



وزارة التعليم العالي والبحث العلمي  
جهاز الإشراف والتقويم العلمي  
إدارة ضمان الجودة والاعتماد الأكاديمي



وصف البرامج الأكاديمية  
جامعة الحلة  
كلية التقنيات الهندسية  
قسم هندسة تقنيات الميكاترونكس

2025-2026

اسم الجامعة: جامعة الحلة

الكلية/المعهد: كلية التقنيات الهندسية

القسم العلمي: هندسة تقنيات الميكاترونكس

اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة تقنيات الميكاترونكس

اسم الشهادة النهائية: بكالوريوس في هندسة تقنيات الميكاترونكس

النظام الدراسي: -مسار بولونيا

تاريخ اعداد الوصف : ٢٠٢٥/٩/٢١

تاريخ ملئ الملف : ٢٠٢٥/٩/٢١

دقق الملف من قبل شعبة ضمان الجودة والأداء الجامعي

اسم مسؤول شعبة ضمان الجودة والأداء الجامعي: م.م علي حسين غلطة

التاريخ: ٢٠٢٥/٩/٢٤

التوقيع



مصادقة السيد العميد

أ.د هارون عبد الكاظم شهد



## 1. الرؤية

يهدف الكادر الأكاديمي في قسم هندسة الميكاترونكس بجامعة الحلة إلى تقديم معارف تقنية عالية الجