>• Friction (14 hrs)<br>• Center of Gravity and Centroid (08 hrs)<br>• Moments of Inertia and virtual work (12 hrs) | | |
| **Course Description** | The course covers the following topics; centroids and center of gravity, analysis of structures: trusses, frames and machines, internal forces in beams and cables, friction, moments of inertia of areas, moments of inertia of masses, method of virtual work. | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. | | |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 50**<br>**In class tests 5**<br>**Seminars 4**<br>**Discussions 6** | 65 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 30**<br>**Prepartion for tests 20**<br>**Homeworks 10** | 60 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

| Module Evaluation<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time (hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments (Homeworks)** | 5 | 10% (10) | 2, 4, 6, 8, 10 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 4 | 8% (8) | Continuous | |
| | **Discussions** | 6 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-5 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100%<br>(100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Analysis of Trusses |
| **Week 2** | Analysis of Trusses, Cont'd |
| **Week 3** | Analysis of Frames |
| **Week 4** | Analysis of Frames, Cont'd |
| **Week 5** | Center of mass, Gravity and centroid |
| **Week 6** | Centroids of Lines, Areas, and Volumes |
| **Week 7** | Centroids of Lines, Areas, and Volumes, Cont'd |
| **Week 8** | **Midterm exam** |
| **Week 9** | Moments of inertia |
| **Week 10** | Moments of inertia, Cont'd |
| **Week 11** | Moments of inertia and Virtual work |
| **Week 12** | Moments of inertia and Virtual work, Cont'd |
| **Week 13** | Composite Bodies and Figures |
| **Week 14** | Friction (frictional forces on screws, flat belts, discs, rolling resistance) |
| **Week 15** | Friction (frictional forces on screws, flat belts, discs, rolling resistance), Cont'd |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Engineering Mechanics-Statics, J.L.Meriam, L.G.Kraige, Wiley, 5th Edition, 2003, ISBN: 0-471-26607-8** | Yes |
| **Recommended Texts** | **Engineering Mechanics-Statics, Hibbeler, R.C.13th Edition, Pearson Prentice Hall, 2016, ISBN 978-0-13-31892-2."** | No |
| **Websites** | N/A | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | CONSTRUCTION MATERIALS II | | | **Module Delivery** | |
| **Module Type** | CORE | | | محاضرات<br>مختبر<br>واجبات بيتية<br>تقارير | |
| **Module Code** | **CIVL- 105** | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 1 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Haider Turki Abed | | **e-mail** | Haider.t.abed@tu.edu.iq | |
| **Module Leader's Acad. Title** | Lecture | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Hafssa Ali Abdullah | | **e-mail** | Hafsa.a.Abdullah42360@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

## Relation with Other Modules

| العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | Construction materials | **Semester** | 1 |
| **Co-requisites module** | | **Semester** | |

## Module Aims, Learning Outcomes, Indicative Contents and Brief Description

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر

| | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | To provide students with physical, mechanical, chemical, and mathematical tools and concepts for understanding construction materials. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | On successful completion of this module, the learner will be able to:<br>5. Calculate standard any construction material properties and classify a type of sample.<br>6. Carry out laboratory tests for preliminary engineering assessment of construction material samples.<br>7. The ability to analyze and examine the raw materials involved in the manufacture of any construction .<br>8. Identify the extent to which construction materials conform to the approved specifications. |
| **Indicative Contents**<br>المحتويات الإرشادية | تتضمن المحتويات الارشادية ما يلي:<br>• Introduction to Wood (2 hours)<br>• Wood (its uses, features, the most important factors affecting the durability of wood) (6 hours)<br>• Dimensional changes in wood, wood drying, wood defects (6 hours)<br>• Characteristics of wood (4 hours)<br>• Types of wood (natural and its types, manufactured and its types) (4 hours)<br>• Introduction to the Cladding materials (2 hours)<br>• Tile (ordinary tiles and terrazzo tiles) (4 hours)<br>• Characteristics of the tile and defects of it (4 hours)<br>• Manufacture of terrazzo and ordinary tiles (2 hours)<br>• Other types of cladding materials (4 hours)<br>• Introduction to Metals (Classification and preparation)(4 hours)<br>• Ferrous metals (Cast iron, Wrought iron and Steel) (4 hours)<br>• Building stone ( geological classification and engineering properties) ( 4 hours)<br>• Characteristics and uses of each class. (4 hours)<br>• Thermal insulation materials in buildings (6 hours) |
| **Course Description** | The aim of this course is to enable the student to:<br>- Describe factors that control the properties of construction materials. |

| | |
|---|---|
| | - List methods of determining the properties of construction materials. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | تم تصميم استراتيجية التعلم والتدريس من أجل: تغطية المواد الأساسية بعناية في المحاضرات، وتطبيق المفاهيم من خلال قيام الطلبة بإجراء تجارب مختبرية بما يتيح للطلاب وقتًا كافيًا لفهم وإدراك المادة بالاطلاع والتطبيق لعدد كبير من الفحوصات المختارة بعناية، وتكليف الطلبة بواجبات بيتية واعداد تقارير خاصة بالفحوصات التي تم اجراءها للتمرين الاضافي والالمام بتفاصيل المواد الانشائية وفهمها. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** 30<br>**In labrotary** 26<br>**Seminars** 4 | 60 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 30**<br>**Preparation for tests** 25<br>**Reports** 10 | 65 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.33 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, | LO #1 and 2 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Reports** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Introduction to Wood |
| **Week 2** | Wood (its uses, features, the most important factors affecting the durability of wood) |
| **Week 3** | Characteristics of wood, Dimensional changes in wood, wood drying, wood defects |
| **Week 4** | Types of wood (natural and its types, manufactured and its types) |
| **Week 5** | Introduction to the Cladding materials |
| **Week 6** | Tile (ordinary tiles and terrazzo tiles) and Manufacture of terrazzo and ordinary tiles |
| **Week 7** | Characteristics of the tile and defects of it |
| **Week 8** | Midterm exam |
| **Week 9** | Other types of cladding materials |
| **Week 10** | Introduction to Metals (Classification and preparation) |
| **Week 11** | Ferrous metals (Cast iron, Wrought iron and Steel) |
| **Week 12** | Building stone ( geological classification and engineering properties) |
| **Week 13** | Characteristics and uses of each class of stone |
| **Week 14** | Thermal insulation materials in buildings |
| **Week 15** | **Final Exam** |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week 1** | Water content of wood test |
| **Week 2** | Compression parallel and perpendicular to grain of wood tests |
| **Week 3** | Impact bending and Nail withdrawal of wood tests |
| **Week 4** | Shear parallel to grain of wood test |
| **Week 5** | Tension parallel and perpendicular to grain of wood tests |
| **Week 6** | Face and shape of tile test |
| **Week 7** | Absorption and face absorption tests of tile |
| **Week 8** | Modulus of rupture of tile test |
| **Week 9** | Midterm exam |
| **Week 10** | Bending of steel Test |
| **Week 11** | Compression test for cast iron, tensile stress for reinforced bar, modulus of elasticity tests |

| | |
|---|---|
| **Week 12** | Compressive strength of stone Test |
| **Week 13** | Density of stone test |
| **Week 14** | water Absorption of stone Tests |
| **Week 15** | Final Exam |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | فحص المواد البنائية – يوسف الدواف | Yes |
| **Recommended Texts** | **Concrete Technology by M. Nouri. Khalaf & Hana Abed Yousif** | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work is required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | ENGINEERING GEOLOGY<br>جيولوجيا هندسية | | | **Module Delivery** | |
| **Module Type** | SUPLEMENT | | | | |
| **Module Code** | CIVIL-106 | | | | |
| **ECTS Credits** | 3 | | | | |
| **SWL (hr/sem)** | 75 | | | | |
| **Module Level** | 1 | | **Semester (s) offered** | 2 | |
| **Administering Department** | Civil Engineering | | **College** | Engineeeing | |
| **Module Leader** | Dr. Aodai A. Ismail | | **e-mail** | dr.aodai@tu.edu.iq | |
| **Module Leader's Acad. Title** | Instructor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Assim Hijran Arif | | **e-mail** | assim.h.arif@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | | **Semester** | |
| **Co-requisites module** | | **Semester** | |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | تهدف المادة الدراسية الى مساعدة الطالب بالتعرف على مادة الجيولوجيا الهندسية من حيث دورها وتأثيرها في تحسين المواد. والاطلاع على دورها في الأعمال المدنية والتعدينية. مع بيان للطرق العملية للتعرف على المشاكل الهندسية للتربة الصخور وطرق معالجتها. التعرف على الخرائط الهندسيةواستعمالاتها. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. **التعرف على الجيولوجيا الهندسية, اهدافها و مجالات عملها.**<br>2. **دور وتأثير الجيولوجيا الهندسية في تحسين مواد الأرض**<br>3. **الاطلاع على دور الجيولوجيا الهندسية في الأعمال المدنية والتعدينية**<br>4. **التعرف على المشاكل الهندسية للتربة و الصخور وطرق معالجتها.**<br>5. **التعرف على الخرائط الهندسية, انواعها, انظمة رسمها و تصنيفها.** | | |
| **Indicative Contents**<br>المحتويات الإرشادية | تتضمن المحتويات الارشادية مايلي:<br>• تعاريف الأرض ومكوناتها 2<br>• التاريخ الجيولوجي الحفر 2<br>• التجوية وتكوين التربة 2<br>• ميكانيك الصخور والتربة4<br>• الطرق الجيوفيزيائية2<br>• كفاءة الطرق الجيوفيزيائية 2<br>• اختيار الموقع التحري الفلزي2<br>• التحري الجيوكيميائي 2<br>• التلوث الصناعي2<br>• دراسة التصحر الجبال والثلوج 2<br>• الترب الكلسية والجبسية2<br>• الخرائط4<br>• التطبيقات الهندسية2 | | |
| **Course Description** | تهدف المادة الدراسية لاعطاء الطالب معلومات تفصيلية عن الجيولوجيا الهندسية ومكوناتها والمفاهيم الاساسية المتعلقة بها والخرائط الجيولوجيه وتدريب الطلبة على كيفية رسمها وقرائتها وفهمها. | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |

| | |
|---|---|
| **Strategies** | تم تصميم استراتيجية التعلم والتدريس من أجل: تغطية المواد الأساسية بعناية في المحاضرات ، وتطبيق المفاهيم بما يتيح للطلاب وقتًا كافيًا لفهم وادراك المادة بالاطلاع والتطبيق لعدد كبير من النماذج والامثلة المختارة بعناية، وتكليف الطلبة بواجبات بيتية للتمرين الاضافي. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 13**<br>**Lab** 20<br>**In class tests 3**<br>**Seminars 2** | 48 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing** 15<br>**Prepartion for tests** 5<br>**Homeworks 7** | 27 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 75 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | تعاريف الأرض ومكوناتها |
| **Week 2** | التاريخ الجيولوجي الحفر |
| **Week 3** | التجوية وتكوين التربة |
| **Week 4** | ميكانيك الصخور والتربة |

| | |
|---|---|
| **Week 5** | ميكانيك الصخور والتربة |
| **Week 6** | ميكانيك الصخور والتربة |
| **Week 7** | **Seminar** |
| **Week 8** | الطرق الجيوفيزيائية |
| **Week 9** | كفاءة الطرق الجيوفيزيائية |
| **Week 10** | اختيار الموقع التحري الفلزي |
| **Week 11** | التحري الجيوكيميائي التلوث الصناعي |
| **Week 12** | دراسة التصحر الجبال والثلوج |
| **Week 13** | الترب الكلسية والجبسية |
| **Week 14** | لتطبيقات الهندسية |
| **Week 15** | **Seminar** |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | يتم تغطية المنهج بالمرسم |
| **Week 1** | البلورات |
| **Week 2** | المعادن |
| **Week 3** | الصخور |
| **Week 4** | الخصائص البصرية |
| **Week 5** | الخصائص الفيزيائية |
| **Week 6** | المسح الجيولوجي |
| **Week 7** | ميكانيك الصخور |
| **Week 8** | ميكانيك التربة |
| **Week 9** | **Seminar** |
| **Week 10** | الجيولوجيا التركيبية |
| **Week 11** | الخرائط الطبوغرافية |
| **Week 12** | الخرائط الجيولوجية |
| **Week 13** | المقاطع الطبوغرافية |

| | |
|---|---|
| **Week 14** | **Seminar** |
| **Week 15** | **Final Exam** |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | الجيولوجيا الهندسية وميكانيك الصخور1980. تاليف ن. دنكان . ترجمة كنانة محمد ثابت, محمد علاء الدين, زهير رمو. | Yes |
| **Recommended Texts** | • اساسيات الجيولوجيا 2009. د.ميشيل كامل.<br>• خواص المواد الهندسية . صالح امين, وليد محمد, طالب حسين.<br>• موسوعة اعلام الجيولوجيين في العراق 2015. احمد جدوع رضا الهيتي.<br>• تجارب مختبر الجيولوجيا وميكانيك التربة 2018. خالد غسان. | Yes |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | جرائم البعث في العراق | | | **Module Delivery** | |
| **Module Type** | غير أساسية(داعمة) | | | محاضرات نظرية | |
| **Module Code** | ENG-214 | | | | |
| **ECTS Credits** | 2 | | | | |
| **SWL (hr/sem)** | 50 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | 1 | |
| **Min number of students** | 15 | | **Max number of students** | 100 | |
| **Administering Department** | environment Engineering | | **College** | Engineeeing | |
| **Module Leader** | Sabah Mahdi Salih | | **e-mail** | sabahmahdi@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | MSc | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | لايوجد | **Semester** | 1 |
| **Co-requisites module** | لايوجد | **Semester** | - |

| Module Aims, Learning Outcomes, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | **1-التعرف على جرائم الحزب والانتهاكات التي قام بها خلال فترة الحكم.**<br>**2- القدرة على فهم الاثار السلبية لهذا الحزب على الجانب النفسي والاجتماعي والثقافي لأفراد الشعب العراقي.**<br>**3- التعرف على التأثير السلبي على واقع البيئة العراقية.** |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | **1- التعرف على المصطلحات ذات الصلة بجرائم الجزب.**<br>**2- التعرف على اهم الاثار السلبية الذي تركها الحزب على واقع المجتمع العراقي في جميع مجالات الحياة.** |
| **Indicative Contents**<br>المحتويات الإرشادية | **يتضمن المحتوى الارشادي مايأتي:**<br>**1- انتهاكات الحقوق والحريات (8 ساعات).**<br>**2- التأثير على الميدان النفسي والاجتماعي (2ساعة).**<br>**3- التأثير على الميدان الثقافي والدين والدولة وعسكرة المجتمع (2ساعة).**<br>**4- اثر القمع على البيئة والسكان (3) ساعات** |
| **Course Description** | **جرائم حزب البعث: هي الجرائم التي ارتكبها الحزب بأبناء الشعب العراقي والتي ادت الى اثار سلبية على المستوى النفسي والاجتماعي والثقافي والاقتصادي والبيئي وعسكرة المجتمع .** |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | تم وضع استراتيجية التعلم والتعليم من اجل ان يحصل الطالب على معلومات كاملة تغطي المنهج الدراسي المعد للمادة ولكي تتحقق الغاية الاساسية للمنهج الذي ينصب نحو المام وادراك الطالب بالجرائم والاثار السلبية التي قام بها الحزب على نسيج المجتمع العراقي ، والاطلاع على الانتهاكات والتجاوزات التي حصلت اثناء فترة الحكم من اجل منع تكرار تلك التجربة مستقبلا. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** 30<br>**In class tests** 2 | 32 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2.1 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 18 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1.2 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 50 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 4 | 20% (20) | 3, 5, ,7, 9,11,13, | LO #1, 2,3,4,..... ,11 |
| | **Assignments (Homeworks)** | 6 | 15% (15) | 2, 4, 6, 10,12,14 | LO # 1, 2, 3, 4 ,.....,11 |
| | **Discussions** | 7 | 5% (5) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 8 | LO # 1-7 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | نبذة وصفية عن الانظمة السياسية في العراق من عام 1921-2003 |
| **Week 2** | انتهاكات النظام البعثي للحقوق والحريات العامة |
| **Week 3** | اثر سلوكيات النظام البعثي في المجتمع |
| **Week 4** | اثر المرحلة الانتقالية في محاربة السياسة الاستبدادية |
| **Week 5** | الميدان النفسي |
| **Week 6** | الميدان الاجتماعي |
| **Week 7** | الدين والدولة |

| | |
|---|---|
| **Week 8** | امتحان نصف الفصل |
| **Week 9** | الثقافة والاعلام وعسكرة المجتمع |
| **Week 10** | استعمال الاسلحة المحرمة دوليا والتلوث البيئي |
| **Week 11** | سياسة الارض المحروقة |
| **Week 12** | تجفيف الاهوار |
| **Week 13** | المقابر الجماعية وتدمير دور العبادة |
| **Week 14** | امثلة واقعية عن جرائم الحزب من واقع المجتمع العراقي |
| **Week 15** | مراجعة لمحتويات المادة |
| **Week 16** | امتحان نهاية الفصل |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **منهاج معتمد من الوزارة** | Yes |
| **Recommended Texts** | | No |
| **Websites** | N/A | |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | ENGINEERING ANALYSIS | | | **Module Delivery** | |
| **Module Type** | BASIC | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | MATH-201 | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | 1 | |
| **Min number of students** | 15 | | **Max number of students** | 60 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Adnan Jayed Zedan | | **e-mail** | jayedadn@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | Ph.D | |
| **Module Tutor** | Mohammed Khairullah Ahmed | | **e-mail** | Mohammed.k.kayrullah@tu.edu.iq | |
| **Peer Reviewer Name** | Omar Saeed Lateef | | **e-mail** | o.s.lateef@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | Calculus II (MATH-102) | **Semester** | 2 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | The overall goal of this course is to enable students to apply appropriate analytical methods to calculate solutions of engineering problems. The student must be able to solve first order and higher order differential equations (ordinary and partial) by various methods. Using Laplace transforms for solving differential equations are also considered. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Build skills with mathematical techniques to solve problems in chemical engineering.<br>2. Review the most common analytical methods to solve ordinary differential equations (ODEs).<br>3. Apply diverse techniques to solve the differential equation in a quantitative manner.<br>4. Interpret the results of the solution of the differential equations.<br>5. Use some advance mathematical methods such as Laplace Transform to solve the models of engineering problems.<br>6. Apply some techniques for solving partial differential equations most likely to be encountered and used by students | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Ordinary Differential Equations (8 hrs)<br>• Linear Differential Equations (4 hrs)<br>• Simultaneous Differential Equations (4 hrs)<br>• Solution by Series (6 hrs)<br>• Functions and Definite Integrals (4 hrs)<br>• Laplace Transform (8 hrs)<br>• Partial Differential Equations (8 hrs) | | |
| **Course Description** | This course is offered to undergraduates and introduces students to the techniques for analytical solution of engineering problems. Ordinary and partial differential equations are considered. Throughout the course, an advanced mathematical methods are used in solution of the problems. | | |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 68**<br>**In class tests 2**<br>**Seminars 4**<br>**Discussions 4** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 20**<br>**Prepartion for tests 15**<br>**Homeworks 12** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 5.0 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #2, 3, 5 and 6 |
| | **Assignments (Homeworks)** | 5 | 10% (10) | 2, 4, 6, 8, 10 | All |
| | **Seminars** | 4 | 8% (8) | Continuous | |
| | **Discussions** | 6 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | First Order Differential Equations (Separable, Homogeneous, Exact Equations) |
| **Week 2** | First Order Differential Equations (Linear Equations, Bernoulli Equation) |
| **Week 3** | Second Order Differential Equations (Homogeneous, un-determent Coefficient) |
| **Week 4** | Second Order Linear Differential Equations, Differential Operators |
| **Week 5** | Higher Order of Linear Differential Equations, The Euler Cauchy Differential Equations |
| **Week 6** | Simultaneous Linear Differential Equations |
| **Week 7** | Midterm exam |
| **Week 8** | Power Series Solutions |
| **Week 9** | Special Functions, Error Function, Gamma Function, Beta Function |
| **Week 10** | Laplace Transform, The Transform of Special Functions, The Differentiation and Integration of Transforms |
| **Week 11** | The Shifting Theorems, Step Functions |
| **Week 12** | Solving Differential Equations by Laplace Transform |
| **Week 13** | Fourier Series, The Euler Formulas, Half Range Expansion |
| **Week 14** | Partial Differential Equations, Separation of Variables |
| **Week 15** | Heat Equations ,Wave Equation |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Erwin Kreysig, Advanced Engineering Mathematics, 8e, John Wiley and Sons, Inc.** | Yes |
| **Recommended Texts** | **C. Ray Wylie, Advanced Engineering Mathematics, 6e, McGraw-Hill** | Yes |
| **Websites** | N/A | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
University of Tikrit
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | CONCRETE TECHNOLOGY | | | **Module Delivery** | |
| **Module Type** | CORE | | | محاضرات<br>مختبر<br>واجبات بيتية<br>تقارير | |
| **Module Code** | CIVL-201 | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | 2 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Fdya Saadi Klak | | **e-mail** | ms.fadiyakalak@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Haider Turky Abed | | **e-mail** | haider.t.abed@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation with Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | Materials Construction I & II | **Semester** | 1,2 |
| **Co-requisites module** | | **Semester** | |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | To provide students with physical, mechanical, chemical, and mathematical tools and concepts for understanding concrete's engineering behavior and introduction to concrete mixes' engineering design. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | On successful completion of this module, the learner will be able to:<br>9. Calculate standard concrete properties and classify a concrete sample.<br>10. Carry out laboratory tests for preliminary engineering assessment of concrete samples.<br>11. Specify the essential features and requirements of concrete permeability.<br>12. Calculate stresses in concrete under various load conditions, and determine the shear strength. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | تتضمن المحتويات الارشادية ما يلي:<br>• Introduction on Cement (6 hours)<br>• Manufacturing of Cement and its composition (6 hours)<br>• Hydration of Cement (6 hours)<br>• Aggregate, Classification of Aggregate, and properties of Aggregate (6 hours)<br>• Sieve Analysis (6 hours)<br>• Fresh Concrete, Workability of Concrete (6 hours)<br>• Tests, & Factors affecting Workability (6 hours)<br>• Segregation, Bleeding, & Compacting of Concrete (6 hours)<br>• Mixing of concrete (6 hours)<br>• Hardened Concrete & Factors affecting the strength of concrete (6 hours)<br>• Curing of concrete (6 hours)<br>• Design of concrete mix (6 hours)<br>• Modulus of elasticity and poisons ratio, Volumetric changes, swelling, and shrinkage (6 hours)<br>• Creep of concrete (6 hours)<br>• Durability of concrete, the permeability of concrete, the resistance of concrete to sulfate salts, the effect of seawater, efflorescence, concreting in cold weather (6 hours) | | |

| | |
|---|---|
| **Course Description** | The aim of this course is to enable the student to:<br>- Describe factors that control the properties of concrete.<br>-List methods of determining the properties of concrete. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | تم تصميم استراتيجية التعلم والتدريس من أجل: تغطية المواد الأساسية بعناية في المحاضرات، وتطبيق المفاهيم من خلال قيام الطلبة بإجراء تجارب مختبرية بما يتيح للطلاب وقتًا كافيًا لفهم وإدراك المادة بالاطلاع والتطبيق لعدد كبير من الفحوصات المختارة بعناية، وتكليف الطلبة بواجبات بيتية واعداد تقارير خاصة بالفحوصات التي تم اجراءها للتمرين الاضافي والالمام بتفاصيل المواد الخرسانية وفهمها. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 58**<br>**In labrotary 31**<br>**Seminars 4** | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 20**<br>**Preparation for tests 15**<br>**Reports 12** | 57 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 5.0 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Reports** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | مقدمة عن السمنت، صناعة السمنت ومركباته |
| **Week 2** | أماهة السمنت، حجوم نواتج عملية الأماهة |
| **Week 3** | أنواع السمنت البورتلاندي |
| **Week 4** | الركام، تصنيف الركام، وخصائص الركام |
| **Week 5** | التحليل المنخلي |
| **Week 6** | الخرسانة الطرية وقوام الخرسانة |
| **Week 7** | Midterm exam |
| **Week 8** | قابلية تشغيل الخرسانة وطرق فحصها |
| **Week 9** | الأنعزال والنضح |
| **Week 10** | الخرسانة المتصلبة |
| **Week 11** | معالجة الخرسانة |
| **Week 12** | طريقة ACI لتصميم الخلطة الخرسانية |
| **Week 13** | الطريقة البريطانية لتصميم الخلطة الخرسانية |
| **Week 14** | المرونة، الأنكماش، والزحف |
| **Week 15** | ديمومة الخرسانة |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week 1** | تجربة تعيين القوام القياسي لعجينة السمنت، تجربة تعيين زمن التجمد الأبتدائي والنهائي، تجربة تعيين مقاومة الأنضغاط للسمنت |
| **Week 2** | تجربة كيفية أخذ عينات الركام، تجربة التحليل المنخلي للركام |
| **Week 3** | تجربة تعيين الكثافة النسبية والأمتصاص للركام، تجربة تعيين الكثافة الكلية والفجوات للركام، تجربة تعيين الطين والمواد الناعمة الأخرى في الركام |
| **Week 4** | تجربة خلط وتحضير خرسانة طرية نموذجية في المختبر، تجربة فحص الهطول، تجربة عامل الرص، تجربة تعيين كثافة الخرسانة الطرية |
| **Week 5** | فحوصات الخرسانة المتصلبة<br>تجربة تعيين مقاومة الأنضغاط لمكعبات الخرسانة |
| **Week 6** | تجربة تعيين مقاومة الشد غير المباشر لأسطوانات الخرسانة |
| **Week 7** | تعيين مقاومة الأنثناء لمواشير الخرسانة<br>تجربة تعيين مقاومة الأنضغاط المعادلة لمقاومة أنضغاط مكعب بأستعمال أجزاء من مواشير مكسرة في فحص الأنثناء |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Concrete Technology by A.M. Neville.**<br><br>**Concrete Technology by M. Nouri. Khalaf & Hana Abed Yousif.** | Yes |
| **Recommended Texts** | 1. Properties of concrete by M.A. Orchard.<br>2. Lea (2011) "The Chemistry of Cement and Concrete", Arnold.<br>3. N.H. Taylor. (1965) " Concrete Technology and Practice ", Angus and Robertson.<br>4. Building Research Establishment (1975)" Design of Normal Concrete Mixes.<br>5. B.W. Shacklock (1974) “Concrete Constituents and Mix Proportions”, Cement and Concrete Associations. | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work is required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | |
|---|---|---|---|---|
| **Module Title** | STRENGTH OF MATERIALS I | | **Module Delivery** | |
| **Module Type** | CORE | | **Theory**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | CIVL-203 | | | |
| **ECTS Credits** | 4 | | | |
| **SWL (hr/sem)** | 100 | | | |
| **Module Level** | 2 | **Semester (s) offered** | 1 | |
| **Administering Department** | Civi Engineering | **College** | Engineering | |
| **Module Leader** | dr. Saad M. Raoof | **e-mail** | dr.saadraouf@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Abdulla Saeb Tais | **e-mail** | abdalla_saab@tu.edu.iq | |
| **Peer Reviewer Name** | | **e-mail** | | |
| **Review Committee Approval** | | **Version Number** | 1.0 | |

## Relation With Other Modules

| العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | | **Semester** | 1,2 |
| **Co-requisites module** | None | **Semester** | - |

## Module Aims, Learning Outcomes, Indicative Contents and Brief Description

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر

| | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | The main aim of studying strength of materials is to understand how different materials behave under various types of applied forces or loads. This knowledge is essential for designing and analyzing structures and machines that can withstand the stresses and strains that they are subjected to in real-world applications. By understanding the properties of materials and how they respond to different types of forces, engineers can design structures and machines that are both safe and efficient.<br>Students may also learn about different types of materials, such as metals, composites, and how they behave under different conditions. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Understanding of material properties: Students will gain an understanding of the mechanical properties of materials, including elasticity, plasticity, and fracture mechanics. They will also learn how to measure and analyze these properties.<br><br>2. Analysis of stress and strain: Students will learn how to analyze and calculate the stresses and strains that occur in materials under different types of loads. They will also learn how to design structures that can withstand these loads.<br><br>3. Understanding of beam theory: Students will learn about the behavior of beams under different types of loads, including bending and shear. They will also learn how to calculate the stresses and deflections in beams.<br><br>4. Torsion analysis: Students will learn about the behavior of materials under torsion, including the stresses and strains that occur in cylindrical and non-cylindrical shapes.<br><br>Overall, the main learning outcome of a strength of materials module is to provide students with a solid understanding of the mechanical behavior of materials and how to design and analyze structures that can withstand different types of loads. This knowledge is essential for engineers in many fields and can be applied to a wide range of real-world applications. |

| | |
|---|---|
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Simple stress (10 hrs)<br>• Simple strain (12hrs)<br>• Torsion (6 hrs)<br>• Shear and bending moment in beams (8hrs)<br>• Stresses in beams (14hrs)<br>• Design beams for flexural and shearing stresses in beams (6hrs) |
| **Course Description** | Understanding of material properties: Students will gain an understanding of the mechanical properties of materials, including elasticity, plasticity, and fracture mechanics. They will also learn how to measure and analyze these properties. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The effective teaching of strengths of materials involves a combination of many strategies. By using multiple teaching methods, providing opportunities for practice and feedback, encouraging interaction and critical thinking, and using real-world examples and technology, instructors can create a supportive and engaging learning environment that helps students to succeed. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 4**<br>**In class test 3** | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 14**<br>**Preparation for tests12**<br>**Reports 11** | 37 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2.5 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 60 | | |

| **Module Evaluation**<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time (hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 1.5 | 2% (2) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 2 | 3% (3) | Continuous | |
| | **Midterm Exam** | 1.5 | 30% (30) | 7 | LO # 1-3 |

| | | | | | |
|---|---|---|---|---|---|
| **Summative assessment** | **Final Exam** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| **Delivery Plan (Weekly Syllabus)**<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Analysis of internal forces, simple stress |
| **Week 2** | Shearing stress, bearing stress |
| **Week 3** | Riveted connections. |
| **Week 4** | Thin walled cylinders |
| **Week 5** | Strains ,definition ,Stress-strain diagram ,Hook's Law, Strains of axially loaded member |
| **Week 6** | Poisso's ratio , Thermal stresses |
| **Week 7** | Torsion, the torsion formula for solid circular shaft , design of circular members in torsion ,angle of twist |
| **Week 8** | **Midterm exam** |
| **Week 9** | Shear force and moments diagram in beams using equations |
| **Week 10** | Shear force and moments diagram in beams without equations |
| **Week 11** | Derivation of flexure Formula |
| **Week 12** | Economic sections, unsymmetrical beams |
| **Week 13** | unsymmetrical beams |
| **Week 14** | Derivation of formula for horizontal |
| **Week 15** | Design for flexure and shear |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Singer "strength of materials" 3rd edition,1980 and 4th edition.** | Yes |
| **Recommended Texts** | **R.C.Hibbeler " Mechanics of Materials" 8th edition,2011.**<br>**R.J.Hearn "Mechanics of Materials " 3rd edition,1997**<br><br>**Popov " Engineering Mechanics of Solids",1990.** | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | ENGINEERING SURVEYING I | | | **Module Delivery** | |
| **Module Type** | BASIC | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical** | |
| **Module Code** | CIVL-203 | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | 1 | |
| **Administering Department** | CIVIL Engineering | | **College** | Engineering | |
| **Module Leader** | Dr. Mohammed A. Abid | | **e-mail** | Moh1963@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Zayad Tareq Ismael | | **e-mail** | mr.ziadtariq@tu.edu.iq | |
| **Peer Reviewer Name** | None | | **e-mail** | none | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation with Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **CIVL208,CIVL-203** | **Semester** | 4,3 |
| **Co-requisites module** | None | **Semester** | - |

| Module Aims, Learning Outcomes, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | Enabling students to develop a comprehensive understanding of the methodology for linking the theoretical part of engineering surveying materials with field work on the ground in order to complete the requirements of the projects to be completed according to engineering specifications and according to the devices and accuracy that are determined and according to the type of project, as well as training students on the types of surveying devices and how to use them.<br>The subject is divided to two parts: the theory and practical field experiments.<br>The theoretical part gives the student the basic theoretical principles of the engineering surveying and its applications in the civil engineering projects (Buildings constructions and design, highways, roads, railways, irrigation canals, water and sewage pipe lines, environmental projects, underground, bridges). It consists of the engineering surveying for civil engineering projects before their design i.e. the production of the engineering plans, contouring, profile and cross-section using the traditional and electronic field survey equipment. Moreover, the computations of the earthworks volumes and areas are also included. The setting out of the civil engineering projects from the design plans onto the desired ground construction area with correct positions and levels, using the traditional and electronic survey instruments.<br>The practical part consists of 32 field survey experiments by using the mechanical, optical and electronic survey equipment. Also, the use of computer hardware and soft wares in engineering surveying. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1.To learn to work as team, ethics and prepare technical reports of surveying.<br>2. To relate theoretical knowledge of surveying to resolve real field problems.<br>3. To establish horizontal control and vertical control by traversing and triangulation.<br>4. To prepare topographical map and contour map on an area.<br>5. Gain the ability to use modern survey equipment to measure angles and distances.<br>6. Gain a basic understanding of the principles and operation of the global positioning system.<br>7.Gain the ability to measure differences in elevation, draw and utilize contour plots. |

| | |
|---|---|
| | 8. Appreciate the need for accurate and thorough note taking in field work to serve as a legal record.<br><br>9. a large practical land survey, setting out of construction works, and report preparation.<br><br>10. After completion of this course students are expected to know how to use surveying devices, tape and how to find the height and distance of each point. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br><br>• Undergraduate Review (4 hrs.)<br>• Fundamentals of surveying engineering (12 hrs.)<br>• Traverse computation (12 hrs.)<br>• Area and volume estimate (12 hrs.)<br>• Curve Theory and Setting out methods (12 hrs.)<br>• Coordinate transformation, intersection and resection methods. (8 hrs.)<br>• Practical surveying (30 hrs.) |
| **Course Description** | This course aims to establish fundamental knowledge of chemical reactor design and engineering. Presentation of the course starts by introducing the chemical reaction engineering algorithm and then utilises it to solve problems in steady state isothermal reactors. Elementary and non-elementary reactions are discussed. Catalytic reactions are also introduced. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem.)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 5**<br>**In class tests 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem.)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 22** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |

| | | | | |
|---|---|---|---|---|
| **Preparation for tests** 15<br>**Homework's** 10 | | | | |
| **Total SWL (h/sem.)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 15% (15) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 40 | 25% (25) | 1,2, 3,4,5, 6, 7,8,9, 10, 11,12 | LO # 1, 2, 3, 4, 5 and 6 |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 9 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Basics of Surveying: Definitions, Types and classes of Surveys, |
| **Week 2** | Basic Principles, Checking Measurements, Units of Measurements, |
| **Week 3** | Location Methods, Errors, Accuracy and precision, Stationing, Field Notes. |
| **Week 4** | Tapes measurements: Methods of Linear Measurement, |
| **Week 5** | Types of Measurements, Taping Methods |
| **Week 6** | Tape Measurements Corrections. |
| **Week 7** | Obstacles with solved examples. |
| **Week 8** | Levelling: Definitions, Theory of Differential Levelling و Curvature and Refraction, levelling procedure and Booking Methods |
| **Week 9** | Midterm exam. |
| **Week 10** | Types of Levels, Bench Mark Levelling, |
| **Week 11** | Profile and Cross-Section Levelling, |
| **Week 12** | Level Loop Adjustment, Reciprocal leveling |
| **Week 13** | Two-peg test, Accuracy in Levelling, |
| **Week 14** | Contouring Plans. |
| **Week 15** | Basic principles of precise and digital levels. |
| **Week 16** | **Final Exam** |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Experiment NO. 1: Instruments (equipment's) used in surveying |
| **Week 2** | Experiment NO.2:Measurements of horizontal distances, angles and Setting out right angles |
| **Week 3** | Experiment NO. 3: Engineering Plan at Scale 1/200 |
| **Week 4** | Experiment NO. 4: Setting out of a building plan by tapes only |
| **Week 5** | Experiment NO. 5: The Main Components of Automatic Level Instrument |
| **Week 6** | Experiment NO. 6: Longitudinal Section (Profile) |
| **Week 7** | Experiment NO. 7: Cross Section |
| **Week 8** | Experiment NO. 8: Reciprocal Leveling |
| **Week 9** | Experiment NO. 9: TWO-PEG TEST |
| **Week 10** | Experiment NO. 10: Closed circuit (loop) levelling |
| **Week 11** | Experiment NO. 11: Contour Plan |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | 1.Y. O. AHMED, " ENGINEERING SURVEYING ", DAR AL-HEKMA, University of Basrah, First Edition, 1990.<br><br>2. KAVANAGH, B., F., " Surveying: principles and applications ", 7th edition, Pearson, Prentice Hall, New Jersy, USA, 2006. | Yes |
| **Recommended Texts** | 1. MOFFITT, F. H. and BOUCHARD, H.," Surveying ", Harper and Row, Inc., New York, 1987.<br>2. BANNISTER, A., and RAYMOND, S., " Surveying", Pitman Publishing, London, 1987.<br><br>3. SHEPHERD, F., A., " Engineering Surveying: Problems and Solutions", Edward Arnold (Publishers) Ltd., 2nd edition,1983. | No |

| | | |
|---|---|---|
| | 4. NATHANSON, J. A., LANZAFAMA, M., T. , and KISSAM, P., " Surveying Fundamental and Practices ", 5th edition, Pearson, Prentice Hall, New Jersy , 2006. | |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | BUILDING CONSTRUCTION انشاء مباني | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVL - 204** | | | | |
| **ECTS Credits** | 4 | | | | |
| **SWL (hr/sem)** | 100 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | Three | |
| **Administering Department** | Civil Engineering | | **College** | Engineeeing | |
| **Module Leader** | Dr. Abdulrahman Eyada. Ibrahim | | **e-mail** | drabdulrahmanibraheem@tu.edu.iq | |
| **Module Leader's Acad. Title** | Instructor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | | **Semester** | |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | تهدف المادة الدراسية لاعطاء الطالب معلومات تفصيلية وتحليلية عن مواد الانشاء المدنية والتي تشمل كفة فقرات انشاء المباني حسب طرق تنفيذها وانواع التصاميم الانشائية والاطلاع على تطور انشاء المباني ثم معرفة كيفية تنفيذ وتصميم الاعمال المدنية الخاصة بالمنشآت البنائية المختلفة وطريقة فهم المستجدات التي تطرأ على مواد البناء وطريقة تنفيذها بأسلوب حضاري جديد يتلاءم ومواد البناء والتكنولوجيا العالمية الحديثة . | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. تعريف الطالب بانواع المباني وطرق تنفيذها والاساليب المتبعة في احالة الاعمال.<br>2. تعريف الطلبة باعمال الحفريات والاملائيات الترابية المتعلقة بالمباني وطرق تنفيذها والالات المستخدمة بالعمل.<br>3. تعريف الطالب باجزاء المنشأت ومراحل انشائها والمواد المستخدمة في انشائها.<br>4. لغرض تمكين الطالب من قراءة المخططات الهندسية.<br>5. تعريف الطالب بمواد البناء وكيفية انتقائها.<br>6. تعرف الطالب على خواص مواد البناء وطريقة فحصها.<br>7. تعريف الطالب بانواع الاعمال الانشائية وطرق التنفيذ. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | تتضمن المحتويات الارشادية مايلي:<br>• مقدمة عامة عن المباني ومراحل انشائها (4 ساعات)<br>• الاعمال الترابية (4 ساعات)<br>• أعمال الاسس (4 ساعات)<br>• اعمال الركائز (4 ساعات)<br>• اعمال الطابوق والكتل (16 ساعة)<br>• الارضيات والسقوف (8 ساعات)<br>• انهاء الجدران والسقوف (8 ساعات)<br>• مانع الرطوبة (4 ساعات)<br>• الابواب والشبابيك (4 ساعات) | | |
| **Course Description** | تهدف المادة الدراسية لاعطاء الطالب معلومات تفصيلية وتحليلية عن مواد الانشاء المدنية والتي تشمل كفة فقرات انشاء المباني حسب طرق تنفيذها وانواع التصاميم الانشائية والاطلاع على تطور انشاء المباني ثم معرفة كيفية تنفيذ وتصميم الاعمال المدنية الخاصة بالمنشآت البنائية المختلفة وطريقة فهم المستجدات التي تطرأ على مواد البناء وطريقة تنفيذها بأسلوب حضاري جديد يتلاءم ومواد البناء والتكنولوجيا العالمية الحديثة . | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |
| **Strategies** | تم تصميم استراتيجية التعلم والتدريس من أجل: تغطية المواد الأساسية بعناية في المحاضرات ، وإظهار المفاهيم بأمثلة مناسبة (وعملية حيثما أمكن ذلك) تتيح للطلاب وقتًا كافيًا لفهم وادراك التقنيات بالاطلاع على عدد كبير من النماذج والامثلة المختارة بعناية . | | |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 56**<br>**In class tests 3**<br>**Seminars 4** | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 20**<br>**Prepartion for tests 10**<br>**Practical observations 7** | 37 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2.467 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 100 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3,4,5,6 and 7 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5,6 and7 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | **مقدمة عامة** عن المباني ومراحل انشائها |
| **Week 2** | **الاعمال الترابية** – تصريف المياه الجوفية |
| **Week 3** | **أعمال الاسس** – انواع الاسس، نزول الاسس، الاهتزازات |
| **Week 4** | **اعمال الركائز**- انواع الركائز، فحوصات الركائز |
| **Week 5** | **اعمال الطابوق والكتل:** انواع الطابوق |
| **Week 6** | **اعمال الطابوق والكتل:** الكتل البنائية، البناء بالطابوق |
| **Week 7** | Midterm exam |

| | |
|---|---|
| **Week 8** | **اعمال الطابوق والكتل:** متطلبات التصميم |
| **Week 9** | **اعمال الطابوق والكتل:** البناء بالكتل، المواد الرابطة |
| **Week 10** | **الارضيات والسقوف**: الاحمال، انواع الارضيات |
| **Week 11** | **الارضيات والسقوف:** السقوف، ختم الارضيات والسقوف |
| **Week 12** | **انهاء الجدران والسقوف**: انهاء الجدران من الداخل، التطبيق بالالواح |
| **Week 13** | **انهاء الجدران والسقوف:** انهاء الجدران والسقوف من الخارج، انواع الاصباغ |
| **Week 14** | **مانع الرطوبة** : تعريفه ، استخداماته ، منافذ تسرب الرطوبة |
| **Week 15** | **الابواب والشبابيك** : تكديس الخشب ، انواع الابواب ، طرق تصنيع الابواب |
| **Week 16** | **Final Exam** |

## Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

| | **لايوجد مختبر** |
|---|---|
| **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** | **انشاء مباني : زهير ساكو و آرتين ليفون. جامعة بغداد – كلية الهندسة، قسم الهندسة المدنية. 2007** | Yes |
| **Recommended Texts** | 6. Emmitt, S. (2018). *Barry's advanced construction of buildings*. John Wiley & Sons.<br>7. Grosse, C. U. (Ed.). (2007). *Advances in construction materials 2007*. Springer Science & Business Media. | No |

| | | |
|---|---|---|
| | 8. Sahu, G. C., & Jena, J. (2015). *Building materials and Construction*. McGraw-Hill Education.<br>9. Nawy, E. G. (2008). *Concrete construction engineering handbook*. CRC press.<br>**10.** Fleming, E. (2009). *Construction Technology: an* illustrated *introduction*. John Wiley & Sons. | |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| | | | | | |
|---|---|---|---|---|---|
| | **Module Information**<br>معلومات المادة الدراسية | | | | |
| **Module Title** | COMPUTER II | | | **Module Delivery** | |
| **Module Type** | SUPLEMENT | | | ☐ Theory<br>☐ Lecture<br>☐ Lab<br>☐ Tutorial<br>☐ Practical<br>☐ Seminar | |
| **Module Code** | ENG-105 | | | | |
| **ECTS Credits** | 4 | | | | |
| **SWL (hr/sem)** | 100 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | 2 | |
| **Administering Department** | Civil Engineering | **College** | Engineering | | |
| **Module Leader** | Mohammed Khairullah Ahmed | **e-mail** | Mohammed.k.kayrullah@tu.edu.iq | | |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | Ph. D. | | |
| **Module Tutor** | Mohammed Mustafa Qasim | **e-mail** | Mohammed.m.qasim@tu.edu.iq | | |
| **Peer Reviewer Name** | Ass. Prof. Dr. Jalal N. Abdulbaqi | **e-mail** | Jalal.abdulbaqi@tu.edu.iq | | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | ENG-104 | **Semester** | 1 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | • To introduce students to the Python programming language and its syntax.<br>• To provide students with an understanding of the conditional and iteration statements used in programming.<br>• To enable students to design and implement functions to solve programming problems.<br>• To introduce students to the basic data structures of Python, including lists, tuples, dictionaries, and sets.<br>• To provide students with an understanding of string manipulation and regular expressions in Python. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Demonstrate an understanding of the Python programming language and its syntax.<br>2. Design and implement conditional and iteration statements in Python.<br>3. Design and implement functions to solve programming problems.<br>4. Demonstrate an understanding of the basic data structures of Python, including lists, tuples, dictionaries, and sets.<br>5. Demonstrate an understanding of string manipulation and regular expressions in Python.<br>6. Demonstrate an understanding of how to deal with files and exceptions. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | • Introduction to Python: syntax, data types, and control structures.<br>• Condition Statements: if, elif, and else statements.<br>• Iteration Statements: for and while loops.<br>• Functions: defining functions and parameter passing.<br>• Lists: creation, indexing, and slicing.<br>• Tuples: creation and unpacking.<br>• Dictionaries: creation and manipulation. | | |

| | |
|---|---|
| | • Sets: creation and manipulation.<br>• Strings: creation, manipulation, and regular expressions.<br>• Files: creation, saving and manipulation. |
| **Course Description** | This module introduces students to the Python programming language, its syntax, and its use in solving programming problems. The module covers the basic programming concepts of condition statements and iteration statements, along with the design and implementation of functions. The module also covers the basic data structures of Python, including lists, tuples, dictionaries, and sets. The module concludes with an introduction to string manipulation and regular expressions in Python. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The module will be delivered through a combination of lectures, assignments, quizzes, and lab sessions. Lectures will provide an overview of the topics, while assignments and quizzes will enable students to apply their knowledge and check their understanding. Lab sessions will provide hands-on experience with Python programming tools and techniques. The module will also include self-directed learning, where students are expected to read and research on their own to enhance their understanding of the subject matter. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**Class lectures: 23**<br>**Class test:2**<br>Seminars: 5<br>Practical: 30 | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 25**<br>**Prepartion for tests 10**<br>**Homeworks 30** | 37 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.3 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 100 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 2, 6, 14 | LO # 1, 3, 6 |
| | **Assignments** | 2 | 15% (15) | 3, 9, 11, 13 | LO # 2, 4, 5 |
| | **Lab** | 14 | 15% (15) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 1.5 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Introduction to Python: syntax, data types, and control structures |
| **Week 2** | Condition Statements: if, elif, and else statements. |
| **Week 3** | Iteration Statement: while loop |
| **Week 4** | Iteration Statement: for loop |
| **Week 5** | Functions: defining functions and parameter passing. |
| **Week 6** | Functions: Libraries and their functions |
| **Week 7** | Midterm |
| **Week 8** | Lists: creation, indexing, and slicing. |
| **Week 9** | Tuples: creation and unpacking. |
| **Week 10** | Dictionaries: creation and manipulation. |
| **Week 11** | Sets: creation and manipulation. |
| **Week 12** | Strings: creation, manipulation, and regular expressions. |
| **Week 13** | Files |
| **Week 14** | Exceptions |
| **Week 15** | Array-Oriented Programming with “numpy” |
| **Week 16** | Final Exam |

## Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

| | **Material Covered** |
|---|---|
| **Week 1** | Introduction to Python IDLE + mathematical manipulation |

| | |
|---|---|
| **Week 2** | Condition Statements |
| **Week 3** | Iteration Statements |
| **Week 4** | Functions |
| **Week 5** | List and Tuples |
| **Week 6** | Dictionaries and sets |
| **Week 7** | Strings and files |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | ***Intro to Python® for Computer Science and Data Science: Learning to Program with AI, Big Data and the Cloud by Paul & Harvey Deitel,* 1st Ed, Pearson Education, 2020** | No |
| **Recommended Texts** | **جِرار سوينُ، ترجمة: هشام رزق الله وآخرون، تعلم البرمجة مع بايثون 3، 2013**<br>**ألن داوني، ترجمة طارق زيد الكيالين، فكر بايثون: كيف تفكر كعالم حاسوب، منشورات جرين يت، 2012** | No |
| **Websites** | Python.org, learnpython.org, realpython.com | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
University of Tikrit
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | ENGLISH II | **Module Delivery** | |
| **Module Type** | SUPLEMENT | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Project**<br>**Seminar** | |
| **Module Code** | ENG-211 | | |
| **ECTS Credits** | 2 | | |
| **SWL (hr/sem)** | 50 | | |
| **Module Level** | 2 | **Semester (s) offered** | 2 |
| **Min number of students** | 15 | **Max number of students** | 100 |
| **Administering Department** | Chemical Engineering | **College** | Engineering |
| **Module Leader** | Ahmed Subhi Abdulla | **e-mail** | Ahmedsubhi1981@tu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | MSc |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | 01/06/2023 | **Version Number** | 1.0 |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | 1,2 |
| **Co-requisites module** | None | **Semester** | - |

## Module Aims, Learning Outcomes, Indicative Contents and Brief Description

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر

| | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | Develop the ability/skill needed to earn a job and develop his/her critical thinking skills to work, develop and communicate. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | Upon successful completion of the course, the students should be able to:<br>• learn how to make job applications and which recruitment procedures they must go through in the process<br>• acquire the special terminology used in job applications and recruitment procedures<br>• learn how to design a letter of application and CV<br>• have a clear idea about how to prepare for an interview and how to behave during an interview<br>• become familiar with the methods of writing a "letter of intent" ("statement of purpose") when applying for academic studies<br>• have an idea about the "letter of recommendation" that they will need when applying for an academic program after completing their university education<br>• gain an understanding of presentation techniques<br>• become familiar with the basic principles of "Paragraph Writing"<br>• learn and practise the key concepts of paragraph writing such as Topic Sentence, Supporting Sentences, Concluding Sentence, Unity and Coherence<br>• gain insight into the essential principles of "Essay Writing" |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Job applications and which recruitment procedures (6 hrs)<br>• Learn how to design a letter of application and CV and how to prepare for an interview and how to behave during an interview (8 hr)<br>• Presentation techniques (6 hrs)<br>• Paragraph Writing (10 hrs) |
| **Course Description** | You will also develop the business communication skills required for anyone in the global economy. This includes topics like delivering presentations, writing emails, or speaking in meetings. This gives you the ability to communicate across departments with a strong ability in reading, writing, speaking, and listening. |

## Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 23**<br>**In class tests 2**<br>**Seminars 5** | 30 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 20**<br>**Preparation for tests 10**<br>**HomeWorks 5**<br>**Project 10** | 45 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.0 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 75 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | – Describing technical functions and applications<br>– Explaining how technology works |
| **Week 2** | |

| | |
|---|---|
| **Week 3** | – Emphasising technical advantages |
| **Week 4** | – Describing specific materials<br>– Discussing quality issues<br>– Describing component shapes and features |
| **Week 5** | |
| **Week 6** | |
| **Week 7** | Midterm exam |
| **Week 8** | – Explaining and assessing manufacturing techniques<br>– Working with drawings<br>– Describing design phases and procedures |
| **Week 9** | |
| **Week 10** | |
| **Week 11** | – Discussing repairs and maintenance<br>– Assessing feasibility<br>– Describing improvements and redesigns |
| **Week 12** | |
| **Week 13** | |
| **Week 14** | – Resolving design problems<br>– Describing types of technical problem<br>– Assessing and interpreting faults |
| **Week 15** | |
| **Week 16** | **Final Exam** |

## Learning and Teaching Resources

مصادر التعلم والتدريس

| | **Text** | **Available in the Library?** |
|---|---|---|
| **Required Texts** | Beer, D. & McMurrey, D. 2004, A Guide to Writing as an Engineer (2nd ed), New York: Wiley | No |
| **Recommended Texts** | Borowick, Jerome N., 2002, Technical Communication and its Applications (2nd ed), New Jersey: Prentice-Hall, Inc. | No |
| **Websites** | http://umich.edu/~elements/5e/lectures/index.html | |

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | HIGHWAY ENGINEERING, I | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVL-206** | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | 2 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Dr. Hanaa Kh. Alwan Al-Bayati | | **e-mail** | dr.hanaa.khaleel@tu.edu.iq | |
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Dr. Mohanad Natiq Alshandah<br>Shaalan Shaher Flayyih | | **e-mail** | dr.mohanad.alshandah@tu.edu.iq<br>Sh.sh.fn10@gmail.com | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | | **Semester** | |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | In this course, students learn some details of the principal and the objective of this course so to enable students to understand the difference between types of roads, functional classification of roads, Highway survey and location, and earthworks, another objective is to distil the principles of geometric design, both vertical and horizontal. Additionally, various laboratory tests on bitumen are conducted to check the quality and different properties of bitumen for pavement construction. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | The aim of this course is to enable the student to:<br>• Provide the students with a wide knowledge of highway engineering definition and objectives.<br>• list the different types of roads based on speed, accessibility, median and the characteristics of each type.<br>• list the main cross-section elements of the roads,<br>• Describe the principles of highway location (Route location) and list the steps of highway location,<br>• Describe the Highway earthworks and mass haul diagram calculation,<br>• Distil the principles of geometric design, both vertical and horizontal.<br>• Describe methods for determining suitable cross-section elements and foundation embankment works in detail. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Introduction, Functional Classification, Survey and Location of Highway (6 hrs)<br>• Earth Works And Mass Haul Diagram (6 hrs)<br>• Design Vehicles and Human Characteristics (3 hrs)<br>• Geometric design (vertical, horizontal, superelevation, Spiral Curve) (18 hrs)<br>• Stopping Sight Distance on Horizontal Curve, Foundation Embankment, and Software applications in highway design (12 hrs) | | |

| | |
|---|---|
| **Course Description** | **On successful completion of this module the learner will be able to:**<br>• a. Students can gain a complete understanding of highway engineering in this course.<br>• b. Students can learn about all aspects of road classification based on speed or median, level of service of it, and all the road elements. Also, learn how they can select the better rout between different alternatives.<br>• c. Students learn how to deal with un-leveling areas by using the "average end area method" of earthwork and drawing the mass haul diagram.<br>• d. Students can learn about all aspects of highway design, including alignment (Vertical and Horizontal).<br>• e. Students' highway design abilities, including superelevation, highway curve widening, and foundation embankment.<br>• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.<br>• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.<br>• Communicate effectively with a range of audiences.<br>• Recognize your ethical and professional obligations in engineering situations and make wise decisions that take into account how engineering solutions will affect the global, economic, environmental, and societal contexts.<br>• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.<br>• Use the right learning strategies to acquire and apply new knowledge as necessary.<br>• By the end of this semester, students will be able to perform various laboratory tests on bitumen, such as: highway laboratory safety, bitumen tests (penetration, softening point, flash and fire point, viscosity, ductility, specific gravity, aging…) |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques and demonstrate concepts with appropriate examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)** | 93 | **Structured SWL (h/w)** | 5.2 |

| | | | |
|---|---|---|---|
| الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 70**<br>**In class tests 5**<br>**Seminars 3** | | الحمل الدراسي المنتظم للطالب أسبوعيا | |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 22**<br>**Preparation for tests 15**<br>**HomeWorks 10** | 57 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 4, 6, 9, 11, 14 | All |
| | **Assignments** | 6 | 10% (10) | 2, 4, 6, 8, 10, 12 | All |
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | All |
| | **Labratory** | 3 | 15% (15) | continuous | |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | Introduction about Functional Classification |
| **Week 2** | Highway Survey and Location |
| **Week 3** | Earth Works And Mass Haul Diagram |
| **Week 4** | Earth Works And Mass Haul Diagram |
| **Week 5** | Design Vehicles and Human Characteristics |
| **Week 6** | Horizontal Alignment |
| **Week 7** | Super Elevation and Pavement Widening |
| **Week 8** | Mid Exam |
| **Week 9** | Vertical Alignment and Grades |

| | |
|---|---|
| **Week 10** | Vertical Alignment and Grades |
| **Week 11** | Symmetrical and Unsymmetrical Vertical Curves (Crest +An sag) |
| **Week 12** | Cross Section Elements |
| **Week 13** | Stopping Sight Distance on Horizontal Curve |
| **Week 14** | Foundation Embankment |
| Week 15 | Software applications in highway design |
| Week 16 | Final Exam |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Introduction |
| **Week 2** | Lab 2: How to write report |
| **Week 3** | Lab 3: Lab Safety |
| **Week 4** | Lab 4: Penetration test |
| **Week 5** | Lab 5: Softening point test |
| **Week 6** | Lab 6: Flash point test |
| **Week 7** | Lab 7: Fire point test |
| **Week 8** | Lab 8: Ductility test |
| **Week 9** | Lab 9: Thin-Film Oven Test |
| **Week 10** | Lab 10: Dynamic viscosity test |
| **Week 11** | Lab 11: Viscosity test |
| **Week 12** | Lab 12: specific gravity |
| **Week 13** | **Final Exam** |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Traffic and Highway Engineering" by Nicholas J. Garber, and Lester A. Hole. 4th ed. University of Virginia, 2009, ISBN-13: 978-0-495-08250-7, ISBN -13:978-156032- | Yes |

| | | |
|---|---|---|
| | 714-1 ISBN-10: 0-495-08250-3. | |
| **Recommended Texts** | Pavement Analysis and Design, By Yang H. Huang<br>Craig's soil mechanics, J.A. Knappet and R.F. Craig, 2012.<br>• A.F. Nikolaides. (2015) "Bituminous Mixtures & Pavements VI", Aristotle University of Thessaloniki (AUTh), Greece. CRC Press, Taylor and Francis group, London, UK.<br>• M. Y. Shahin (2005) " PAVEMENT MANAGEMENT FOR AIRPORTS, ROADS, AND PARKING LOTS", Springer Science Business Media, LLC, First edition ©1994 by Chapman and Hall; seventh printing 2002 by Kluwer Academic Publishers. | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | STRENGTH OF MATERIALS II | **Module Delivery** | |
| **Module Type** | CORE | **Theory**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | CIVL-207 | | |
| **ECTS Credits** | 6 | | |
| **SWL (hr/sem)** | 150 | | |
| **Module Level** | 2 | **Semester (s) offered** | 1, 2 |
| **Administering Department** | Civi Engineering | **College** | Engineering |
| **Module Leader** | dr. Saad M. Raoof | **e-mail** | dr.saadraouf@tu.edu.iq |
| **Module Leader's Acad. Title** | Assistant Professor | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | None | **e-mail** | |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | | **Version Number** | 1.0 |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | CIVL-202 | **Semester** | 1 |

| Co-requisites module | None | Semester | - |
|---|---|---|---|

## Module Aims, Learning Outcomes, Indicative Contents and Brief Description

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر

| | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | The main aim of studying strength of materials is to understand how different materials behave under various types of applied forces or loads. This knowledge is essential for designing and analyzing structures and machines that can withstand the stresses and strains that they are subjected to in real-world applications. By understanding the properties of materials and how they respond to different types of forces, engineers can design structures and machines that are both safe and efficient.<br><br>Students may also learn about different types of materials, such as metals, composites, and how they behave under different conditions. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | 1. Understanding of material properties: Students will gain an understanding of the mechanical properties of materials, including elasticity, plasticity, and fracture mechanics. They will also learn how to measure and analyze these properties.<br><br>2. Analysis of stress and strain: Students will learn how to analyze and calculate the stresses and strains that occur in materials under different types of loads. They will also learn how to design structures that can withstand these loads.<br><br>3. Understanding of beam theory: Students will learn about the behavior of beams under different types of loads, including bending and shear. They will also learn how to calculate the stresses and deflections in beams.<br><br>4. Torsion analysis: Students will learn about the behavior of materials under torsion, including the stresses and strains that occur in cylindrical and non-cylindrical shapes.<br><br>Overall, the main learning outcome of a strength of materials module is to provide students with a solid understanding of the mechanical behavior of materials and how to design and analyze structures that can withstand different types of loads. This knowledge is essential for engineers in many fields and can be applied to a wide range of real-world applications. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Beams deflection (20 hrs)<br>• Combined stresses (10 hrs)<br>• Mohr's circle (4 hrs) |

| | |
|---|---|
| | • Design of Columns (12 hrs)<br>• Riveted and welded connections (4 hrs) |
| **Course Description** | . Students will gain an understanding of the mechanical properties of materials, including elasticity, plasticity, and fracture mechanics. They will also learn how to measure and analyze these properties. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The effective teaching of strengths of materials involves a combination of many strategies. By using multiple teaching methods, providing opportunities for practice and feedback, encouraging interaction and critical thinking, and using real-world examples and technology, instructors can create a supportive and engaging learning environment that helps students to succeed. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 30** | 30 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 10**<br>**Preparation for tests10**<br>**Reports 10** | 30 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.0 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 60 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 1.5 | 2% (2) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 2 | 3% (3) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 1.5 | 30% (30) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Double integration method |
| **Week 2** | Double integration method |
| **Week 3** | Theorems of area-moment method |
| **Week 4** | Moment diagrams by parts |
| **Week 5** | Deflections in simply supported beams |
| **Week 6** | Midspan deflections |
| **Week 7** | **Midterm Exam** |
| **Week 8** | Combined axial and flexural loads |
| **Week 9** | Kern of a section; loads applied off axes of symmetry |
| **Week 10** | Stress at a point |
| **Week 11** | Mohr's circle |
| **Week 12** | Column; critical load; long columns by Euler's Formula |
| **Week 13** | Design of Columns for Concentric Loading |
| **Week 14** | Design of Columns for Eccentric Loading |
| **Week 15** | Riveted and welded connections; Strength of a simple Lap joint |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Singer "strength of materials" 3rd edition,1980 and 4th edition.** | Yes |
| **Recommended Texts** | **R.C.Hibbeler " Mechanics of Materials" 8th edition,2011.**<br>**R.J.Hearn "Mechanics of Materials " 3rd edition,1997**<br><br>**Popov " Engineering Mechanics of Solids",1990.** | No |
| **Websites** | | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | ENGINEERING SURVEYING II | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical** | |
| **Module Code** | CIVL-208 | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr./sem.)** | 150 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | 4 | |
| **Administering Department** | CIVIL Engineering | | **College** | Engineering | |
| **Module Leader** | Dr. Mohammed A. Abid | | **e-mail** | Moh1963@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | none | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation with Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **CIVL-203** | **Semester** | 3 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | students will be able to:<br>Know basic principles of geodetic surveying and land information system. Accurately measure distances and angles using high precision and up-to-date surveying equipment at the end of this course. The subject is divided to two parts:<br>1- the theory and practical field experiments. The theoretical part gives the student the basic theoretical principles of the engineering surveying and its applications in the civil engineering projects (Buildings constructions and design, highways, roads, railways, irrigation canals, water and sewage pipe lines, environmental projects, underground, bridges). It consists of the engineering surveying for civil engineering projects before their design i.e. the production of the engineering plans, contouring, profile and cross-section using the traditional and electronic field survey equipment. Moreover, the computations of the earthworks volumes and areas are also included. The setting out of the civil engineering projects from the design plans onto the desired ground construction area with correct positions and levels, using the traditional and electronic survey instruments.<br>2- The practical part consists of 24 field survey experiments 12 for each course by using the mechanical, optical and electronic survey equipment. Also, the use of computer hardware and soft wares in engineering surveying. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1.To learn to work as team, ethics and prepare technical reports of surveying.<br>2. To relate theoretical knowledge of surveying to resolve real field problems.<br>3. To establish horizontal control and vertical control by traversing and triangulation.<br>4. To prepare topographical map and contour map on an area.<br>5. Gain the ability to use modern survey equipment to measure angles and distances.<br>6. Gain a basic understanding of the principles and operation of the global positioning system. | | |

| | |
|---|---|
| | 7.Gain the ability to measure differences in elevation, draw and utilize contour plots.<br><br>8. Appreciate the need for accurate and thorough note taking in field work to serve as a legal record.<br><br>9. a large practical land survey, setting out of construction works, and report preparation.<br><br>10. After completion of this course students are expected to know how to use surveying devices, tape and how to find the height and distance of each point. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br><br>• Undergraduate Review (4 hrs.)<br>• Fundamentals of surveying engineering (8 hrs.)<br>• Traverse computation (10 hrs.)<br>• Area and volume estimate (8 hrs.)<br>• Curve Theory and Setting out methods (10 hrs.)<br>• Coordinate transformation, intersection and resection methods. (8 hrs.)<br>Practical surveying (30 hrs.) |
| **Course Description** | This course aims to establish fundamental knowledge of studying surveying instruments and their use in the measurement of angles, distances and elevations. Also includes mathematics, computational methods, adjustments and measurement analysis used in plane surveying |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem.)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** **78**<br>**In class tests** **7** | 85 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 6.7 |

| | | | |
|---|---|---|---|
| **Unstructured SWL (h/sem.)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 30**<br>**Preparation for tests 24**<br>**Homework's 10** | 64 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.3 |
| **Total SWL (h/sem.)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr.) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 15% (15) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments+ Practical** | 40 | 25% (25) | 1,2,3, 4, 5,6, 7.8, 9,10, 11,12 | LO # 1, 2, 3, 4, 5 and 6 |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 9 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Traverse Surveys: Types of Traverses, |
| **Week 2** | Measurements and Adjustments of Traverses (Bowditch and Transit Method), |
| **Week 3** | Accuracy of Traverses, Applications. Missing measurements. |
| **Week 4** | Areas: Graphical Methods, Mechanical Methods (Mechanical and digital Planimeter), |
| **Week 5** | Mathematical Methods (Mean Ordinates, Trapezoidal and Simpson's Rules), Double Meridian Distance Method and Coordinates Method. |
| **Week 6** | Applications of area calculations for regular and irregular shapes. |
| **Week 7** | Volumes: Cross- Sections, Spot Heights and Contours Lines methods, |
| **Week 8** | (Mean Areas, Trapezoidal (End Areas) and Simpson's Methods). Prismoidal Correction and Curvature correction based on Pappas's Theorem. |
| **Week 9** | Midterm exam. |
| **Week 10** | mass haul diagram. Theodolite and tape, two theodolites and Electronic Total Station. Problems With sighting distance at field. |
| **Week 11** | Coordinate transformation, intersection and resection methods. |
| **Week 12** | Level Loop Adjustment, Reciprocal leveling |

| | |
|---|---|
| **Week 13** | Curve Design and Setting Out: Types of Horizontal Curves, Simple Circular Curves, |
| **Week 14** | Reverse Curves, Compound Curves and (Basic Curve Geometry, Computation of Curve Components, Field Setting Out), Transition Curves and Vertical Curves (Sag and Crest). Theory and Setting out methods: tape method, |
| **Week 15** | 11. Electronic Surveying (Digital Level, Electronic Theodolite, EDM Instruments, GPS Equipment and Electronic Total Station) |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Experiment NO. 1: Theodolite. |
| **Week 2** | Experiment NO. 2: Setting out by Theodolite. |
| **Week 3** | Experiment NO. 3: Horizontal angle measurement test. |
| **Week 4** | Experiment NO. 4: Vertical angle measurement test. |
| **Week 5** | Experiment NO. 5: Setting out of a building plan by theodolite. |
| **Week 6+7** | Experiment NO. 6: The production of an engineering plan at scale 1/500. |
| **Week 8** | Experiment NO. 7: Intersection and Resection (free – station) methods. |
| **Week 9** | Experiment NO. 8: Setting out a horizontal circular curve. |
| **Week 10+11** | Experiment NO. 9: Practical application of total station. |
| **Week 12** | Experiment NO. 10: Area Measurements by Planimeter. |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | 1.Y. O. AHMED, " ENGINEERING SURVEYING ", DAR AL-HEKMA, University of Basrah, First Edition, 1990.<br><br>2. KAVANAGH, B., F., "Surveying: principles and applications ", 7th edition, Pearson, Prentice Hall, New Jersy, USA, 2006. | Yes |
| **Recommended Texts** | 1. MOFFITT, F. H. and BOUCHARD, H., "Surveying ", Harper and Row, Inc., New York, 1987.<br>2. BANNISTER, A., and RAYMOND, S., " Surveying ", | No |

| | | |
|---|---|---|
| | Pitman Publishing, London, 1987.<br>3. SHEPHERD, F., A., "Engineering Surveying: problems and Solutions", Edward Arnold (Publishers) Ltd., 2nd edition, 1983.<br>4. NATHANSON, J. A., LANZAFAMA, M., T. , and KISSAM, P., " Surveying Fundamental and Practices ", 5th edition, Pearson, Prentice Hall, New Jersy ,2006. | |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | CONSTRUCTION DRAWING رسم انشائي | **Module Delivery** | |
| **Module Type** | CORE | محاضرات<br>مرسم<br>رسم لوحات<br>واجبات بيتية رسم | |
| **Module Code** | **CIVL -209** | | |
| **ECTS Credits** | 4 | | |
| **SWL (hr/sem)** | 100 | | |

| | | | |
|---|---|---|---|
| **Module Level** | 2 | **Semester (s) offered** | Four |
| **Administering Department** | Civil Engineering | **College** | Engineeeing |
| **Module Leader** | Dr. Abdulrahman Eyada. Ibrahim | **e-mail** | drabdulrahmanibraheem@tu.edu.iq |
| **Module Leader's Acad. Title** | Instructor | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | | **Version Number** | 1.0 |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | Engineering drawing II | **Semester** | Civil -104 |
| **Co-requisites module** | | **Semester** | |

## Module Aims, Learning Outcomes, Indicative Contents and Brief Description
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر

| | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | تهدف المادة الدراسية لاعطاء الطالب معلومات تفصيلية عن الرسوم والمخططات والخرائط الانشائية والمفاهيم الاساسية المتعلقة بها. وتدريب الطلبة على كيفية رسمها وقرائتها وفهمها. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 13.تعريف الطالب على لغة الرسم الانشائي واهم الرموز والمصطلحات المتداولة عالميا.<br>14.ايصال المعلومة للطالب كي يتعرف على كيفية تنفيذ المخططات الهندسية المدنية والمعمارية.<br>15.لغرض تمكين الطالب من قراءة المخططات الهندسية.<br>16.تعريف الطالب باجزاء المنشآت الهندسية وكيفية رسمها. |
| **Indicative Contents**<br>المحتويات الإرشادية | تتضمن المحتويات الارشادية مايلي:<br>• مقدمة عن الرسم الانشائي (4 ساعات)<br>• تفاصيل حديد التسليح (4 ساعات)<br>• الاسس والركائز (12 ساعة)<br>• الاعمدة الخرسانية (4 ساعات)<br>• الجدران الخرسانية (4 ساعات)<br>• السقوف الخرسانية المسلحة (8 ساعات)<br>• الجسور الخرسانية المسلحة (4 ساعات)<br>• الاعتاب والروافد الخرسانية المسلحة (128 ساعة)<br>• السلالم الخرسانية المسلحة (8 ساعات) |
| **Course Description** | تهدف المادة الدراسية لاعطاء الطالب معلومات تفصيلية عن الرسوم والمخططات والخرائط الانشائية والمفاهيم الاساسية المتعلقة بها. وتدريب الطلبة على كيفية رسمها وقرائتها وفهمها. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | تم تصميم استراتيجية التعلم والتدريس من أجل: تغطية المواد الأساسية بعناية في المحاضرات ، وتطبيق المفاهيم من خلال قيام الطلبة برسم لوحات حضوريا في المرسم بما يتيح للطلاب وقتًا كافيًا لفهم وادراك المادة بالاطلاع والتطبيق لعدد كبير من النماذج والامثلة المختارة بعناية، وتكليف الطلبة بواجبات بيتية للتمرين الاضافي على رسم التفاصيل الانشائية وفهمها. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** **13** | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.2 |

| | | | | |
|---|---|---|---|---|
| **Lab** 45<br>**In class tests** 3<br>**Seminars** 2 | | | | |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing** 20<br>**Prepartion for tests** 10<br>**Homeworks** 7 | 37 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2.467 | |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 100 | | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | مقدمة عن الرسم الانشائي واهم الرموز والمصطلحات |
| **Week 2** | تفاصيل حديد التسليح |
| **Week 3** | الاساس الجداري والاساس المنفرد و الاساس المتصل |
| **Week 4** | الاساس المستمر والاساس الرمثي (الحصيري) |
| **Week 5** | اسس الركائز |
| **Week 6** | الاعمدة الخرسانية المسلحة |
| **Week 7** | **Seminar** |
| **Week 8** | الجدران الخرسانية المسلحة |
| **Week 9** | السقوف الخرسانية المسلحة |
| **Week 10** | الجسور الخرسانية المسلحة |
| **Week 11** | الاعتاب والروافد الخرسانية المسلحة : الاعتاب البسيطة الاسناد |

| | |
|---|---|
| **Week 12** | الاعتاب والروافد الخرسانية المسلحة : الاعتاب المستمرة |
| **Week 13** | الاعتاب والروافد الخرسانية المسلحة : الاعتاب المستمرة |
| **Week 14** | السلالم الخرسانية المسلحة |
| **Week 15** | **Seminar** |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | يتم تغطية المنهج بالمرسم |
| **Week 1** | الرموز والمصطلحات الانشائية ومخطط افقي لبناية |
| **Week 2** | تفاصيل حديد التسليح |
| **Week 3** | الاساس الجداري والاساس المنفرد و الاساس المتصل |
| **Week 4** | الاساس المستمر والاساس الرمثي (الحصيري) |
| **Week 5** | اسس الركائز |
| **Week 6** | الاعمدة الخرسانية المسلحة |
| **Week 7** | Midterm exam |
| **Week 8** | الجدران الخرسانية المسلحة |
| **Week 9** | السقوف الخرسانية المسلحة |
| **Week 10** | الجسور الخرسانية المسلحة |
| **Week 11** | الاعتاب والروافد الخرسانية المسلحة : الاعتاب البسيطة الاسناد |
| **Week 12** | الاعتاب والروافد الخرسانية المسلحة : الاعتاب المستمرة |
| **Week 13** | الاعتاب والروافد الخرسانية المسلحة : الاعتاب المستمرة |
| **Week 14** | السلالم الخرسانية المسلحة |
| **Week 15** | السلالم الخرسانية المسلحة |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **الرسم الانشائي والمدني : طلال عبدالرحيم جرجيس و محمد سليمان حسن. جامعة الموصل- كلية الهندسة. 1988.** | Yes |

| | | |
|---|---|---|
| **Recommended Texts** | 11. Allen, E., & Rand, P. (2016). *Architectural detailing: function, constructibility, aesthetics*. John Wiley & Sons.<br>12. Kubba, S. (2008). *Blueprint Reading: Construction Drawings for the Build*<br>13. Dodsworth, S., & Anderson, S. (2015). *The fundamentals of interior design*. Bloomsbury Publishing.<br>**14.** Huth, M. (2013). *Understanding construction drawings*. Cengage Learning. | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
Tikrit University
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | FLUID MECHANICS | | | **Module Delivery** | |
| **Module Type** | BASIC | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Experimental**<br>**Reports** | |
| **Module Code** | **CIVL -210** | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 2 | | **Semester (s) offered** | 4 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Dr. Asmaa Abdul Jabbar Jamel | | **e-mail** | ms.asmaajameel@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assist Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Asst. Prof . Ruqiya Abed Hussain<br>Asst.Lecturer: Omar Taher Nafee<br>Asst.Lecturer: Sinan Noori Faihan | | **e-mail** | ms.ruqiyaabed@tu.edu.iq<br>mr.omartaher@tu.edu.iq<br>Sinananajjar@tu.edu.iq | |
| **Peer Reviewer Name** | Lecturer: Mohammed Faiq Yass | | **e-mail** | mohamed_faiq@tu.edu.iq | |
| **Review Committee Approval** | 1/6/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | | **Semester** | |
| **Co-requisites module** | None | **Semester** | |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | A proper understanding of fluid mechanics is extremely important in many areas of civil engineering. This course has been designed to provide basic knowledge of fluid mechanics to the students of civil engineering so that it would be helpful them to understand the basic phenomena of this science. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • To take up important concepts of fluid flows to the civil engineers managing and designing systems of various fluid flows.<br>• To develop a student's skills in analyzing fluid flows through the proper use of modeling and the application of the basic fluid-flow principles.<br>• Be able to demonstrate knowledge and understanding of Bernoulli's equation as applied to internal and external flow problems.<br>• Be able to demonstrate knowledge and understanding of momentum equation as applied to internal and external flow problems.<br>• Be able to demonstrate knowledge and understanding of using dimensional analysis to undertake scale-model testing.<br>• in carrying out laboratory experiments, using test and measurement equipment, and in collecting data.<br>• Analysis of flow in a single pipe and in pipes connected in series and in parallel, Pumps and Turbines, and Flow through branched pipes.<br>• Learn basic elements of open channel sections and classify the flow in an open channel. Analysis and computation of critical and uniform flow in open channels. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Introduction to Fluids Mechanics and Fluid Properties (8 hrs)<br>• Static Fluid (24 hrs)<br>• Dynamic Fluid (22 hrs)<br>• Dimensional Analysis (6 hrs) | | |
| **Course Description** | This course discusses basic concepts of fluid mechanics, among others fluid types and classifications, the scope of fluid mechanics, fluid statics, Dynamic fluid and the analysis of dimensions, s, and study model. With the learning in the classroom and practicum, students get the opportunity to apply the theory obtained directly in the laboratory.<br>With this course, students are expected to be able to understand the basic concepts of fluid mechanics and be able to analyze and apply the basic | | |

| | |
|---|---|
| | equations of fluid mechanics, which will then be used as a basis for studying the Basic of Hydraulic structures. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** are designed to provide students with a basic theoretical and practical understanding of fluid mechanics and pipe flows. demonstrate concepts with appropriate (and where possible practical) examples the tutorials are question and answer sessions allowing students time to reflect on and apply the lecture material and develop problem solving skills. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 60**<br>**In laboratory 30**<br>**In class tests 5** | 95 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 6.3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 20**<br>**Preparation for tests 20**<br>**Reports 15** | 55 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.7 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 15% (15) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Reports** | 4 | 15% (15) | continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Basic Concept and Definition of Fluid. Application in Civil Engineering. Distinction Between Solids, Liquids & Gases, Fluid Properties. |
| **Week 2** | Newton Law of Viscosity; Vapor Pressure, Boiling Point, Cavitation; Surface Tension, Capillarity, Bulk Modulus of Elasticity, Compressibility. |
| **Week 3** | Fluid Statics – Fundamental Equation, Units and Scales of Pressure. |
| **Week 4** | Pressure Measurement, Mechanical Pressure Gage. |
| **Week 5** | Hydrostatic Forces on Submerged Plane Surfaces. |
| **Week 6** | Hydrostatic Forces on Submerged Curved Surfaces. |
| **Week 7** | Midterm Exam. |
| **Week 8** | Accelerated Fluid Masses. |
| **Week 9** | Fluid Dynamics: Definitions of Flow Types, Flow Patterns. |
| **Week 10** | Continuity Equation. |
| **Week 11** | Euler's And Bernoulli's Equations. |
| **Week 12** | Applications on Bernoulli's Equation. |
| **Week 13** | The Momentum Equation, Application of The Momentum Equation. |
| **Week 14** | Application of The Momentum Equation Cont'd, Introduction to Dimensional Analysis. |
| **Week 15** | Dimensional Analysis Solved Example. |
| **Week 16** | **Final Exam** |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Introduction to Fluid Lab and Its Application in Civil Engineering. |
| **Week 2** | Lab 2: Report Requirements in Fluid Mechanic Lab. |
| **Week 3** | Lab 3: Fluid Properties. |
| **Week 4** | Lab 4: Hydraulic Bench. |
| **Week 5** | Lab 5: Hydrostatics of Pressure Center. |
| **Week 6** | Lab 6: Validation of Bernoulli's Theorem. |
| **Week 7** | Lab 7: **Midterm Exam.** |
| **Week 8** | Lab 8: Venture Meter. |

| | |
|---|---|
| **Week 9** | Lab 9: Orifice and Jet Trajectory Test. |
| **Week 10** | Lab 10: Impact of Jets. |
| **Week 11** | Lab 11: Fluid Friction in Pipes. |
| **Week 12** | Lab 12: Reynolds Number Experiment. |
| **Week 13** | Lab 13: Water Distribution Network Analysis (Computer lab). |
| **Week 14** | Lab 14: Water Distribution Network Analysis (Computer lab) Cont'd. |
| **Week 15** | Lab 15: Flow Over Ogee Spillway. |
| **Week 16** | **Final Exam.** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **Frank M. White, "Fluid Mechanics", Seventh edition, McGraw-Hill, 2009.** | No |
| **Recommended Texts** | **Robert W. Fox, Alan T. McDonald, and P. J. Pritchard, "Introduction to Fluid Mechanics", Seventh Edition, John Wiley & Sons Inc., New York, 2010.** | No |
| **Websites** | | |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | STATISTICS AND PROBABILITY | | | **Module Delivery** | |
| **Module Type** | BASIC | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | MATH-302 | | | | |
| **ECTS Credits** | 3 | | | | |
| **SWL (hr/sem)** | 75 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 5 | |
| **Min number of students** | 25 | | **Max number of students** | 80 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Maysoon Abdullah Mansor | | **e-mail** | dr.maysoonabdullah@tu.edu.iq | |
| **Module Leader's Acad. Title** | **Assistant Prof.** | | **Module Leader's Qualification** | **Ph.D.** | |
| **Module Tutor** | Dalia Shaker Mahdi | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **None** | **Semester** | - |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | This module aims to provide chemical engineering students with a thorough understanding of a number of separation processes that are essential to the process industry, such as sedimentation, filtration, Screening, Fluidization, Membrane separation and Centrifugation processes. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | After completing this module successfully, the student will be able to:<br>• Gain the knowledge and abilities necessary to apply theory, experimentation, data analysis, and interpretation into unit operations.<br>• Students are learned the basic principles in separation engineering such as (Filtration, fluidization, membranes separation, sieving, sedimentation etc).<br>• Develop the ability to understand Sedimentation processes including gravity settling, sink-and-float methods, and differential settling methods, uses of clarifiers and thickeners, flocculation, and batch sedimentation;<br>• Understand how to evaluate the screen effectiveness as a measure of a screen's success in separating solid particles. Know the properties of masses of particulate solids.<br>• Explain the principles of fluidization technology, characteristics of fluidized systems; mass and heat transfer between fluids and particles; liquid-solids and gas-solids systems.<br>• Describe the filtration separation method. Mechanism that controls how fluids move through porous beds. The various forms of industrial filtration and the filter medium.<br>• Understand the centrifugal design and analysis.<br>• Describe and evaluate the fundamentals and uses of membrane treatment systems. | | |
| | Indicative content includes the following. | | |

| | |
|---|---|
| **Indicative Contents**<br>المحتويات الإرشادية | • **Statistics I: pure applied probability** (8 hrs)<br>• **Statistics II: applied probability** (7 hrs)<br>• **Probability** (10 hrs) |
| **Course Description** | Students are introduced to: Introduction to **statistics**; Frequency Tables; Measures of central tendency: Average, mode, and median; Measures of dispersion: Variance and standard deviation; Introduction to probabilities: Sample space, Events, axioms of probability; Conditional probabilities and Independence; Random variables |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | This module covers a variety of theoretical, conceptual and practical areas, which require a range of knowledge and skills at a more advanced level to be displayed and exercised. Delivery of its syllabus content therefore involves a diversity of teaching and assessment methods suitable to the learning outcomes of the module; these include formal lectures, structured tutorials (work closely integrated with the lecture material), laboratory exercises to develop practical skills and familiarization with equipment and experimental techniques. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 40**<br>**In class discussion 3**<br>**In class tests 2** | 45 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 15**<br>**Preparation for tests 10**<br>**Project 5** | 30 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2.0 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 75 | | |

## Module Evaluation
تقييم المادة الدراسية

| | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 3 | 10% (10) | 3, 5, 9, 12 | LO #1, 2, 3, 4,5 and 6 |
| | **Assignments** | 6 | 20% (20) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 2 | 5% (5) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 15% (15) | 7 | LO # 1-5 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| **Delivery Plan (Weekly Syllabus)**<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Introduction:<br>- Data collection<br>- Data collection |
| **Week 2** | Central measurements:<br>- arithmetic mean, geometric mean, Harmonic mean and median<br>- comparisons between central measurements. |
| **Week 3** | |
| **Week 4** | Variation measurements<br>- Range, Mean deviation, Variation Coefficient of variance, sequence and, measurements<br>comparisons between variation measurements |
| **Week 5** | |
| **Week 6** | Variation measurements<br>- Range, Mean deviation, Variation Coefficient of variance, sequence and, measurements, comparisons between variation measurements |
| **Week 7** | Midterm exam |
| **Week 8** | Sampling theory<br>- Random variables<br>- Sample size<br>- Random experiments |
| **Week 9** | Probability<br>- Principles of probability theory<br>- Probability laws and methods |
| **Week 10** | Probability Distributions<br>- Discrete probability distribution<br>- Continuous probability distribution |
| **Week 11** | Washing filter cakes, Compressible cakes, |
| **Week 12** | Hypothesis tests for means<br>- One population<br>- Two population or more<br>Hypothesis tests |
| **Week 13** | |

| | |
|---|---|
| | - For variation (one way)<br>- For variation (two way) |
| **Week 14** | Correlation and Regression<br>- Person coefficient<br>- Rank coefficient |
| **Week 15** | |
| **Week 16** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **Probability and Statistics for the engineering and the sciences, By Jay L. Devore. Cengage Learning, 2016** | No |
| **Recommended Texts** | **A Second Course in Probability 2nd Edition, Sheldon M. Ross, University of Southern California, Erol A. Peköz, Boston University, PUBLICATION PLANNED FOR: July 2023** | No |
| **Websites** | N/A | |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | THEORY OF STRUCTURES I | | | **Module Delivery** | |
| **Module Type** | CORE | | | محاضرات<br>واجبات بيتية<br>تقارير | |
| **Module Code** | **CIVL-301** | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 5 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Mazin B. Abdulrahman | | **e-mail** | dr.mazinburhan@tu.edu.iq | |
| **Module Leader's Acad. Title** | Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Assim Mohammed Lateef<br>Omer Farouk Ibraheem | | **e-mail** | assaim77@tu.edu.iq<br>omer.f.ibrahim@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation with Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | CIVL-207 | **Semester** | 4 |
| **Co-requisites module** | | **Semester** | |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | • To impart the basic types of structures and structures parts .<br>• To explain the main principles of different types of structures. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | On successful completion of this module, the learner will be able to:<br>1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics<br>2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors<br>3. communicate effectively with a range of audiences<br>4. recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts<br>5. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives<br>6. develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions<br>7. acquire and apply new knowledge as needed, using appropriate learning strategies. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | • Types of Structures and Loads (2 Hrs)<br>• Idealized Structure **(** 2 Hours )<br>• Equations of Equilibrium ( 2 Hours )<br>• Determinacy and Stability ( 4 Hours )<br>• common Types of trusses ( 2 Hours )<br>• The Method of Joints for truss analysis ( 2 Hours )<br>• The Method of section for truss analysis ( 2 Hours )<br>• Internal Loadings at a Specified Point ( 2 Hours )<br>• Shear and Moment Diagrams for a Beam ( 2 Hours )<br>• Shear and Moment Diagrams for a Frame ( 2 Hours )<br>• Cables and Arches ( 2 Hours )<br>• Influence Lines for Beams ( 2 Hours )<br>• Influence Lines for Floor Girders ( 2 Hours )<br>• Absolute Maximum Shear and Moment ( 2 Hours ) | | |
| **Course Description** | In this course, students learn some information about structures type, | | |

| | |
|---|---|
| | structures classifications, supports types, analysis of statically determinate structures, truss analysis, shear and moments diagrams, influence lines of structures, approximate analysis of statically indeterminate structures. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | تم تصميم استراتيجية التعلم والتدريس من أجل: تغطية المواد الأساسية بعناية في المحاضرات النظرية لمادة نظرية الانشاءات وتطبيق المفاهيم من خلال قيام الطلبة بتطبيق النظريات العلمية وحل الواجبات والأطلاع عمليا" على العناصر ألنشائية في المشاريع المنفذة وقيد ألأنشاء بشكل عملي ومباشر , بما يتيح للطلاب وقتًا كافيًا لفهم وإدراكا لمادة بالاطلاع والتطبيق، وتكليف الطلبة بواجبات منزلية واعداد تقارير خاصة الجوانب النظرية لمواضيع علمية مختاره , وكيفية ألأستفادة من هذه التفاصيل في الواقع العملي . |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 78** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 27**<br>**Preparation for tests10**<br>**Reports 10** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.0 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 1.5 | 2% (2) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Reports** | 2 | 3% (3) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 1.5 | 30% (30) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Types of Structures and Loads |
| **Week 2** | Idealized Structure |
| **Week 3** | Equations of Equilibrium |
| **Week 4** | Determinacy and Stability |
| **Week 5** | common Types of trusses |
| **Week 6** | The Method of Joints for truss analysis |
| **Week 7** | The Method of section for truss analysis |
| **Week 8** | **Term Exam** |
| **Week 9** | Internal Loadings at a Specified Point |
| **Week 10** | Shear and Moment Diagrams for a Beam |
| **Week 11** | Shear and Moment Diagrams for a Frame |
| **Week 12** | Cables and Arches |
| **Week 13** | Influence Lines for Beams |
| **Week 14** | Influence Lines for Floor Girders |
| **Week 15** | Absolute Maximum Shear and Moment |
| **Week 16** | **Term Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | 1. Structural Analysis" by R. C. Hibbler, 8thd Edition. Published by Pearson Prentice Hall, 2009, ISBN-10: 0-13-257053-X, ISBN-13: 978-0-13-257053-4. | Yes |
| **Recommended Texts** | 2. "Structural Analysis" by Aslam Kasimali, 5th Edition , Publisher: Timothy Anderson,2015, ISBN-13: 978-1-133-94389-1 , ISBN-10: 1-133-94389-6 | Yes |
| **Websites** | | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work is required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | CONCRETE DESIGN I | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVL -302** | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 5 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Hasan Jasim Mohammed | | **e-mail** | dr.hassanjassim@tu.edu.iq | |
| **Module Leader's Acad. Title** | Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Wisam Amer Aules<br>Hosam Abdullah Daham | | **e-mail** | Wisam.a.aules@tu.edu.iq<br>hosam@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **CIVL - 207** | **Semester** | 4 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | In this course, students learn some details of Principal of reinforced concrete design using multi-methods, flexural analysis and design of beams, shear and diagonal tension in beams, bond, anchorage, and development length, serviceability, and analysis and design for torsion. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Specific outcomes of instruction (e.g. the student will be able to explain the significance of current research about a particular topic.)<br>• Upon successful completion of this course, you should be able to:<br>a. Flexural analysis and design of reinforced concrete members.<br>b. Find the capacity and reinforcement of the sections.<br>c. Determine the shear capacity of the beams.<br>d. Calculate the beam section steel for torsion. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Introduction(4 hrs)<br>• Flexural Analysis and Design of Beams (10 hrs)<br>• Shear and Diagonal Tension in Beams (14 hrs)<br>• Bond, Anchorage, and Development Length(10 hrs)<br>• Serviceability (6 hrs)<br>• Analysis and Design for Torsion (6 hrs)<br>• Analysis of Indeterminate Beams (6 hrs) | | |
| **Course Description** | In this course, students learn some details of Principal of reinforced concrete design using multi-methods, flexural analysis and design of beams, shear and diagonal tension in beams, bond, anchorage, and development length, serviceability, and analysis and design for torsion. | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. | | |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 78**<br>**In class tests 5**<br>**Seminars 10** | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 27**<br>**Prepartion for tests 20**<br>**Homeworks 10** | 57 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 10% (10) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | Introduction. Mechanical Properties of concrete. |
| **Week 2** | Concrete materials and its properties |
| **Week 3** | Reinforcement .Loading and used ACI-Code. |
| **Week 4** | Flexural Analysis and Design of Beams. Ultimate strength method (Introduction) |
| **Week 5** | Analysis and design of beams of rectangular sections. ACI- Design requirement.<br>Doubly Reinforced Rectangular Beams (Analysis and Design) |
| **Week 6** | T-Beams (Analysis and Design) |

| | |
|---|---|
| **Week 7** | Midterm exam |
| **Week 8** | Shear and Diagonal Tension in Beams |
| **Week 9** | ACI Code Provisions for Shear Design |
| **Week 10** | Design of Web Reinforcement |
| **Week 11** | Bond, Anchorage, and Development Length<br>ACI Code Provisions for Development of Tension Reinforcement |
| **Week 12** | Simplified Equations for Development Length<br>Anchorage of Tension Bars by Hooks |
| **Week 13** | Anchorage Requirements for Web Reinforcement<br>Development of Bars in Compression |
| **Week 14** | Bar Cutoff and Bend Points in Beams<br>Bar Splices |
| **Week 15** | Serviceability. Control of Deflections. Calculation of Immediate Deflections |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | |
| **Week 2** | |
| **Week 3** | |
| **Week 4** | |
| **Week 5** | |
| **Week 6** | |
| **Week 7** | |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **“Design of concrete structures” by Nilson, A., Darwin, D. and Dolan, C., 14th edition, McGraw Hill, 2010, ISBN 978-007-131139-7.** | Yes |

| | | |
|---|---|---|
| | **"Design of Reinforced Concrete" by Jack McCormack and Brown, R., 9th edition, John Wiley & Sons, 2014, ISBN 978-1-118-12984-5.** | |
| **Recommended Texts** | **"Building Code Requirements for Structural Concrete" by ACI-Code (ACI 318M-19), 2019.**<br><br>**"Structural Concrete Theory and Design" by M. Nadim Hassoun and Akthem Al-Manaseer, 7th edition, JohnWiley & Sons, 2020, ISBN 9781119605119.** | Yes |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | SOIL MECHANICS I | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVIL – 303** | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 1 | |
| **Administering Department** | Civil Engineering | | **College** | Engineeeing | |
| **Module Leader** | Dr. Mahmood G. Jassam | | **e-mail** | dr.mahmoudghazi@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Dr. Lamyaa N. Snodi<br>Israa S. Hussen<br>Mazin A. Hussen | | **e-mail** | dr.lamyaanajah@tu.edu.iq<br>ms.israasalih@tu.edu.iq<br>mr.mazinali@tu.edu.iq | |
| **Peer Reviewer Name** | Dr. Adnan J. Zedan | | **e-mail** | jayedadn@tu.edu.iq | |

| | | | |
|---|---|---|---|
| **Review Committee Approval** | 01/06/2023 | **Version Number** | 1.0 |

| **Relation With Other Modules**<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | CIVIL -105 | **Semester** | 2 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | To provide students with physical, mechanical, chemical and mathematical tools and concepts for the understanding of engineering behavior of soils and introduction to engineering design of geotechnical systems. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | The aim of this course is to enable the student to:<br>1- list the salient engineering properties of soils and their characteristics,<br>2- describe factors which control the properties of soil,<br>3- list methods of determining the properties of soils,<br>4- list basic areas of GeoEngineering that were covered in the course and how problems in these areas are tackled,<br>5-Perform elementary analyses in each area described in the course and understand the limitations to these analyses. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Introduction, Historical development, Origin of soil (5 hrs)<br>• Formation of soil and characterization, Clay minerals (15 hrs)<br>• Soil phase relationships, Index properties and Classification (25 hrs)<br>• Stress within a soil mass, Geostatic stress, Mohr circle, p-q diagram, capillarity (25 hrs) | | |
| **Course Description** | On successful completion of this module the learner will be able to:<br>• Calculate standard soil properties and classify a soil sample.<br>• Calculate stresses in soil under various load conditions.<br>• Carry out laboratory tests for preliminary engineering assessment of a soil sample.<br>• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. | | |

| | |
|---|---|
| | • Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.<br>• Communicate effectively with a range of audiences.<br>• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.<br>• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.<br>• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.<br>• Acquire and apply new knowledge as needed, using appropriate learning strategies. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 70**<br>**In class tests 5**<br>**Seminars 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 22**<br>**Prepartion for tests 15**<br>**Homeworks 10** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 4, 6, 9, 11, 14 | All |
| | **Assignments** | 6 | 10% (10) | 2, 4, 6, 8, 10, 12 | All |
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | All |
| | **Labratory** | 3 | 15%(15) | continuous | |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Introduction about soil and soil mechanics |
| **Week 2** | Problems of soil in civil engineering and engineering application of soil mechanics |
| **Week 3** | Formation and general types of soil |
| **Week 4** | Soil composition and structure including clay minerals |
| **Week 5** | Sensitivity of soil and thixotropy |
| **Week 6** | Volume and weight relationships |
| **Week 7** | Atterberge limits and activity of clay |
| **Week 8** | Soil classification |
| **Week 9** | Geostatic stresses |
| **Week 10** | Stresses induced by external loads |
| **Week 11** | Principal stresses |
| **Week 12** | Mohr circle |
| **Week 13** | p-q diagram, stress path |
| **Week 14** | Effective stresses concepts |
| **Week 15** | Capillarity |
| **Week 16** | **Final Exam** |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Introduction |
| **Week 2** | Lab 2: How to write report |
| **Week 3** | Lab 3: Water content test |
| **Week 4** | Lab 4: Specific gravity test |
| **Week 5** | Lab 5: Atterberge limits |
| **Week 6** | Lab 6: Liquid limit test |
| **Week 7** | Lab 7: Plastic limit test |
| **Week 8** | Lab 8: Shrinkage limit test |
| **Week 9** | Lab 9: Soil classification |
| **Week 10** | Lab 10: Water content test |
| **Week 11** | Lab 11: Sieve analysis |
| **Week 12** | Lab 12: Hydrometer analysis |
| **Week 13** | Lab 13: Soil compaction |
| **Week 14** | Lab 14: Compaction test |
| **Week 15** | Lab 15: Field density test |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Lambe and Whitman (1990) "Soil Mechanics ", John Willy and Sons**<br><br>**Das B.M. (1982) "Soil Mechanics Laboratory Manual", Engineering Press Inc.** | Yes |
| **Recommended Texts** | **Theoretical soil mechanics, Karl Terzaghi, 1943**<br>**Principlas of geotechnical engineering, Braja M. Das, 2010**<br>**Craig's soil mechanics, J.A. Knappet and R.F. Craig, 2012** | No |

| | | |
|---|---|---|
| | **Giovanna B. (2007), "Introduction to Geotechnical Engineering LABORATORY MANUAL"** | |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
Tikrit University
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | MANAGEMENT & ECONOMIC | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | CIVL -304 | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 5 | |
| **Administering Department** | Civi Engineering | | **College** | Engineering | |
| **Module Leader** | Dr. Maysoon Abdullah Mansor | | **e-mail** | dr.maysoonabdullah@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Assistant lecturer; Younus Khalaf Mohammed | | **e-mail** | Yunus.k.muhammad@tu.edu.iq | |
| **Peer Reviewer Name** | Assist prof .Dr. Abdulrahman Adnan Ibrahim | | **e-mail** | Dr.abdulrahmanadnan@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation with Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **None** | **Semester** | - |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Enable students to develop a comprehensive understanding of the special methodology in construction management, project planning and scheduling, and to reach the best possible settlement of resources within the limits of time, cost, and resource availability. In addition to project financial planning, cash flow forecasting, economic comparisons, selection of the optimal alternative, and calculating depreciation in various ways. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. The student learns about the most important means and methods of construction management and how to plan and schedule projects and reach the best allocation of resources.<br>2. The student will be able to plan and schedule projects and settle resources.<br>3. The student will be able to find the project time, find the critical path and critical events, and update the time of the construction project activities<br>4. The student learns how to plan the financial for the project and forecast the cash flow<br>5. The student learns how to evaluate alternatives, make economic comparisons, and how to calculate extinction in different ways.<br>6. The student will be able to conduct financial planning and forecast the cash flow of the project.<br>7. The student will be able to make economic comparisons, choose the optimal alternative, and link the information to the engineering reality. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• The construction industry, Management functions and elements (4hrs)<br>• Construction project scheduling and planning (22hrs)<br>• Forecasting, Crushed, Resources Programming (10 hrs)<br>• Engineering Economics, Time factor and its impact on capital, Depreciation (24 hrs)<br>• Economic Comparisons of Alternatives: (10 hrs) | | |
| **Course Description** | This course aims to establish basic knowledge of time and financial scheduling by presenting and applying scheduling methods, resource allocation and crushed program, in addition to analyzing the time factor and | | |

| | |
|---|---|
| | its impact on capital, methods of calculating depreciation, conducting economic comparisons, and acquiring decision-making skills in choosing the optimal alternative. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** 70<br>**In class tests** 5<br>**Seminars** 3 | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 25**<br>**Prepartion for tests 15**<br>**Homeworks 7** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

| **Module Evaluation**<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| | | **Time (hr)** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, and 3 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 ,6 and 7 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-4 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Introduction - The construction industry , Management functions and elements. |
| **Week 2** | Construction project scheduling and planning : Network Analysis Technique |
| **Week 3** | Updating in Arrow Diagram ,Time grid method |
| **Week 4** | Program Evaluation Review Technique (PERT) , -Line of balance |
| **Week 5** | Crushed Program |
| **Week 6** | Resource programming |
| **Week 7** | Midterm exam |
| **Week 8** | Cash Flow Forecasting |
| **Week 9** | Engineering Economics: - Supply and Demand- Break Even Point |
| **Week 10** | Principles of the feasibility study |
| **Week 11** | Time factor and its impact on capital: - Simple &Compound Interest ,Nominal and Effective Interest Rate , Inflation |
| **Week 12** | Depreciation: Straight Line Method, Declining Balance Method, Sum of the years Digits, Sinking Fond method, |
| **Week 13** | Economic Comparisons of Alternatives: Present Worth Method, Internal Rate of Return Method, Annual Worth Method, : -Future Worth Method, and Benefit / Cost Ratio |
| **Week 14** | Engineering Ethics: Why Study Engineering Ethics, Professionalism and Codes of Ethics , Understanding Ethical Problems |
| **Week 15** | Engineering Ethics: Ethical Problem-Solving Techniques , Risk, Safety, and Accidents, The Rights and Responsibilities of Engineers |
| **Week 16** | Final Exam |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | 1. Principles of Construction Management by:Roy Pilcher. 1992Publisher: Pearson ISBN-10: 0070940274<br><br>ISBN-13 : 978-0070940277<br><br>2.Engineering Economy by De Garms . 1988.Edition 8th | Yes |

| | | |
|---|---|---|
| | Publisher: Collier Macmillan, ISBN-10 :0023286342: ISBN-13 :978-0023286346<br><br>3.Engineering Ethics: Concepts and Cases, Fourth Edition<br><br>Charles E. Harris, Michael S. Pritchard, and Michael J. RabinLibrary of Congress Control Number: 2008924940<br><br>ISBN-13: 978-0-495-50279-1 ISBN-10: 0-495-50279-0<br><br>Wadsworth10 Davis Drive Belmont, CA 94002-3098<br><br>USA<br><br>4. Engineering Ethics by CHARLES B. FLEDDERMANN, Fourth Edition Library of Congress Cataloging-in-Publication Data | |
| **Recommended Texts** | 1.Modren Construction Management by: F.Harris , 2001 Edition 5th Publisher: Wiley-Blackwell ISBN-10632055138<br>ISBN-13 : 978-0632055135<br>2.Construction planning ,Equipment and Methods , by Robert L. Peurifoy, 2018.<br>3.Critical Path Method in Construction Practice by: Antil ,1990 . | No |
| **Websites** | www.Pathways.cu.edu.eg | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | HIGHWAY ENGINEERING, II | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVL-305** | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 5 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Dr. Hanaa Kh. Alwan Al-Bayati | | **e-mail** | dr.hanaa.khaleel@tu.edu.iq | |
| **Module Leader's Acad. Title** | lecturer | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Aodai Abdulillah Ismail<br>Shaalan Shaher Flayyih | | **e-mail** | dr.aodai@tu.edu.iq<br>Sh.sh.fn10@gmail.com | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | CIVL-208 | **Semester** | 4 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | In this course, students learn some details of the principal and the objective of this course so to enable students to understand Soil Engineering for Highway Design, Soil Stabilization, Paving materials including asphalt, concrete, Aggregate Combination, engineering properties of asphalt, asphalt concrete mix design, superpave and Marshal mix design, General principles of flexible and rigid pavement design and railway and airport. | | |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | The aim of this course is to enable the student to:<br>• Provide the students with a wide knowledge of highway engineering definitions and objectives.<br>• Describe the principles Soil Engineering properties for Highway Design and Soil Stabilization,<br>• Describe the Paving Materials, source of asphalt materials, Aggregate Combination, and physical and mechanical properties of aggregate.<br>• Describe the engineering properties of asphalt, asphalt concrete mix design, Superpave and Marshal mix design.<br>• Describe methods for determining a suitable cross-section of pavements through the AASHTO pavement design for flexible and rigid pavement design.<br>• Describe methods and the principle of railway and airport design. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br><br>• Introduction highway engineering definition and objectives (3 hrs)<br>• Soil Engineering properties for Highway Design and Soil Stabilization,<br>• (6 hrs)<br>• Paving Materials, source of asphalt materials, Aggregate Combination, and physical and mechanical properties of aggregate (6 hrs)<br>• engineering properties of asphalt, asphalt concrete mix design, Superpave and Marshal mix design (12 hrs)<br>• Describe methods for determining a suitable cross-section of pavements through the AASHTO pavement design for flexible and rigid pavement design. (12 hrs)<br><br>• Describe methods and the principle of railway and (6 hrs) | | |

| | |
|---|---|
| **Course Description** | **On successful completion of this module the learner will be able to:**<br>• a. Students can gain a complete understanding of highway engineering on this course.<br>• b. Students can learn about all aspects of Soil Engineering properties for Highway Design and Soil Stabilization,<br>• c. Students learn how to deal with Paving Materials, source of asphalt materials, Aggregate Combination, and physical and mechanical properties of aggregate.<br>• • Students will have a good knowledge of engineering properties of asphalt, asphalt concrete mix design, Superpave and Marshall mix design<br>• d. At the end of this course, the students will be able to design the pavement and they will get the essential way and methods to determine a suitable cross-section of pavements through the AASHTO pavement design for flexible and rigid pavement design.<br>• e. Students' highway design abilities, including superelevation, highway curve widening, and foundation embankment.<br>• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.<br>• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.<br>• Communicate effectively with a range of audiences.<br>• Recognize your ethical and professional obligations in engineering situations and make wise decisions that take into account how engineering solutions will affect global, economic, environmental, and societal contexts.<br>• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.<br>• Use the right learning strategies to acquire and apply new knowledge as necessary.<br>• By the end of this semester, students will be able to perform various laboratory tests on bitumen, such as: highway laboratory safety, hot mix design and rigid pavement tests (California bearing ratio, Asphalt Centrifuge Extractors, Sieve analysis, Abrasion loss by using Los-Angeles, Mix design Formula, Marshall method for HMA, Specific gravity of compacted HMA samples…) |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques and |

| | |
|---|---|
| | demonstrate concepts with appropriate examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 78**<br>**In class tests 5**<br>**Seminars 10** | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 22**<br>**Preparation for tests 25**<br>**HomeWorks 10** | 57 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 4, 6, 9, 11, 14 | All |
| | **Assignments** | 6 | 10% (10) | 2, 4, 6, 8, 10, 12 | All |
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | All |
| | **Labratory** | 3 | 15% (15) | continuous | |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | Soil Engineering for Highway Design |
| **Week 2** | Soil Stabilization |
| **Week 3** | Paving Materials |

| | |
|---|---|
| **Week 4** | Paving Materials |
| **Week 5** | Aggregate Combination |
| **Week 6** | Asphalt Cement Properties |
| **Week 7** | Mixture Design and Properties |
| **Week 8** | Mixture Design and Properties |
| **Week 9** | Flexible Pavement Design |
| **Week 10** | Flexible Pavement Design |
| **Week 11** | Rigid Pavement Design |
| **Week 12** | Rigid Pavement Design |
| **Week 13** | Joint, Reinforcement |
| **Week 14** | Railway Design and Airport |
| Week 15 | Software applications in highway design |
| Week 16 | Final Exam |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Introduction |
| **Week 2** | Lab 2: How to write report |
| **Week 3** | Lab 3: Lab Safety |
| **Week 4** | Lab 4: California bearing ratio test |
| **Week 5** | Lab 5: Asphalt Centrifuge Extractors test |
| **Week 6** | Lab 6: Sieve analysis |
| **Week 7** | Lab 7: Abrasion loss by using Los-Angeles's test |
| **Week 8** | Lab 8: Mix design Formula |
| **Week 9** | Lab 9: Marshall method for HMA |
| **Week 10** | Lab 10: Marshall method for HMA |
| **Week 11** | Lab 11: Specific gravity of compacted HMA samples |
| **Week 12** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Traffic and Highway Engineering" by Nicholas J. Garber, and Lester A. Hole. 4th ed. University of Virginia, 2009, ISBN-13: 978-0-495-08250-7, ISBN -13:978-156032-714-1 ISBN-10: 0-495-08250-3. | Yes |
| **Recommended Texts** | Pavement Analysis and Design, By Yang H. Huang<br>Craig's soil mechanics, J.A. Knappet and R.F. Craig, 2012.<br>• A.F. Nikolaides. (2015) "Bituminous Mixtures & Pavements VI", Aristotle University of Thessaloniki (AUTh), Greece. CRC Press, Taylor and Francis group, London, UK.<br>• M. Y. Shahin (2005) " PAVEMENT MANAGEMENT FOR AIRPORTS, ROADS, AND PARKING LOTS", Springer Science Business Media, LLC, First edition ©1994 by Chapman and Hall; seventh printing 2002 by Kluwer Academic Publishers. | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | Numerical Analysis | | | **Module Delivery** | |
| **Module Type** | SUPLEMENT | | | **Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | MATH-301 | | | | |
| **ECTS Credits** | 3 | | | | |
| **SWL (hr/sem)** | 75 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 6 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Adnan Jayed | | **e-mail** | jayedadn@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Teacher | | **Module Leader's Qualification** | M.Sc. | |
| **Module Tutor** | Mohammed Khairullah Ahmed | | **e-mail** | Mohammed.k.kayrullah@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **Engineering Analysis (MATH-201), Computer Programming (ENG-105)** | **Semester** | 2 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | *Understand the need for numerical methods, and go through the stages (mathematical modeling, solving and implementation) of solving a particular physical problem.*<br>*Understand the basics of differentiation, relate the slopes of the secant line and tangent line to the derivative of a function, use rules of differentiation to differentiate functions, find maxima and minima of a function, and apply concepts of differentiation to real world problems.*<br>*Use several minimizing of residual criteria to choose the right criterion, derive the constants of a linear regression model based on least squares method criterion, use in examples, the derived formulas for the constants of a linear regression model, and prove that the constants of the linear regression model are unique and correspond to a minimum.*<br>*Define an ordinary differential equation, differentiate between an ordinary and partial differential equation, and solve linear ordinary differential equations with fixed constants by using classical solution and Laplace transform techniques.* | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • *Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.*<br>• *Apply numerical methods to obtain approximate solutions to mathematical problems.*<br>• *Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.*<br>• *Analyze and evaluate the accuracy of common numerical methods.*<br>• *Implement numerical methods in Matlab, Comsol and Excel*<br>• *Write efficient, well-documented Matlab code and Excel sheet and present numerical results in an informative way.*<br>• *Recognize when numerical methods can be employed to solve problems in mathematics.*<br>• *Apply numerical methods in solving systems of linear equations*<br>*Solve initial-value problems in ordinary differential equations Estimate eigenvalues and eigenvectors.* | | |

| | |
|---|---|
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Errors, Approximations and Series Approach (2 hrs.)<br>• Roots Estimation, fundamentals and its application (4 hrs.)<br>• System of equation (Linear and non-linear) (4 hrs.)<br>• Integration, differentiation and Interpolation (6 hrs.)<br>• Regression (linear, multilinear and non-linear) (4 hrs.)<br>• ODE and PDE (10 hrs.) |
| **Course Description** | *To explore complex systems, physicists, engineers, financiers and mathematicians require computational methods since mathematical models are only rarely solvable algebraically. Numerical methods, based upon sound computational mathematics, are the basic algorithms underpinning computer predictions in modern systems science. Such methods include techniques for simple optimization, interpolation from the known to the unknown, linear algebra underlying systems of equations, ordinary differential equations to simulate systems, and stochastic simulation under random influences. Topics covered are: the mathematical and computational foundations of the numerical approximation and solution of scientific problems; simple; vectorization; clustering; polynomial and spline interpolation; regression; pattern recognition; integration and differentiation; solution of large scale systems of linear and nonlinear equations; modelling and solution with sparse equations; explicit schemes to solve ordinary differential equations and partial differential equations.* |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 30**<br>**In class tests 03**<br>**Practical 15** | 48 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 10**<br>**Prepartion for tests 10**<br>**Homeworks 07** | 27 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2.0 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 75 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Mathematical Background:<br>- matrix<br>- matrix operations (addition, multiplication,….<br>- Determinant<br>- Matrix inversion |
| **Week 2** | System Of Linear Algebraic Equations |

| | |
|---|---|
| | - Gauss Elimination<br>- Matrix Inversion<br>- The Gauss-Seidle Method |
| **Week 3** | Open Methods to Estimate Root.<br>- The Newton Raphson Method<br>- The Secant Method |
| **Week 4** | *Closed Methods for Root Estimation*<br>- *Bisection Methods*<br>- *False Position Methods* |
| **Week 5** | Curve Fitting<br>- Linear Regression<br>- Newton's Divided-Difference Interpolation Polynomials<br>- Lagrange Interpolation Polynomials |
| **Week 6** | Curve Fitting<br>- *Multi-linear Regression*<br>- *Non-Linear Regression* |
| **Week 7** | *Partial Exam* |
| **Week 8** | Numerical Integration<br>- The Trapezoidal Rule<br>- Simpson Rules |
| **Week 9** | Numerical Differentiation<br>- Richardson Extrapolation |
| **Week 10** | Ordinary Differential Equations<br>- Euler's Method<br>- Modified Euler's Method |
| **Week 11** | Ordinary Differential Equations<br>- Runge -Kutta Methods ($2^{nd}$ and $4^{th}$ order methods) |
| **Week 12** | Partial Differential Equations<br>- Finite Difference. Elliptic Equations |
| **Week 13** | Partial Differential Equations<br>- Finite Difference. Parabolic Equations |

| | |
|---|---|
| **Week 14** | Partial Differential Equations<br>- Special B.C for PDE |
| **Week 15** | *Final Review and Advanced Application* |
| **Week 16** | *Final Exam* |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: MATLAB Introduction, m-file, and Excel Sheet fundamentals |
| **Week 2** | Lab 2: Writing a program /Excel technique for solving sin(x) in Taylor series |
| **Week 3** | Lab 3: Writing a program for solving ($x^2$-3x-9=0 and mode), by bi-section method and false-position method |
| **Week 4** | Lab 4: Writing a program /Excel technique for solving ($x^2$-3x-9=0 and mode ), by Newton-Raphson method and fixed-point iteration method |
| **Week 5** | Lab 5: Writing a program /Excel technique to solve three linear equations system, (matrix approach) |
| **Week 6** | Lab 6: Writing a program /Excel technique to solve three linear equations system, (iterative approach) |
| **Week 7** | Lab 7: Writing a program /Excel technique to solve Newton Divided Difference example |
| **Week 8** | Lab 8: Writing a program /Excel technique to solve Numerical Differentiation and Integration examples |
| **Week 9** | Lab 9: Writing a program /Excel technique to solve Numerical Interpolation by Lagrange method |
| **Week 10** | Lab 10: Writing a program /Excel technique to solve ODE by Euler ad RK (IVP) |
| **Week 11** | Lab 11: Writing a program /Excel technique to solve ODE by Euler ad RK (BVP) |
| **Week 12** | Lab 12: Writing a program /Excel technique to solve system of ODE by Euler method |
| **Week 13** | Lab 13: Writing a program /Excel technique to solve system of PDE by finite element method |
| **Week 14** | Lab 14: Review |
| **Week 15** | Lab 15: Lab. Exam |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Stephan Chapra, Numerical methods for Engineers | Yes |
| **Recommended Texts** | Joe D. Hoffman, Numerical Methods for Engineers and Scientists | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | THEORY OF STRUCTURES II | **Module Delivery** | |
| **Module Type** | CORE | | محاضرات<br>واجبات بيتية<br>تقارير |
| **Module Code** | CIVL-306 | | |
| **ECTS Credits** | 6 | | |
| **SWL (hr/sem)** | 150 | | |
| **Module Level** | 3 | **Semester (s) offered** | 2 |
| **Administering Department** | Civil Engineering | **College** | Engineering |
| **Module Leader** | Mazin B. Abdulrahman | **e-mail** | dr.mazinburhan@tu.edu.iq |
| **Module Leader's Acad. Title** | Professor | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | | **Version Number** | 1.0 |

## Relation with Other Modules

| العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | CIVL-301 | **Semester** | 5 |
| **Co-requisites module** | | **Semester** | |

## Module Aims, Learning Outcomes, Indicative Contents and Brief Description

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر

| | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | • To. explain the main method to determine Structures deformations<br>• To explain the main method to analyze the Indeterminate structures. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | On successful completion of this module, the learner will be able to:<br>1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics<br>2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors<br>3. communicate effectively with a range of audiences<br>4. recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts<br>5. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives<br>6. develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions<br>7. acquire and apply new knowledge as needed, using appropriate learning strategies. |
| **Indicative Contents**<br>المحتويات الإرشادية | • Deflection of Structures (2 Hrs)<br>• Conjugate-Beam Method to determine the deflection (4 Hrs)<br>• Deflection using Energy Method ( 2 Hours )<br>• Method of Virtual Work: Trusses ( 2 Hours )<br>• Method of Virtual Work: Beams and Frames ( 2 Hours )<br>• Analysis of Statically Indeterminate Structures by the Force Method ( 2 Hours )<br>• Force Method of Analysis: Beams ( 4 Hours )<br>• Force Method of Analysis: Frames (2 Hours )<br>• Force Method of Analysis: Trusses ( 2 Hours )<br>• Displacement Method of Analysis: Slope- Deflection Equations (2 Hours)<br>• Analysis of Beams (2 Hours )<br>• Analysis Frames (2 Hours )<br>• Displacement Method of Analysis: Moment Distribution ( 2 Hours ) |

| | |
|---|---|
| | • |
| **Course Description** | In this course, students learn some information about :<br>1- determine the deflection of structures<br>2- analysis of statically indeterminate structures using different methods. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | تم تصميم استراتيجية التعلم والتدريس من أجل: تغطية المواد الأساسية بعناية في المحاضرات النظرية لمادة نظرية الانشاءات وتطبيق المفاهيم من خلال قيام الطلبة بتطبيق النظريات العلمية وحل الواجبات والأطلاع عمليا" على العناصر ألنشائية في المشاريع المنفذة وقيد ألأنشاء بشكل عملي ومباشر , بما يتيح للطلاب وقتًا كافيًا لفهم وإدراكا لمادة بالاطلاع والتطبيق، وتكليف الطلبة بواجبات منزلية واعداد تقارير خاصة الجوانب النظرية لمواضيع علمية مختاره , وكيفية ألأستفادة من هذه التفاصيل في الواقع العملي . |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 93** | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 27**<br>**Preparation for tests 20**<br>**Reports 10** | 57 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.0 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 1.5 | 2% (2) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Reports** | 2 | 3% (3) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 1.5 | 30% (30) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | **Deflections Using Energy Methods** |
| **Week 2** | **Castigliano's Theorem for Trusses** |
| **Week 3** | **Principle of virtual work** |
| **Week 4** | **Analysis of Statically Indeterminate Structures by the Force Method : Beams** |
| **Week 5** | **Analysis of Statically Indeterminate Structures by the Force Method : Frames** |
| **Week 6** | **Analysis of Statically Indeterminate Structures by the Force Method : Trusses** |
| **Week 7** | **Conjugate beams method for determine deflection** |
| **Week 8** | **Term Exam** |
| **Week 9** | **Displacement Method of Analysis: Slope- Deflection Equations** |
| **Week 10** | **Analysis of Beams** |
| **Week 11** | **Analysis of Frames** |
| **Week 12** | **Displacement Method of Analysis: Moment Distribution** |
| **Week 13** | **Moment Distribution for Beams** |
| **Week 14** | **Moment Distribution for Frames** |
| **Week 15** | **Truss Analysis Using the Stiffness Method** |
| **Week 16** | **Term Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | 1. Structural Analysis" by R. C. Hibbler, 8thd Edition. Published by Pearson Prentice Hall, 2009, ISBN-10: 0-13-257053-X, ISBN-13: 978-0-13-257053-4. | Yes |
| **Recommended Texts** | 2. "Structural Analysis" by Aslam Kasimali, 5th Edition , Publisher: Timothy Anderson,2015, ISBN-13: 978-1-133-94389-1 , ISBN-10: 1-133-94389-6 | Yes |
| **Websites** | | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work is required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
Tikrit University
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **CONCRETE DESIGN II** | | | **Module Delivery** | |
| **Module Type** | **CORE** | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVL -307** | | | | |
| **ECTS Credits** | **6** | | | | |
| **SWL (hr/sem)** | **150** | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 6 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Hasan Jasim Mohammed | | **e-mail** | dr.hassanjassim@tu.edu.iq | |
| **Module Leader's Acad. Title** | Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Wisam Amer Aules<br>Hosam Abdullah Daham | | **e-mail** | Wisam.a.aules@tu.edu.iq<br>hosam@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **CIVL - 302** | **Semester** | 5 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | In this course, students learn some details of Analysis of Indeterminate Beams, analysis and Design of Slabs (One-Way Slabs), two- way R.C. slab design, loading transfer, analysis and Design for Torsion, short Columns, and slender Columns. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | Specific outcomes of instruction (e.g., the student will be able to explain the significance of current research about a particular topic.)<br>Upon successful completion of this course, you should be able to:<br>a. Analysis of Indeterminate Beams<br>b. Analysis and Design of Slabs (One-Way Slabs)<br>c. Two- way R.C. slab design<br>d. Loading transfer<br>e. Analysis and Design for Torsion<br>f. Short Columns<br>g. Slender Columns | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Analysis of Indeterminate Beams (4 hrs)<br>• Analysis and Design of Slabs (One-Way Slabs) (6 hrs)<br>• Two- way R.C. slab design (10 hrs)<br>• Loading transfer (6 hrs)<br>• Analysis and Design for Torsion (10 hrs)<br>• Short Columns (10 hrs)<br>• Slender Columns (10 hrs) | | |
| **Course Description** | In this course, students learn some details of Analysis of Indeterminate Beams, analysis and Design of Slabs (One-Way Slabs), two- way R.C. slab design, loading transfer, analysis and Design for Torsion, short Columns, and slender Columns. | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. | | |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 78**<br>**In class tests 5**<br>**Seminars 10** | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 27**<br>**Prepartion for tests 20**<br>**Homeworks 10** | 57 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 10% (10) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Analysis of Indeterminate Beams<br>ACI Moment Coefficients |
| **Week 2** | Analysis and Design of Slabs (One-Way Slabs).Types of Slabs<br>Design of One-Way Slabs. Temperature and Shrinkage Reinforcement |
| **Week 3** | Two- way R.C. slab design |
| **Week 4** | Direct design method |

| | |
|---|---|
| **Week 5** | Loading transfer<br>Frame building |
| **Week 6** | Multi-story building (moment factor method) |
| **Week 7** | Midterm exam |
| **Week 8** | Analysis and Design for Torsion<br>ACI Code Provisions for Torsion Design |
| **Week 9** | Reinforcement for Torsion<br>Design for Torsion |
| **Week 10** | Short Columns<br>Introduction: Axial Compression |
| **Week 11** | Transverse Ties And Spirals |
| **Week 12** | Compression plus Bending Of Rectangular Columns<br>Analysis and Interaction Diagrams<br>Design Aids |
| **Week 13** | Slender Columns. Introduction |
| **Week 14** | ACI Criteria for Slenderness Effects in Columns |
| **Week 15** | ACI Moment Magnifier Method for Non-sway Frames |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | |
| **Week 2** | |
| **Week 3** | |
| **Week 4** | |
| **Week 5** | |
| **Week 6** | |
| **Week 7** | |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **"Design of concrete structures" by Nilson, A., Darwin, D. and Dolan, C., 14th edition, McGraw Hill, 2010, ISBN 978-007-131139-7.**<br><br>**"Design of Reinforced Concrete" by Jack McCormack and Brown, R., 9th edition, John Wiley & Sons, 2014, ISBN 978-1-118-12984-5.** | Yes |
| **Recommended Texts** | **"Building Code Requirements for Structural Concrete" by ACI-Code (ACI 318M-19), 2019.**<br><br>**"Structural Concrete Theory and Design" by M. Nadim Hassoun and Akthem Al-Manaseer, 7th edition, JohnWiley & Sons, 2020, ISBN 9781119605119.** | Yes |
| **Websites** | | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | SOIL MECHANICS II | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVIL -308** | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 6 | |
| **Administering Department** | Civil Engineering | | **College** | Engineeeing | |
| **Module Leader** | Dr. Mahmood G. Jassam | | **e-mail** | dr.mahmoudghazi@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Dr. Lamyaa N. Snodi<br>Israa S. Hussen<br>Mazin A. Hussen | | **e-mail** | dr.lamyaanajah@tu.edu.iq<br>ms.israasalih@tu.edu.iq<br>mr.mazinali@tu.edu.iq | |
| **Peer Reviewer Name** | Dr. Adnan J. Zedan | | **e-mail** | jayedadn@tu.edu.iq | |
| **Review Committee Approval** | 01/06/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | CIVIL -303 | **Semester** | 5 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | To provide students with physical, mechanical, chemical and mathematical tools and concepts for the understanding of engineering behavior of soils and introduction to engineering design of geotechnical systems. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | The aim of this course is to enable the student to:<br>1- list the salient engineering properties of soils and their characteristics,<br>2- describe factors which control the properties of soil,<br>3- list methods of determining the properties of soils,<br>4- list basic areas of GeoEngineering that were covered in the course and how problems in these areas are tackled,<br>5-Perform elementary analyses in each area described in the course and understand the limitations to these analyses. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Flow of water through soil (25 hrs)<br>• Compressibility of Soil (20 hrs)<br>• Shear strength of soil (25 hrs) | | |
| **Course Description** | On successful completion of this module the learner will be able to:<br>• Specify the essential features and requirements of soil permeability and seepage.<br>• Calculate settlement and find the shear strength of soil<br>• Carry out laboratory tests for preliminary engineering assessment of a soil sample.<br>• Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.<br>• Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.<br>• Communicate effectively with a range of audiences.<br>• Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact | | |

| | |
|---|---|
| | of engineering solutions in global, economic, environmental, and societal contexts.<br>• Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.<br>• Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.<br>• Acquire and apply new knowledge as needed, using appropriate learning strategies. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 70**<br>**In class tests 5**<br>**Seminars 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 22**<br>**Prepartion for tests 15**<br>**Homeworks 10** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 4, 6, 9, 11, 14 | All |
| | **Assignments** | 6 | 10% (10) | 2, 4, 6, 8, 10, 12 | All |

| | | | | | |
|---|---|---|---|---|---|
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | All |
| | **Labratory** | 3 | 15%(15) | continuous | |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| **Delivery Plan (Weekly Syllabus)**<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Coefficient of permeability and Darcy's law |
| **Week 2** | One dimensional flow |
| **Week 3** | Seepage force, critical head gradient |
| **Week 4** | Two dimensional flow and Laplace equation |
| **Week 5** | Flow net, two dimensional flow through anisotropic soil |
| **Week 6** | Compressibility characteristics of clay soil |
| **Week 7** | Consolidation of soil |
| **Week 8** | Terzaghi one dimensional consolidation theory |
| **Week 9** | Consolidation settlement |
| **Week 10** | Mohr- Columb failure criteria |
| **Week 11** | Direct shear test |
| **Week 12** | Consolidated drained triaxial test |
| **Week 13** | Consolidated undrained triaxial test |
| **Week 14** | unconsolidated undrained triaxial test |
| **Week 15** | unconfined compression test |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Introduction |
| **Week 2** | Lab 2: permeability of soil |
| **Week 3** | Lab 3: Constant head permeability test |

| | |
|---|---|
| **Week 4** | Lab 4: Falling head permeability |
| **Week 5** | Lab 5: Consolidation of soil |
| **Week 6** | Lab 6: One dimensional Consolidation test |
| **Week 7** | Lab 7: One dimensional Consolidation test |
| **Week 8** | Lab 8: Shear Strength of soil |
| **Week 9** | Lab 9: Direct shear test |
| **Week 10** | Lab 10: Direct shear test |
| **Week 11** | Lab 11: Triaxial test |
| **Week 12** | Lab 12: Consolidated drained triaxial test |
| **Week 13** | Lab 13: Consolidated undrained triaxial test |
| **Week 14** | Lab 14: unconsolidated undrained triaxial test |
| **Week 15** | Lab 15: Unconfined compression test |
| **Week 16** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **Lambe and Whitman (1990) "Soil Mechanics ", John Willy and Sons**<br><br>**Das B.M. (1982) "Soil Mechanics Laboratory Manual", Engineering Press Inc.** | Yes |
| **Recommended Texts** | **Theoretical soil mechanics, Karl Terzaghi, 1943**<br>**Principlas of geotechnical engineering, Braja M. Das, 2010**<br>**Craig's soil mechanics, J.A. Knappet and R.F. Craig, 2012**<br><br>**Giovanna B. (2007), "Introduction to Geotechnical Engineering LABORATORY MANUAL"** | No |
| **Websites** | | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
Tikrit University
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | HYDROLOGY | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical** | |
| **Module Code** | CIVL -309 | | | | |
| **ECTS Credits** | 4 | | | | |
| **SWL (hr/sem)** | 100 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 6 | |
| **Administering Department** | Civi Engineering | | **College** | Engineering | |
| **Module Leader** | Mohammed Faiq Yass | | **e-mail** | mohamed_faiq@tu.edu.iq | |
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | M.Sc. | |
| **Module Tutor** | Ass.Lecturer: Omar Taher Nafee<br>Ass.Lecturer : Ali Fayeq Saber | | **e-mail** | mr.omartaher@tu.edu.iq<br>alifayeqsaber@gmail.com | |
| **Peer Reviewer Name** | Asst.prof.Dr. Asmaa Abdul Jabbar | | **e-mail** | ms.asmaajameel@tu.edu.iq | |
| **Review Committee Approval** | --- | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | CIVL -210 | **Semester** | 4 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Studying everything related to the science of water, its characteristics, its distribution above and below the earth, and what this science is closely related to the other sciences, such as geology, hydraulics, and others, and teaching the student the correct foundations for this science. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • The student recognizes the importance of wide hydrological science.<br>• The student learns how to obtain important hydrological information.<br>• Giving the student experience in choosing the appropriate methods for measuring the discharge of water resources.<br>• The student learns to study the paths of the entire hydrological cycle and the methods used to find them.<br>• The student will be familiar with the important statistical and analytical methods that are related to hydrology.<br>• The student learns how to obtain the graphical relationships that provide the design values for the water projects to be established in the study area. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Introduction to Engineering Hydrology. (4 hrs)<br>• Fundamentals of Hydrology . (12 hrs)<br>• Precipitation and Forms of Precipitation. (12 hrs)<br>• Stream flow measurement, Hydrographs, Flood Routing . (25 hrs)<br>• Groundwater and Forms of Subsurface Water. (10 hrs) | | |
| **Course Description** | Teach students the basics of hydrology and everything related to this science and its importance through its relationship to water resources | | |

| | |
|---|---|
| | projects and their design, as the efficiency of water projects depends on the accuracy of hydrological information. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The learning and teaching strategy is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 60**<br>**In class tests 3**<br>**Seminars 0** | 63 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 20**<br>**Prepartion for tests 10**<br>**Homeworks 7** | 37 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2.46 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 100 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 3, 6, 9, 12,15 | LO #1, 2, 3, 4 and 5 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-4 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Introduction, Hydrologic Cycle, Hydrologic Cycle Paths, Water Budget Equation, Applications in Engineering, Typical Failure Factors for Hydraulic Structure, Sources of Data. |
| **Week 2** | Precipitation, Forms of Precipitation, Adequacy of Rain Gauge Stations, Preparation of Data, Estimating of Missing Data, Test for Consistency of Records, Presentation of Rainfall Data. |
| **Week 3** | Mean Precipitation Over an Area, Frequency of Point Rainfall, Plotting Position Criteria. |
| **Week 4** | Evaporation Process, Methods to Reduce Evaporation Losses, Evaporimeters, Empirical Evaporation Equations, Infiltration<br>Infiltration Capacity, Infiltration Indices. |
| **Week 5** | Stream flow Measurement, Measurement of Stage, Measurement of Velocity, Area-Velocity Method, Stage-Discharge Relationship. |
| **Week 6** | Runoff , Runoff Characteristics of Streams, Runoff Volume, Rainfall – Runoff Correlation |
| **Week 7** | Midterm exam. |
| **Week 8** | Flow-Duration Curve, Flow-Mass Curve, Storage Volume Evaluation |
| **Week 9** | Calculation of Maintainable Demand, Variable Demand. |
| **Week 10** | Hydrographs, Factors Affecting Flood Hydrograph, Components o f a Hydrograph, Base Flow Separation, Effective Rainfall (ER). |
| **Week 11** | Unit Hydrograph, Derivation of Unit Hydrographs, Unit Hydrographs of Different Durations |
| **Week 12** | Floods, Rational Method, Empirical Formulae, Unit Hydrograph Method, Flood Frequency Studies, Gumbel's Method, Confidence Limits. |
| **Week 13** | Flood Routing, Hydrologic Storage Routing (Level Pool Routing), Modified Paul's Method. |
| **Week 14** | Goodrich's Method, Hydrologic Channel Routing, Muskingum's Method for Routing. |
| **Week 15** | Groundwater, Forms of Subsurface Water, Saturated Formation Categories<br>Ground Water Budget, Wells, Steady Flow into a Well (Confined Flow and Unconfined Flow) |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Engineering Hydrology ,Third Edition Mc Graw hill, New Delhi,K.Subramanya,2014.** | No |

| | | |
|---|---|---|
| **Recommended Texts** | **1.Chow, V.T ,Hand book of applied hydrology ,Mc Graw hill ,New York.**<br>**2.Hydrology for Engineering (Linsley).** | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | TRAFFIC ENGINEERING | | | **Module Delivery** | |
| **Module Type** | CORE | | | | |
| **Module Code** | CIVL-310 | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 3 | | **Semester (s) offered** | 6 | |
| **Administering Department** | Civil Engineering | | **College** | Engineeeing | |
| **Module Leader** | Dr. Aodai A. Ismail | | **e-mail** | dr.aodai@tu.edu.iq | |
| **Module Leader's Acad. Title** | Instructor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | CIVL-305 | **Semester** | 5 |
| **Co-requisites module** | | **Semester** | |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Traffic engineering is a branch of civil engineering that implements engineering techniques to efficiently and safely move vehicles and people along roadways and through intersections. The goal of traffic engineering is to ensure that the needs of people traversing roads are adequately met. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | **6. Some of the responsibilities of traffic engineers include signal timing, signal design, traffic modeling and forecasting, traffic management plans, and road safety audits.**<br>**7. However, traffic engineers are not only responsible for accommodating vehicles. They are also key in creating safe routes for pedestrians and cyclists, and may often perform relevant studies.**<br>**8. Whether you live in the smallest town or the largest city, traffic engineering is integral to your safety and how you experience your daily life .**<br>9. **Traffic engineers evaluate each town or city, and utilize methods that best suit the flow of traffic and population density of the area when creating a new traffic experience. They'll take into consideration data regarding local accidents, traffic counts, and multimodal connections. From there, the traffic engineer will create a plan to implement the safest and most effective traffic pattern..** | | |
| **Indicative Contents**<br>المحتويات الإرشادية | تتضمن المحتويات الارشادية مايلي:<br>• Teach students Traffic Engineering planning and design, including General principles of transportation engineering, Traffic Elements, | | |

| | |
|---|---|
| | Intersections, Signalized Intersections, Parking Studies, Background of Highway Capacity and Accident Studies |
| **Course Description** | Phase of transportation engineering which deals with planning, geometric design, and traffic operation of roads and their networks terminals, relationships with other modes of transportation. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching strategy is designed to: Carefully cover in lectures the necessary fundamental analytical techniques and demonstrate concepts with appropriate examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 60**<br>**Lab 30**<br>**In class tests 3**<br>**Seminars 2** | 95 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 6.3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 30**<br>**Prepartion for tests 5**<br>**Homeworks 15** | 55 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.7 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | :Introduction<br>General principles of transportation engineering |
| **Week 2** | Road Users: Human limitations-Definition of a good driver-Physical ,Psyicological and modifying characteristics of driver-Driving task and information-Pedestrian control |
| **Week 3** | Vehicle: Static and operation characteristics of vehicle-General requirement of vehicle |
| **Week 4** | Travel time and Delay studies: Definition-Applications-Methods of measurements-Intersection delay-Mathematical analysis |
| **Week 5** | Traffic Elements: Fundamental speed-flow-density relationships (Linear and Non-Linear) Spacing ,headway, gap and clearance relationships-Statistical and Mathemetical analysis. |
| **Week 6** | Spot-Speed studies: Definition-Applications-Methods of measurements-Statistical analysis. |
| **Week 7** | Traffic Volume Studies: Definition-Types-Applications-Methods of measurements-Traffic volume counts-Expending and adjusting of short counts-Mathematical analysis |
| **Week 8** | Backgrond of Highway Capacityt: Definition-Types-Factors affecting capacity-Level of service types. |
| **Week 9** | Headway distribution (double exponential distribution( |
| **Week 10** | Intersections (general): Classification-types and shapes-Design principles- at-grade intersections-Interchange warrants |
| **Week 11** | Signalized Intersections: Definition-Types and shapes-Design principles (Webster and HCM methods) |
| **Week 12** | Parking Studies: Definition-Classification-Types-Design principles. |
| **Week 13** | Accident Studies: Definition- Classification-Record Systems-Safely Precaution and measures. |
| **Week 14** | HCM program application on Signalized Intersections |
| **Week 15** | TRANSCAD program application on trips generation, trips distribution, mode choice and traffic assignment |
| **Week 16** | Final Exam |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | |
| **Week 1** | Human Limitation at site of the study |
| **Week 2** | Design Vehicle choosing for highway design |
| **Week 3** | Highway Geometric Design and cross section elements |
| **Week 4** | Traffic Stream Parameters: macro and micro parameters |
| **Week 5** | Spot Speed Study and their field applications |

| | |
|---|---|
| **Week 6** | Seminar |
| **Week 7** | Traffic Safety Elements |
| **Week 8** | Level of Service of Highways |
| **Week 9** | Traffic Intersections Design |
| **Week 10** | Signalized Intersections cycle length and LOS |
| **Week 11** | Vehicles Parking |
| **Week 12** | Travel Time and Delays |
| **Week 13** | Traffic volumes distrubution |
| **Week 14** | Seminar |
| **Week 15** | Final Exam |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Traffic Engineering (2004) Roger P. Roess, Elena S. Prassas, William R. McShane. | Yes |
| **Recommended Texts** | • مبادئ هندسة المرور (2012) د.لمياء عبد الجليل احمد<br>• Traffic Engineering Manual (2009) State of Minnesota<br>• A policy on geometric design of highways and streets - American Association of State Highway and Transportation Officials<br>• Highway capacity manual – Transportation Research Board<br>• Traffic and Highway Engineering (2019) Nicholas J. Garber, Lester A. Hoel | Yes |
| **Websites** | | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | |
|---|---|---|---|
| **Module Title** | ENGINEERING PROJECT I | **Module Delivery** | |
| **Module Type** | CORE | **Theory**<br>**Lecture**<br>**Seminar** | |
| **Module Code** | CIVL-401 | | |
| **ECTS Credits** | 2 | | |
| **SWL (hr/sem)** | 50 | | |
| **Module Level** | 4 | **Semester (s) offered** | 1 |
| **Min number of students** | 15 | **Max number of students** | 80 |
| **Administering Department** | Civil Engineering | **College** | Engineering |
| **Module Leader** | All faculty members | **e-mail** | - |
| **Module Leader's Acad. Title** | - | **Module Leader's Qualification** | - |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | 01/06/2023 | **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, Indicative Contents and Brief Description

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر

| | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | The main aim of this course is to prepare students for the practical tasks of the work place after graduation. This includes building his/her ability to perform a complete project. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Upon completion of this course, the student should be able to:<br>2. Structure a working schedule for the project.<br>3. Present Clear aim and objectives of the graduation project.<br>4. Present the literature review with relation to the selected topic.<br>5. Carry out the design (or any topic selected).<br>6. Write a technical report.<br>7. Defend the technical report in front of a committee and be able to answer questions asked by the committee members. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>- Basic concepts of a project. (6hrs)<br>- Physical and Mechanical Properties of components (6 hr)<br>- Planning for construction (4 hr)<br>- Design steps (16 hrs) |
| **Course Description** | Graduation project leading to BSc. Degree, arranged between a student and the faculty member. The aim of the project must be one of the following: application of new scientific methods for solving different civil problems, and their modeling, analysis and Investigation of new research areas in civil engineering fields. Design, develop and present a project based on the knowledge acquired during undergraduate studies. |

## Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully describe the course design and teaching methodology for project and applications lectures specifically aimed at small college and university instruction. |

## Student Workload (SWL)

الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** **0**<br>**Office hours** **20**<br>**In class tests** **0**<br>**Discussions** **6**<br>**Practical** **4** | 30 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2.0 |

| | | | |
|---|---|---|---|
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home searching 40**<br>**Preparation for final test 10**<br>**Technical writing 20** | 70 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.6 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 100 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Discussion** | 30 | 30% (30) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 0 | 0% (0.0) | - | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 10 | 10% (10) | Continuous | All |
| **Summative assessment** | **Midterm Exam** | 0 | 0% (0) | - | - |
| | **Final defiance** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Sample identification and start applying the methodological framework |
| **Week 2** | Design, referee and review the research tool. |
| **Week 3** | Apply data collection tools |
| **Week 4-5** | Unloading, processing and analyzing data |
| **Week 6-7-8** | Draw and discuss conclusions and link the theoretical framework to the applied framework |
| **Week 9-10** | Extracting recommendations, building proposals and indicating the mechanisms for their implementation. |
| **Week 11** | Submit an initial copy of the project for review to the supervisor |
| **Week 12** | Submit the copy for linguistic review |
| **Week 13** | Submit the final version of the graduation project to the discussion committee |
| **Week 14** | **Posters presentation** |
| **Week 15** | **Graduation Project Discussion** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required References** | CIVIL ENGINEERING PROJECT MANAGEMENT, FOURTH EDITION. ALAN TWORT, GORDON REES, ELSEVIER, 2003 | No |
| **Recommended Texts** | | Yes |
| **Websites** | TBD | |

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | CONCRETE DESIGN III | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVL -402** | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 4 | | **Semester (s) offered** | 7 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Muyasser Mohammed Jomaa'h | | **e-mail** | muyasserjomaah@tu.edu.iq | |
| **Module Leader's Acad. Title** | Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Wisam Amer Aules | | **e-mail** | Wisam.a.aules@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **CIVL - 307** | **Semester** | 6 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | In this course, students learn some details of One-way R.C. ribbed slab design, two-way R.C. ribbed slab (Waffle) design, plastic hinges in beams, R.C. Flat slab (Design and Analysis), openings in slabs, R.C. circular slab design, yield Lines in slabs, R.C. Staircases design, R.C. corbels design, prestressed R.C. beams, and R.C. tanks design. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | Specific outcomes of instruction (e.g., the student will be able to explain the significance of current research about a particular topic.)<br>Upon successful completion of this course, you should be able to:<br>a. One-way R.C. ribbed slab design<br>b. Two-way R.C. ribbed slab (Waffle) design<br>c. Plastic hinges in beams<br>d. R.C. Flat slab (Design and Analysis)<br>e. Openings in slabs<br>f. R.C. circular slab design<br>g. Yield Lines in slabs<br>h. Staircases design<br>i. R.C. corbels design<br>j. Prestressed R.C. beams<br>k. R.C. tanks design. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• One-way R.C. ribbed slab design (4 hrs)<br>• Two-way R.C. ribbed slab (Waffle) design (6 hrs)<br>• Plastic hinges in beams (2 hrs)<br>• R.C. Flat slab (Design and Analysis) (6 hrs)<br>• Openings in slabs (2 hrs)<br>• R.C. circular slab design (4 hrs)<br>• Yield Lines in slabs (8 hrs)<br>• Staircases design (8 hrs)<br>• R.C. corbels design (8 hrs)<br>• Prestressed R.C. beams (8 hrs)<br>• R.C. tanks design. (6 hrs) | | |
| **Course Description** | In this course, students learn some details of One-way R.C. ribbed slab design, two-way R.C. ribbed slab (Waffle) design, plastic hinges in beams, R.C. Flat slab (Design and Analysis), openings in slabs, R.C. circular slab design, yield Lines in slabs, R.C. Staircases design, R.C. corbels design, | | |

| | |
|---|---|
| | prestressed R.C. beams, and R.C. tanks design. |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 78**<br>**In class tests 5**<br>**Seminars 10** | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 27**<br>**Prepartion for tests 20**<br>**Homeworks 10** | 57 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 10% (10) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | One-way R.C. ribbed slab design. Introduction |
| **Week 2** | 1- way RC ribbed slab design |
| **Week 3** | Two-way R.C. ribbed slab (Waffle) design |
| **Week 4** | Plastic hinges in beams |
| **Week 5** | R.C. Flat slab (Design and Analysis) |
| **Week 6** | Openings in slabs |
| **Week 7** | Midterm exam |
| **Week 8** | R.C. circular slab design |
| **Week 9** | Yield Lines in slabs |
| **Week 10** | R.C. Staircases design |
| **Week 11** | R.C. corbels design |
| **Week 12** | Prestressed R.C. beams. Introduction |
| **Week 13** | Prestressed beam analysis |
| **Week 14** | R.C. tanks design. Introduction<br>R.C. circular tanks design |
| **Week 15** | R.C. rectangular tanks design |
| **Week 16** | **Final Exam** |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | |
| **Week 2** | |
| **Week 3** | |
| **Week 4** | |
| **Week 5** | |
| **Week 6** | |
| **Week 7** | |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **"Design of concrete structures" by Nilson, A., Darwin, D. and Dolan, C., 14th edition, McGraw Hill, 2010, ISBN 978-007-131139-7.**<br><br>**"Design of Reinforced Concrete" by Jack McCormack and Brown, R., 9th edition, John Wiley & Sons, 2014, ISBN 978-1-118-12984-5.** | Yes |
| **Recommended Texts** | **"Building Code Requirements for Structural Concrete" by ACI-Code (ACI 318M-19), 2019.**<br><br>**"Structural Concrete Theory and Design" by M. Nadim Hassoun and Akthem Al-Manaseer, 7th edition, JohnWiley & Sons, 2020, ISBN 9781119605119.** | Yes |
| **Websites** | | |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | FOUNDATION ENGINEERING I | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVL – 403** | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | **150** | | | | |
| **Module Level** | 4 | | **Semester (s) offered** | 1 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Dr. Farouk Majeed Muhauwiss | | **e-mail** | dr.faroukmajeed@tu.edu.iq | |
| **Module Leader's Acad. Title** | Asst. Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Dr. Wisam Kh. Dheab | | **e-mail** | mr.wisamdheab@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **CIVL – 308** | **Semester** | 2 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Foundation engineers aim to comprehend the behavior of soil and its interaction with structures by performing a suitable geotechnical site investigation. This includes studying soil properties, such as strength, stiffness, compressibility, and permeability, to assess their influence on foundation design. Foundation engineers assess the bearing capacity of soil, which refers to its ability to support the applied loads from a structure without excessive settlement or failure. The aim is to ensure that the foundation has an adequate bearing capacity to safely support the structure's loads. Estimate the settlement occurs when a foundation undergoes vertical displacement due to soil compression or consolidation. Foundation engineers aim to minimize and control settlement through proper foundation design, including selecting appropriate foundation types, distributing loads, and considering soil improvement techniques. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1- Ability to perform geotechnical site investigations.<br>2-Assessing the bearing capacity of soil to ensure that the foundation has an adequate bearing capacity to safely support the structure's loads.<br>3- Students can be able to analyze and evaluate the performance of foundations, including assessing settlement, stability, and bearing capacity issues.<br>4- Students can develop problem-solving and critical thinking skills to identify, analyze, and solve geotechnical engineering problems related to foundation design.<br>5- Students can be able to effectively communicate their ideas, design solutions, and analysis results through written reports, drawings, and oral presentations. They should also develop the ability to work collaboratively in multidisciplinary teams. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Site investigations (20 hrs)<br>• Bearing capacity (30 hrs)<br>• Stresses in soil mass (10 hrs)<br>• Settlement of buildings (28 hrs) | | |
| **Course Description** | Foundation Engineering-I, are provided to deal with soil exploration method to investigate the underground soil physical and mechanical properties and conducting field tests. Calculating the bearing capacity of soil by various methods, estimating stress distribution through soil media to estimate all components of settlements that may occur due to loading coming from superstructure | | |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | Clearly communicate the module's learning outcomes and objectives to students at the beginning. This will provide them with a clear understanding of what they are expected to learn and achieve throughout the module. Incorporate active learning strategies to engage students actively in the learning process. This can include group discussions, problem-solving activities, case studies, and interactive simulations. Encourage students to actively participate and apply their knowledge to real-world scenarios. Visual representations can help students grasp complex concepts and make connections between theory and practical applications. Incorporate real-world examples and case studies of foundation engineering projects to demonstrate the application of theoretical concepts.. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 60**<br>**Tutorial 15**<br>**Final Exam 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 40**<br>**Prepartion for tests 20**<br>**Homeworks 12** | 72 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 3, 7, 11, 14 | LO #1, 2, and 3 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, , 9, 13 | LO # 1, 2, 3 and 4 |
| | **Case study reports** | 4 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 1.5 | 10% (10) | 8 | LO # 1-2 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Site investigation –Purpose, Planning, Boring. |
| **Week 2** | Site investigation – number and depth of Boreholes. |
| **Week 3** | Site investigation –disturbance in samples |
| **Week 4** | Site investigation –in situ tests |
| **Week 5** | Bearing Capacity - modes of failure, bearing capacity classification, factor of safety in design of foundation, bearing capacity requirements, factors affecting bearing capacity |
| **Week 6** | Bearing Capacity - methods of determining bearing capacity, which equations to use? |
| **Week 7** | Bearing Capacity - effect of soil compressibility (local shear failure), footings with inclined or eccentric loads. |
| **Week 8** | Midterm exam |
| **Week 9** | Bearing Capacity - effect of water table on bearing capacity, bearing capacity for footings on layered soils, Skempton's bearing capacity equation |
| **Week 10** | Bearing Capacity - design charts for footings on sand and non-plastic silt, bearing capacity of footings on slopes, foundation on rock |
| **Week 11** | Stresses in soil mass- definitions, contact pressure, stress increase due to different loading, point load, 2:1 approximation method, uniformly loaded line of finite length, uniformly loaded strip area. |
| **Week 12** | Stresses in soil mass- triangular loaded strip area, uniformly loaded circular area, uniformly loaded rectangular or square area, triangular load of limited length, embankment loading, any shape loaded area (Newmark chart): |
| **Week 13** | Settlement of buildings- types of settlement, tilting of foundations, limiting values of settlement parameters, components of total settlement, methods of computing immediate settlement |
| **Week 14** | Settlement of buildings- immediate settlement based on the theory of elasticity, Schmertmann's method (1978), Bjerrum's method for average settlement of layered clay soil, primary consolidation settlement, compression index $C_c$ method: |
| **Week 15** | Settlement of buildings- Skempton – Bjerrum modification for 3-dimentional consolidation, secondary consolidation settlement, degree or rate of settlement |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Bowles, J.E., 1996. Foundation analysis and design. McGraw-Hill.** | Yes |
| **Recommended Texts** | **Das, B.M., 2017. Shallow foundations: bearing capacity and settlement. CRC press.** | Yes |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
Tikrit University
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR

# وصف المادة الدراسية

## Module Information

معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | CONSTRUCTION METHODS | **Module Delivery** | |
| **Module Type** | CORE | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | CIVL – 404 | | |
| **ECTS Credits** | 5 | | |
| **SWL (hr/sem)** | 125 | | |
| **Module Level** | 4 | **Semester (s) offered** | 7 |
| **Administering Department** | Civi Engineering | **College** | Engineering |
| **Module Leader** | Dr. Abdulrahman Adnan | **e-mail** | Dr.abdulrahmanadnan@tu.edu.iq |
| **Module Leader's Acad. Title** | Assist Professor | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | Assist L. Younus KH. Mohammad | **e-mail** | Yunus.k.muhammad@tu.edu.iq |
| **Peer Reviewer Name** | Assist Prof.Dr. Maysoon A. Mansor | **e-mail** | Dr.maysoonabdullah@tu.edu.iq |
| **Review Committee Approval** | 1/6/2023 | **Version Number** | 1.0 |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **None** | **Semester** | -- |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Enabling students to develop a comprehensive understanding of the value engineering methodology, types of contracts, how to deal and the interrelationship between engineering contracts, referral methods, how to find the costs of owning and operating engineering equipment, the physical factors affecting the work of equipment, determining the productivity of some construction equipment, the productivity of concrete, how to design molds and Introducing students to the most important ethical problems that threaten their work and ways to solve them | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Introducing the student to value engineering<br>• Introducing the student to referral methods and engineering contracts<br>• Introducing the student to the engineering equipment and the factors affecting it, and calculating the costs of owning and operating.<br>• Introducing the student to the physiologic factors that affect the work of engineering equipment<br>• Introducing the student to the trailers, their specifications and method of work<br>• Introducing students to the most important equipment used in construction work<br>• Introducing students to the equipment used in concrete works<br>• Introduce the student to how molds carry concrete work<br>• Introducing students to ethical problems and ways to solve them | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Value Engineering (4 hrs)<br>• Engineering contract and Referral methods (4 hrs)<br>• engineering equipment (20 hrs)<br>• Engineering equipment productivity (16 hrs)<br>• Concrete productivity (5 hrs)<br>• Concrete formwork design (4 hrs)<br>• Ethical problems (4 hrs) | | |
| **Course Description** | This course aims to establish basic knowledge of construction contracts and how to deal with equipment in terms of its cost and productivity, and to identify the most important factors that affect its selection and then use it in | | |

| | |
|---|---|
| | accomplishing the tasks required to achieve the highest productivity and the lowest cost. and Introducing students to the most important ethical problems that threaten their work and ways to solve them |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** 60<br>**In class tests** 3<br>**Seminars** 3 | 66 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing** 25<br>**Prepartion for tests** **20**<br>**Homeworks** 14 | 59 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 6, 10, 12, 14 | LO #1, 2, 3, 4and 5 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5,6,7,8 and 9 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-10 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Value Engineering هندسة القيمة |
| **Week 2** | Engineering contracts, Referral methods العقود الهندسية واساليب الاحالة |
| **Week 3** | Classification of engineering equipment تصنيف المعدات الهندسية |
| **Week 4** | Owning and operating costs كلف الامتلاك والتشغيل |
| **Week 5** | Owning and operating costs كلف الامتلاك والتشغيل |
| **Week 6** | Physical factors affecting engineering equipment العوامل الفيزيائية التي تؤثر على المعدات الهندسية |
| **Week 7** | Physical factors affecting engineering equipment , Compactors العوامل الفيزيائية التي تؤثر على المعدات الهندسية , الحادلات |
| **Week 8** | Midterm exam, Tractors امتحان نصف الفصل , الجرارات |
| **Week 9** | Bulldozer , Tractors Shovel المقلعة , المجرفة |
| **Week 10** | Scrapers القاشطة |
| **Week 11** | Excavating equipment معدات الحفر |
| **Week 12** | Excavating equipment , Concrete production equipment معدات الحفر, معدات انتاج الخرسانة |
| **Week 13** | Concrete production equipment, Midterm exam معدات انتاج الخرسانة. امتحان فصلي |
| **Week 14** | Forms for concrete structures قوالب المنشآت الخرسانية |
| **Week 15** | Ethical problems المشاكل الاخلاقية |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **1. تخطيط ومعدات وطرق الانشاء**<br>**محمد ايوب صبري العزي. الجزء الاول . بغداد 1982**<br>**2.** . Engineering Ethics by CHARLES B. FLEDDERMANN, Fourth Edition Library of Congress Cataloging-in-Publication Data | No |
| **Recommended Texts** | **Frank H& Ronald McCaffer " Construction Plant " Granada publishing, 1982** | No |

**APPENDIX:**

| GRADING SCHEME<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | SANITARY ENGINEERING I | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | CIVL – 405 | | | | |
| **ECTS Credits** | 5 | | | | |
| **SWL (hr/sem)** | 125 | | | | |
| **Module Level** | 4 | | **Semester (s) offered** | 7 | |
| **Administering Department** | Civi Engineering | | **College** | Engineering | |
| **Module Leader** | Assist. Prof. Samaher J. Mohammed | | **e-mail** | Samaher.j.mohammed@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | M.Sc. | |
| **Module Tutor** | Assist. Lecture Dalia Sh. Mahdi | | **e-mail** | Eng.dalia9494@gmail.com | |
| **Peer Reviewer Name** | Assist. Prof. Ruqiya Abed Hussain | | **e-mail** | ms.ruqiyaabed@tu.edu.iq | |
| **Review Committee Approval** | 1/6/2023 | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | CIVL -210 | **Semester** | 4 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | 1. The course aims to introduce students to the basics of designing and evaluating wastewater networks and their accessories, such as the types of pipes used.<br>2. Introduce students to the sources of sewage water, runoff in sewage pipes, and what are the accessories of sewage networks<br>3. Teaching students the basics of designing storm networks and their accessories.<br>4. Teaching the student to calculate the amounts of rain water. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. The learner will be able to design a sewage networks system in addition to knowing the accessories of the network and everything related to the works of its two sites.<br>2. Knowing the details of the storm networks system and rainfall calculations, in addition to the network accessories and everything related to its site engineering works.<br>3. Design of lift stations as well as design of waterways for buildings | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Undergraduate Review (4 hrs)<br>• Fundamentals of sewage network design (20 hrs)<br>• Case studies and evaluate sewage network (15 hrs)<br>• Fundamentals of storm network design (20 hrs)<br>• Case studies and evaluate storm network (11 hrs) | | |
| **Course Description** | This course aims to form the basic knowledge for designing and evaluating infrastructure networks (sewage network system and storm network system). The presentation of the course begins with studying the methods of collecting water for the two networks, calculating their quantities, and then using the results in designing the network, in addition to studying the international standards for these networks. Networks evaluation (sewage network system and storm network system) and ways to fix it were also discussed | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |

| | |
|---|---|
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 70**<br>**In class tests 5**<br>**Seminars 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 22**<br>**Prepartion for tests 15**<br>**Homeworks 10** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 4, 7, 10, 12, 14 | All |
| | **Assignments** | 6 | 10% (10) | 6, 8, 10, 12 | All |
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | All |
| | **Laboratory** | 3 | 15% (15) | continuous | |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | Introduction |
| **Week 2** | Types and Characterizes of Wastewater |
| **Week 3** | Sewer pipes |
| **Week 4** | Estimate the amount of sewage |
| **Week 5** | Estimate the amount of sewage by using population |
| **Week 6** | Design of Sanitary Sewers system |
| **Week 7** | Midterm exam |
| **Week 8** | Design of Storm Sewers |
| **Week 9** | Rainfall Investigations |
| **Week 10** | The ground and underground survey |
| **Week 11** | Layout of the system |
| **Week 12** | Rainfall equation, factors and amount of rainfall water |
| **Week 13** | Design of inlet system and pipe system |
| **Week 14** | Design of pipe and manhole |
| **Week 15** | The profile |
| **Week 16** | Final Exam |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Introduction about wastewater and storm |
| **Week 2** | Lab 2: How to write report |
| **Week 3** | Lab 3: Sample collection method for wastewater and rainwater |
| **Week 4** | Lab 4: Sample collection method for storm water |
| **Week 5** | Lab 5: Temperature and PH-Value |
| **Week 6** | Lab 6: Turbidity |
| **Week 7** | Lab 7: color, Taste and Odor |
| **Week 8** | Lab 8: Determination of Total Solids |
| **Week 9** | Lab 9: Volatile Solid |

| | |
|---|---|
| **Week 10** | Lab 10: Non-Volatile Solid |
| **Week 11** | Lab 11: Organic compound |
| **Week 12** | Lab 12: Solids and Density |
| **Week 13** | Lab 13: Dissolved Solid D.S |
| **Week 14** | Lab 14: Suspended Solid S.S |
| **Week 15** | Lab 15: Oils and Fats |
| **Week 16** | Lab 16: Final Exam |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Water Supply and Sewage, by E.W. Steel, and T.G. McGhee. 1979<br>A Guide to selection of cost-effective wastewater treatment system by Mc kinney R. E.; United Stats Environmental j.; 1975 | Yes |
| **Recommended Texts** | Haestad Methods S. Rocky Durrans. STORMWATER CONVEYANCE MODELING AND DESIGN. Bentley Institute Press, 2007 | No |
| **Websites** | | |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | HYDRAULIC STRUCTURES | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | **CIVL – 406** | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | 150 | | | | |
| **Module Level** | 4 | | **Semester (s) offered** | 7 | |
| **Administering Department** | Civi Engineering | | **College** | Engineering | |
| **Module Leader** | Ruqiya Abed Hussain | | **e-mail** | ms.ruqiyaabed@tu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | MSc | |
| **Module Tutor** | Dr. Asmaa Abdul Jabbar Jamel<br>Asst.Lecturer: Omar Taher Nafee<br>Asst.Lecturer: Sinan Noori Faihan | | **e-mail** | ms.asmaajameel@tu.edu.iq<br>mr.omartaher@tu.edu.iq<br>SinaSinananajjar@tu.edu.iq | |
| **Peer Reviewer Name** | Lecturer: Mohammed Faiq Yass | | **e-mail** | mohamed_faiq@tu.edu.iq | |
| **Review Committee Approval** | 1/6/2023 | | **Version Number** | 1.0 | |

<table>
<tr><th colspan="4">Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى</th></tr>
<tr><td>Prerequisite module</td><td>CIVL -210</td><td>Semester</td><td>6</td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</td><td>-</td></tr>
<tr><th colspan="4">Module Aims, Learning Outcomes, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر</th></tr>
<tr><td colspan="2">Module Aims<br>أهداف المادة الدراسية</td><td colspan="2">1. To learn students some details of Principles of hydraulic structures designing and focusing on some important installations in life, such as canals, gates, irrigation control systems, as well as culverts, inverted siphon and other hydraulic structures .<br>2. To develop problem solving skills and understanding of hydraulic structure theories through the application of Practical applications.<br>3. This course deals with the basic concept of hydraulic structures.</td></tr>
<tr><td colspan="2">Module Learning Outcomes<br><br>مخرجات التعلم للمادة الدراسية</td><td colspan="2">• The student learns how to design hydraulic structures of various kinds.<br>• Giving the student experience in choosing the appropriate method for designing these structures through the available data.<br>• Giving the student experience in choosing the appropriate method designing.<br>• The student will be familiar with the most important design methods used.<br>• acquire and apply new knowledge as needed, using appropriate learning strategies.<br>• The student learns how to design hydraulic structures according to modern programs and laws, and study the properties of some facilities in terms of their type, composition, or flow properties and the factors affecting them.</td></tr>
<tr><td colspan="2">Indicative Contents<br>المحتويات الإرشادية</td><td colspan="2">Indicative content includes the following.<br><br>• Introduction to Hydraulic Structures (3 hours)<br>• Regulators: Types of Regulators, Design of Regulators (6 hours)<br>• Design of Floors, Causes of floor failures (6 hours)<br>• Design of Floor Using Lane's ,Bligh and Khosla's Theory (6 hours)<br>• Energy Dissipaters (6 hours)<br>• Vertical Drop (6 hours)<br>• Standard Stilling Basins (6 hours)<br>• Protection Works (3 hours)</td></tr>
</table>

| | |
|---|---|
| | • Transitions (6 hours)<br>• Culvert (6 hours)<br>• Aqueduct( pipe and flume ) (6 hours)<br>• Weirs and Spillways (6 hours)<br>• Dams, Economic Height of the Dam (6 hours)<br>• Concrete Gravity Dam concrete (6 hours)<br>• Earth Dam(6 hours) |
| **Course Description** | This course aims to establish fundamental knowledge of designing hydraulic structures according to modern programs and laws, and studying the characteristics of some facilities in terms of their types, composition, flow properties, and the factors affecting them. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 84**<br>**In class tests 5**<br>**Seminars 4** | 93 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 6.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 32**<br>**Prepartion for tests 15**<br>**Homeworks 10** | 57 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Introduction to Hydraulic Structures |
| **Week 2** | Types of Hydraulic Structures, Regulators: Types of Regulators, Discharge of Regulators with fully and partial opening of gate, Design of Regulators. |
| **Week 3** | Design of Floors, Causes of floor failures ( Piping & Uplift Pressure). |
| **Week 4** | - Design of Floor Using Bligh's Theory.<br>- Design of Floor Using Lane's Theory.<br>- Design of Floor Using Khosla's Theory. |
| **Week 5** | - Energy Dissipaters,<br>- Hydraulic Jump, Types of Hydraulic jump, Basic Characteristics of Hydraulic Jump |
| **Week 6** | - Vertical Drop |
| **Week 7** | - Standard Stilling Basins, Types of Stilling Basins |
| **Week 8** | - Protection Works |
| **Week 9** | -Transitions, Types of Transitions, Design of Warped Transition |
| **Week 10** | - Hydraulic Analysis of Culvert<br>- Loading and Structural Design of Culvert |
| **Week 11** | -Design of Pipe Aqueduct.<br>- Design of Flume Aqueduct<br>-Design of Inverted Siphon |
| **Week 12** | - Weirs, Types of Weirs, Design of Weirs<br>- Spillways, Types of Spillways, Design of Ogee Spillway |
| **Week 13** | -Dams, Classification of Dams, Factors Governing selection Dam Type, Selection of Dam Site, Economic Height of the Dam |

| | |
|---|---|
| | |
| **Week 14** | - Concrete Gravity Dam, Forces Acting on Gravity Dam |
| **Week 15** | **-** Earth Dam, Types of Earth Dams, Causes of failures of Earth Dams, , Seepage through Earth Dam, Phreatic Line in an earth dam(Casagrande Method), Stability Analysis of Slopes, Over All stability of Earth Dam |
| **Week 16** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | |
| **Week 2** | |
| **Week 3** | |
| **Week 4** | |
| **Week 5** | |
| **Week 6** | |
| **Week 7** | |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | • Chow ,V.T. ," Open channel Hydraulics" Mc Craw Hill Company ,1959.<br>• Varshney ,R.S.,S.C.Gupta,and R.L.Gupta,"Theory and design of irrigation structures " N.C. Jainat Rookee Press , India vol . II, 1982.<br>• Irrigation Engineering and Hydraulic Structures(Santosh Kumar Garg)19Edition ,New Delhi 2005. | No |
| **Recommended Texts** | • Design Textbook in civil Engineering ….. By ( Serge Leliavsky )<br>• Hydraulic Structures P. Novak, A.I.B. Moffat and C. Nalluri and R. Narayanan<br>4 th edition ., 2007. | No |

| | | |
|---|---|---|
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
University of Tikrit
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | ENGINEERING PROJECT II | **Module Delivery** | |
| **Module Type** | CORE | **Practical Seminar** | |
| **Module Code** | CIVL-407 | | |
| **ECTS Credits** | 2 | | |
| **SWL (hr/sem)** | 50 | | |
| **Module Level** | 4 | **Semester (s) offered** | 2 |
| **Min number of students** | 15 | **Max number of students** | 80 |
| **Administering Department** | Civil Engineering | **College** | Engineering |
| **Module Leader** | All faculty members | **e-mail** | - |
| **Module Leader's Acad. Title** | - | **Module Leader's Qualification** | - |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | 01/06/2023 | **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, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | The main aim of this course is to prepare students for the practical tasks of the work place after graduation. This includes building his/her ability to perform a complete project. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Upon completion of this course, the student should be able to:<br>2. Structure a working schedule for the project.<br>3. Present Clear aim and objectives of the graduation project.<br>4. Present the literature review with relation to the selected topic.<br>5. Carry out the design (or any topic selected).<br>6. Write a technical report.<br>7. Defend the technical report in front of a committee and be able to answer questions asked by the committee members. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>- Basic concepts of a project. (6hrs)<br>- Physical and Mechanical Properties of components (6 hr)<br>- Planning for construction (4 hr)<br>- Design steps (16 hrs) |
| **Course Description** | Graduation project leading to BSc. Degree, arranged between a student and the faculty member. The aim of the project must be one of the following: application of new scientific methods for solving different civil problems, and their modeling, analysis and Investigation of new research areas in civil engineering fields. Design, develop and present a project based on the knowledge acquired during undergraduate studies. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully describe the course design and teaching methodology for project and applications lectures specifically aimed at small college and university instruction. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** **0**<br>**Office hours** **20**<br>**In class tests** **0**<br>**Discussions** **6**<br>**Practical** **4** | 30 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2.0 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 70 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.6 |

| | | | |
|---|---|---|---|
| **Library, dorm, home searching 40**<br>**Preparation for final test 10**<br>**Technical writing 20** | | | |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 100 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Discussion** | 30 | 30% (30) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 0 | 0% (0.0) | - | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 10 | 10% (10) | Continuous | All |
| **Summative assessment** | **Midterm Exam** | 0 | 0% (0) | - | - |
| | **Final defiance** | 3 | 60% (60) | 16 | All |
| **Total assessment** | | | 100%<br>(100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Sample identification and start applying the methodological framework |
| **Week 2** | Design, referee and review the research tool. |
| **Week 3** | Apply data collection tools |
| **Week 4-5** | Unloading, processing and analyzing data |
| **Week 6-7-8** | Draw and discuss conclusions and link the theoretical framework to the applied framework |
| **Week 9-10** | Extracting recommendations, building proposals and indicating the mechanisms for their implementation. |
| **Week 11** | Submit an initial copy of the project for review to the supervisor |
| **Week 12** | Submit the copy for linguistic review |
| **Week 13** | Submit the final version of the graduation project to the discussion committee |
| **Week 14** | **Posters presentation** |
| **Week 15** | **Graduation Project Discussion** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | **Text** | **Available in the Library?** |
|---|---|---|

| | | |
|---|---|---|
| **Required References** | CIVIL ENGINEERING PROJECT MANAGEMENT, FOURTH EDITION. ALAN TWORT, GORDON REES, ELSEVIER, 2003 | No |
| **Recommended Texts** | | Yes |
| **Websites** | TBD | |

Ministry of Higher Education and Scientific Research - Iraq
University of Tikrit
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | STEEL DESIGN | **Module Delivery** | |
| **Module Type** | CORE | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | **CIVL- 408** | | |
| **ECTS Credits** | 5 | | |
| **SWL (hr/sem)** | 125 | | |
| **Module Level** | 4 | **Semester (s) offered** | 8 |
| **Administering Department** | Civil & Env. Engineering | **College** | Engineering |
| **Module Leader** | Dr. Hosam A. Al-Azzawi | **e-mail** | hosam@tu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | | **Version Number** | 1.0 |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | **CIVL-307** | **Semester** | 7 |
| **Co-requisites module** | None | **Semester** | - |

| Module Aims, Learning Outcomes, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | - Learn the current specification for LRFD mehod<br>- Be able to design steel members and connections based on LRFD method. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Apply the load and resistance factor design (LRFD)<br>• Analysis and design of individual members and connections.<br>• Identify and formulate problems in steel structure design and find appropriate solutions<br>• Make a balance between a theoretical and the practical |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• LRFD loads and strength (4 hrs)<br>• Tension and compression members (14 hrs)<br>• Beams (10 hrs)<br>• Beams - columns (8 hrs)<br>• Connection (8 hrs)<br>• Bolted and welded connections (12 hrs) |
| **Course Description** | This course aims to establish fundamental knowledge of steel design and engineering. Presentation of the course starts by introducing the LRFD loads and then utilizes it to deals with different types of members under various types of loads and boundary conditions. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate , examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 56**<br>**In class tests 5**<br>**Seminars 4** | 65 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 30**<br>**Prepartion for tests 20**<br>**Homeworks 10** | 60 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | |
| | **Final Exam** | 3 | 50% (50) | 16 | |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | Introduction –Loads- Design specification- Standard cross-sectional shapes |
| **Week 2** | Tension members |
| **Week 3** | Tension members + Compression members-introduction |
| **Week 4** | Compression members |
| **Week 5** | Compression members cont. + Beams-introduction |
| **Week 6** | Beams |
| **Week 7** | Beams |

| | |
|---|---|
| **Week 8** | Midterm exam |
| **Week 9** | Beams-Columns |
| **Week 10** | Beams-Columns cont. |
| **Week 11** | Connections |
| **Week 12** | Connections cont. |
| **Week 13** | Bolted connection –simple – shear & tension, prying on bolts |
| **Week 14** | Welded connections |
| **Week 15** | Welded connections (Fillet, PJP, CJP, simple connections) |
| **Week 16** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **AISC Manual of steel construction, 15th ed 2017** | No |
| **Recommended Texts** | **W.T. Segui steel Design 5th ed., Thomson** | No |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | FOUNDATION ENGINEERING II | | | **Module Delivery** | |
| **Module Type** | CORE | | | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | **CIVL – 409** | | | | |
| **ECTS Credits** | 6 | | | | |
| **SWL (hr/sem)** | **150** | | | | |
| **Module Level** | 4 | | **Semester (s) offered** | 2 | |
| **Administering Department** | Civil Engineering | | **College** | Engineering | |
| **Module Leader** | Dr. Farouk Majeed Muhauwiss | | **e-mail** | dr.faroukmajeed@tu.edu.iq | |
| **Module Leader's Acad. Title** | Asst. Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | Dr. Wisam Kh. Dheab | | **e-mail** | mr.wisamdheab@tu.edu.iq | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Review Committee Approval** | | | **Version Number** | 1.0 | |

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **CIVL – 403** | **Semester** | 1 |
| **Co-requisites module** | None | **Semester** | - |
| **Module Aims, Learning Outcomes, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Foundation engineers analyze the loads acting on a structure and design the foundation to distribute these loads effectively to the underlying soil, ensuring that the structure remains stable and does not experience excessive settlement, tilting, or failure. Determining suitable foundation types to identify and select the most appropriate foundation type for a given structure and soil conditions. This involves considering factors such as building loads, soil characteristics, groundwater conditions, and environmental factors to determine whether shallow foundations (e.g., spread footings, mat foundations) or deep foundations (e.g., piles and drilled shafts) are more suitable. Dealing with the problems of slope stability, analysis and design earth retaining structures. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1- Proficiency in foundation structural design and developing the skills necessary to design various types of foundations, including shallow (spread, combined and mat foundations) foundations<br>2- Ability to estimate piles load capacity and design pile cap.<br>3- Analysis and design of retaining structure (e.g. gravity and cantilever retaining walls)<br>4- The ability to deal with slope stability problems and how to evaluate the factor of safety against failure.<br>5- Students can develop problem-solving and critical thinking skills to identify, analyze, and solve geotechnical engineering problems related to foundation design.<br>6- Students can be able to effectively communicate their ideas, design solutions, and analysis results through written reports, drawings, and oral presentations. They should also develop the ability to work collaboratively in multidisciplinary teams. | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• structural design of footings (30 hrs)<br>• deep foundations – pile foundations (20 hrs)<br>• retaining walls and slope stability (15 hrs)<br>• stability of slopes (13 hrs) | | |
| **Course Description** | Foundation engineering-II, are provided to deal with structural design of spread, combined and mat foundation. Estimating the load capacity of various type of single piles and group piles in different methods. Calculating the lateral earth pressure and design gravity and cantilever retaining walls. Finding the factor of safety for natural and artificial ground slopes. | | |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | Clearly communicate the module's learning outcomes and objectives to students at the beginning. This will provide them with a clear understanding of what they are expected to learn and achieve throughout the module. Incorporate active learning strategies to engage students actively in the learning process. This can include group discussions, problem-solving activities, case studies, and interactive simulations. Encourage students to actively participate and apply their knowledge to real-world scenarios. Visual representations can help students grasp complex concepts and make connections between theory and practical applications. Incorporate real-world examples and case studies of foundation engineering projects to demonstrate the application of theoretical concepts.. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 60**<br>**Tutorial 15**<br>**Final Exam 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 40**<br>**Prepartion for tests 20**<br>**Homeworks 12** | 72 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 3, 7, 11, 14 | LO #1, 2, and 3 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, , 9, 13 | LO # 1, 2, 3 and 4 |
| | **Case study reports** | 4 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 1.5 | 10% (10) | 8 | LO # 1-2 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| | **Material Covered** |
| **Week 1** | Structural design of footings- types of footings, assumptions, load combinations, critical sections for footings, ACI 318−14 code requirements, soil pressure distributions under footings |
| **Week 2** | Structural design of footings- design of concentric spread footings, design steps of square spread footings, design steps of rectangular spread footings, design steps of wall spread footings |
| **Week 3** | Structural design of footings- design steps of eccentric spread footings, design of combined footings |
| **Week 4** | Structural design of footings- design of rectangular combined footings, design of trapezoidal combined footings, design of strap combined footings |
| **Week 5** | Structural design of footings- mat foundations, uses of mat foundations, types of mat foundations, design of mat foundations |
| **Week 6** | Structural design of footings- the conventional rigid method, the approximate flexible method, discrete methods, design steps of mat foundations by conventional rigid method |
| **Week 7** | Pile foundations- ultimate pile capacity, piles in compression, piles in tension, piles in clay, Tomlinson (1971) $\alpha-$method, Meyerhof (1976) $\beta-$method |
| **Week 8** | Midterm exam |
| **Week 9** | Pile foundations- Tomlinson (1971) method, Vijayvergia and Focht (1972) method, Burland method (1973) for bored piles, frictional resistance for piles in sand |
| **Week 10** | Pile foundations- Broom's method (1965), Nurdlund's method (1965), pile foundations group, spacing of piles, efficiency of pile group |
| **Week 11** | Pile foundations- pile group efficiency in clay, pile group efficiency in sand, negative skin friction, piles group subjected to moment, design of pile cap, practical aspects on pile cap design, design procedure of pile cap |
| **Week 12** | Retaining walls- introduction, types of retaining walls, design considerations, definitions of terms |
| **Week 13** | Retaining walls- gravity retaining walls, cantilever retaining walls, |
| **Week 14** | Retaining walls- forces acting on retaining walls, stability considerations |
| **Week 15** | Stability of slopes, types of slips, safety factor, infinite slopes, effect of seepage, ($\varphi = 0$) condition, triangular cross section |
| **Week 16** | **Final Exam** |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | **Bowles, J.E., 1996. Foundation analysis and design. McGraw-Hill.** | Yes |
| **Recommended Texts** | **Baban, T. M., 2016. Shallow Foundations Discussions and Problem Solving. by John Wiley & Sons, Ltd, ISBN: 9781119056119** | No |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq
Tikrit University
College of Engineering
Department of Civil Engineering

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | ESTIMATING & SPECIFICATIONS | **Module Delivery** | |
| **Module Type** | CORE | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Seminar** | |
| **Module Code** | CIVL – 410 | | |
| **ECTS Credits** | 6 | | |
| **SWL (hr/sem)** | 150 | | |

| | | | |
|---|---|---|---|
| **Module Level** | 4 | **Semester (s) offered** | 8 |
| **Administering Department** | Civi Engineering | **College** | Engineering |
| **Module Leader** | Dr. Abdulrahman Adnan | **e-mail** | Dr.abdulrahmanadnan@tu.edu.iq |
| **Module Leader's Acad. Title** | Assist Professor | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | Assist L. Younus KH. Mohammad | **e-mail** | Yunus.k.muhammad@tu.edu.iq |
| **Peer Reviewer Name** | Assist Prof.Dr. Maysoon A. Mansor | **e-mail** | Dr.maysoonabdullah@tu.edu.iq |
| **Review Committee Approval** | 1/6/2023 | **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, Indicative Contents and Brief Description**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | | | |
| **Module Aims**<br>أهداف المادة الدراسية | Enable students to develop a comprehensive understanding of the methodology of the principles of preliminary and detailed estimation, calculating the amount of ironwork, pricing items, how to prepare a technical specification, and how to deal with undertaking documents. | | |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Introducing the student to the initial estimation and its types<br>• Introducing the student with the duties of the quantity surveyor during the stages of project completion<br>• Introduce the student to detailed estimation<br>• Introducing the student to how to prepare price tables.<br>• Introducing the student how to write a technical specification.<br>• Introducing the student to the undertaking documents and the engineering supervision contract<br>• Introducing the student to the Unified Standard Guide | | |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Introduction to the types of estimation and the duties of the quantity surveyor during the stages of project completion (4 hrs)<br>• Initial estimation (4 hrs)<br>• Detailed estimation (20 hrs)<br>• Estimation the amount of earthwork (4 hrs)<br>• Pricing (10 hrs)<br>• Technical Specifications (4 hrs)<br>• undertaking documents (10 hrs)<br>• Engineering supervision contract (4hrs) | | |
| **Course Description** | Introducing the student to the duties of the quantity surveyor during the stages of project completion, as well as estimating the value of the origin in an initial and detailed manner, as well as estimating the amount of earthworks for roads and canals, and being able to do price analysis and write specifications and undertaking documents. | | |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | | | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. | | |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures** 60<br>**In class tests** 3<br>**Seminars** **15** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing** 25<br>**Prepartion for tests** **20**<br>**Homeworks** **27** | 72 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 6, 10, 12, 14 | LO #1, 2, 3, 4and 5 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5,6,7,8 and 9 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 8 ,14 | LO # 1-10 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | Material Covered |
|---|---|
| **Week 1** | مقدمة عن المسح الكمي و واجبات المساح الكمي خلال مراحل انجاز المشروع |
| **Week 2** | التخمين الاولي |
| **Week 3** | التخمين التفصيلي |
| **Week 4** | التخمين التفصيلي |
| **Week 5** | التخمين التفصيلي |
| **Week 6** | التخمين التفصيلي |
| **Week 7** | التخمين التفصيلي |

| | |
|---|---|
| **Week 8** | امتحان فصلي .الاعمال الترابية |
| **Week 9** | الاعمال الترابية, تحليل الاسعار |
| **Week 10** | تحليل الاسعار |
| **Week 11** | تحليل الاسعار |
| **Week 12** | المواصفات الفنية |
| **Week 13** | وثائق التعهد |
| **Week 14** | وثائق التعهد. امتحان فصلي |
| **Week 15** | عقد الاشراف الهندسي |
| **Week 16** | امتحان نهائي |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **د. غانم عبدالرحمن بكر " تخمين ومواصفات الاعمال الانشائية" المكتبة الوطنية بغداد 1986** | No |
| **Recommended Texts** | **B.N.Dutta " Estimating &costing " S.Dutta &Co publishing, 20th Edition 1989** | No |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.

| | | |
|---|---|---|
| | Ministry of Higher Education and Scientific Research - Iraq<br>Tikrit University<br>College of Engineering<br>Department of Civil Engineering | |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | SANITARY ENGINEERING II | **Module Delivery** | |
| **Module Type** | CORE | **Theory**<br>**Lecture**<br>**Tutorial**<br>**Practical**<br>**Seminar** | |
| **Module Code** | CIVL – 411 | | |
| **ECTS Credits** | 5 | | |
| **SWL (hr/sem)** | 125 | | |
| **Module Level** | 4 | **Semester (s) offered** | 8 |
| **Administering Department** | Civi Engineering | **College** | Engineering |
| **Module Leader** | Assist. Prof. Samaher J. Mohammed | **e-mail** | Samaher.j.mohammed@tu.edu.iq |
| **Module Leader's Acad. Title** | Assistant Professor | **Module Leader's Qualification** | M.Sc. |
| **Module Tutor** | Assist. Lecture Dalia Sh. Mahdi | **e-mail** | Eng.dalia9494@gmail.com |
| **Peer Reviewer Name** | Assist. Prof. Ruqiya Abed Hussain | **e-mail** | ms.ruqiyaabed@tu.edu.iq |
| **Review Committee Approval** | 1/6/2023 | **Version Number** | 1.0 |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | CIVL -405 | **Semester** | 8 |
| **Co-requisites module** | None | **Semester** | - |

| Module Aims, Learning Outcomes, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | 1. The course aims to introduce students to the basics of designing and evaluating Supply water networks and their accessories, such as the types of pipes used<br>2. Introduce students to the sources and demand of supply water, pressure in pipes, and what are the accessories of supply water networks system<br>3. Introduce students to estimated population, water demand, water pressure |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. The learner will be able to design a supply water networks system in addition to knowing the accessories of the network and everything related to the works of its sites.<br>2. The learner will be able to evaluate supply water networks system and the water demand for it.<br>3. The learner will be able to estimated population, water demand and water pressure |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following.<br>• Undergraduate Review (4 hrs)<br>• Fundamentals of supply water networks system design (20 hrs)<br>• Case studies and evaluate supply water networks system (20 hrs)<br>• Fundamentals of population, water demand, water pressure (20 hrs)<br>• Case studies and evaluate supply water network (6 hrs) |
| **Course Description** | This course aims to form the basic knowledge for designing and evaluating infrastructure network (supply water networks system). The presentation of the course begins with studying the methods of supplying water for the city, calculating the water demand, and then using the results in designing the network, in addition to studying the international standards for these networks. Networks evaluation for supply water networks and ways to fix it were also discussed |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning and teaching **strategy** is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) |

| | |
|---|---|
| | examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 70**<br>**In class tests 5**<br>**Seminars 3** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Library, dorm, home memorizing 22**<br>**Prepartion for tests 15**<br>**Homeworks 10** | 47 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3.1 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 5% (5) | 4, 6, 12, 14 | All |
| | **Assignments** | 6 | 10% (10) | 6, 8, 10, 12 | All |
| | **Seminars** | 3 | 10% (10) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | All |
| | **Laboratory** | 3 | 15% (15) | continuous | |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| | **Material Covered** |
|---|---|
| **Week 1** | Introduction to Water Supply System |
| **Week 2** | Types and characterizes of supply water |
| **Week 3** | supply water networks pipes |
| **Week 4** | Estimate the water demand |

| | |
|---|---|
| **Week 5** | Estimate the consumption of supply water by using population |
| **Week 6** | Design of supply water networks system |
| **Week 7** | Midterm exam |
| **Week 8** | Required Capacity Water supply systems |
| **Week 9** | Requirements of Good Distribution System |
| **Week 10** | Distribution Reservoirs |
| **Week 11** | Distribution System Design Requirements |
| **Week 12** | Intake Structure |
| **Week 13** | Screening: Type of screen, Design of screen |
| **Week 14** | Design of sedimentation basins |
| **Week 15** | head loss in pipe |
| **Week 16** | Final Exam |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| | **Material Covered** |
| **Week 1** | Lab 1: Introduction about supply water |
| **Week 2** | Lab 2: Sample collection method for Supply water |
| **Week 3** | Lab 3: Electrical Conductivity |
| **Week 4** | Lab 4: Metals |
| **Week 5** | Lab 5: Viscosity |
| **Week 6** | Lab 6: Chloride and Residual chlorine |
| **Week 7** | Lab 7: Dissolved Oxygen |
| **Week 8** | Lab 8: Hardness |
| **Week 9** | Lab 9: Total Plate count |
| **Week 10** | Lab 10: Alkalinity |
| **Week 11** | Lab 11: Acidity |
| **Week 12** | Lab 12: Sulfate |
| **Week 13** | Lab 13: Phosphates |
| **Week 14** | Lab 14: Nitrogen compound |

| | |
|---|---|
| **Week 15** | Lab 15: Test for coliform bacteria |
| **Week 16** | Lab 16: Final Exam |

| **Learning and Teaching Resources**<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Water Supply Engineering Design, by E.W. Steel, and T.G. McGhee. 1979<br>Water and wastewater treatment by Joanne E. Drinan, Frank R. Spellman, 2013 | Yes |
| **Recommended Texts** | • WHO 2011 WHO guidelines for drinking-water quality (Geneva: World Health Organization)<br>• Water quality index (WQI) for groundwater quality assessment by Kumar S K, Logeshkumaran A, Magesh N S, Godson P S and Chandrasekar 2015 ,Chennai City. Water Sci. 5 335–343 | No |
| **Websites** | | |

**APPENDIX:**

| **GRADING SCHEME**<br>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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

NB 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.

| | | |
|---|---|---|
|  | Ministry of Higher Education and Scientific Research - Iraq<br>University of Tikrit<br>College of Engineering<br>Department of Civil Engineering |  |

# MODULE DESCRIPTOR
# وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | Engineering Software applications | **Module Delivery** | |
| **Module Type** | Suplement | **Theory**<br>**Lecture**<br>**Practical**<br>**Seminar** | |
| **Module Code** | CIVL -412 | | |
| **ECTS Credits** | 6 | | |
| **SWL (hr/sem)** | 150 | | |
| **Module Level** | 4 | **Semester (s) offered** | 8ustafa |
| **Administering Department** | Civil Engineering | **College** | Engineering |
| **Module Leader** | Mustafa Dheyaa Othman | **e-mail** | Mustafa.AlMashaykhi@tu.edu.iq |
| **Module Leader's Acad. Title** | Asst. lect. | **Module Leader's Qualification** | Ms. C. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | | **e-mail** | |
| **Review Committee Approval** | 01/06/2023 | **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, Indicative Contents and Brief Description<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر | |
|---|---|
| **Module Aims**<br>أهداف المادة الدراسية | The aim of this module is to equip students with the necessary skills and knowledge to effectively use engineering software applications for various engineering tasks and applications. The module will focus on introducing students to different software tools commonly used in the field of engineering and providing hands-on experience in utilizing these tools to solve engineering problems. By the end of the module, students should be able to proficiently apply engineering software for analysis, design, modeling, and documentation purposes. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | 1. Familiarity with Engineering Software: Gain an understanding of the purpose, capabilities, and features of different engineering software applications commonly used in the industry.<br>2. Software Navigation and Interface: Develop proficiency in navigating through various software interfaces, understanding different tools and functions, and effectively utilizing the software's user interface.<br>3. Analysis and Simulation: Acquire skills in utilizing engineering software for performing analysis and simulation tasks, such as structural analysis, fluid dynamics simulations, heat transfer analysis, or electrical circuit simulations.<br>4. Data Management and Visualization: Understand how to manage and organize data within engineering software, including importing and exporting data, creating data visualizations, and generating reports.<br>5. Practical Application: Apply engineering software to solve real-world engineering problems, evaluate design alternatives, optimize designs, and analyze engineering systems. |
| **Indicative Contents**<br>المحتويات الإرشادية | |
| **Course Description** | The course covers topics such as software navigation, analysis and simulation, design and modeling, data management and visualization, software integration, and practical application of software tools. Through practical exercises and projects, students will develop proficiency in selecting, utilizing, and evaluating engineering software for diverse engineering applications. |
| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
| **Strategies** | The learning strategy includes incorporating real-world engineering |

| | |
|---|---|
| | applications and case studies throughout the course. The instructor plays a vital role in providing guidance and support to students throughout the course and providing resources and reference Materials. Also, conceptual understanding, this includes introducing different types of software tools used in specific engineering domains. The course emphasizes hands-on practice to develop students' proficiency in using engineering software. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل<br>**In class lectures 70**<br>**In class tests 4**<br>**Seminars 4** | 78 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل<br>**Home practicing and self-training 45**<br>**Preparation for tests 15**<br>**Homework 12** | 72 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.8 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| | | Time (hr) | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10, 12, 14 | LO #1, 2, 3, and 4 |
| | **Assignments** | 6 | 18% (18) | 2, 4, 6, 8, 10, 12 | LO # 1, 2, 3, 4, 5 and 6 |
| | **Seminars** | 3 | 12% (12) | Continuous | |
| **Summative assessment** | **Midterm Exam** | 2 | 10% (10) | 7 | LO # 1-3 |
| | **Final Exam** | 3 | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري والعملي

| | Material Covered |
|---|---|
| **Week 1** | **SAP2000**<br>- Overview of structural analysis and design software<br>- Introduction to SAP2000 interface and features<br>- Creating and setting up a new project in SAP2000<br>- Defining geometry and coordinate system |

| | |
|---|---|
| | - Creating and modifying nodes, elements, and structural members |
| **Week 2** | - Assigning properties and section properties to the model<br>- Understanding different types of loads (dead loads, live loads, etc.)<br>- Applying loads to the model (point loads, distributed loads, etc.)<br>- Specifying load combinations and load cases |
| **Week 3** | - Performing static and dynamic analysis of the structure<br>- Reviewing analysis results (displacements, forces, stresses, etc.)<br>- Interpretation and visualization of analysis results |
| **Week 4** | - Designing and checking reinforced concrete elements (beams, columns, slabs)<br>- Checking steel members (beams, columns, connections) for code compliance<br>- Design optimization and code-based design review<br>- Case studies and practical applications |
| **Week 5** | **MS Project**<br>- Introduction to Microsoft Project and Project Management<br>- Overview of Microsoft Project interface and key features<br>- Creating a new project and setting project properties |
| **Week 6** | - Defining tasks, task durations, and dependencies<br>- Resource Management and Project Tracking<br>- Assigning resources to tasks and managing resource availability |
| **Week 7** | - Tracking project progress and updating task status<br>- Generating reports and visuals to monitor project performance<br>- Mid-term exam |
| **Week 8** | **SAFE software**<br>- Overview of SAFE software and its capabilities in geotechnical engineering<br>- Introduction to geotechnical analysis in SAFE<br>- Understanding soil properties and material models for geotechnical analysis<br>- Creating and importing soil profiles and defining geotechnical parameters |
| **Week 9** | - Foundation types and design considerations in geotechnical engineering<br>- Modeling various foundation systems in SAFE, including isolated footings, combined footings, mat foundations, and pile caps<br>- Defining soil-structure interaction and incorporating it into the model<br>- Analysis of foundation systems considering geotechnical loads and deformations |
| **Week 10** | - Introduction to slab-on-grade systems and their behavior in geotechnical engineering<br>- Modeling and analysis of slab-on-grade systems in SAFE<br>- Evaluating soil support and load distribution on slabs<br>- Design considerations for slab-on-grade systems in geotechnical applications |
| **Week 11** | - Advanced features and capabilities of SAFE software for geotechnical engineering<br>- Seismic analysis and design considerations for geotechnical structures<br>- Case studies and practical examples of geotechnical engineering projects using SAFE<br>- Project work: Participants work on a geotechnical engineering project using SAFE, applying the concepts learned throughout the course. |
| **Week 12** | **Autodesk Revit** |

| | |
|---|---|
| | - Introduction to Revit and Building Information Modeling (BIM)<br>- Overview of the Revit interface and key features<br>- Creating a new project and setting project properties<br>- Building basic 3D models and understanding element properties |
| **Week 13** | - Architectural Design in Revit<br>- Creating architectural elements such as walls, floors, and roofs<br>- Adding doors, windows, and other building components<br>- Applying materials and finishes to architectural elements |
| **Week 14** | - Structural Design in Revit<br>- Modeling structural elements such as columns, beams, and foundations<br>- Creating structural connections and analyzing structural behavior<br>- Coordinating with architectural elements and ensuring structural integrity |
| **Week 15** | - Design examples |
| **Week 16** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **Manuals of the above-mentioned software** | No |
| **Recommended Texts** | | No |
| **Websites** | | |

**APPENDIX:**

**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 | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

NB 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.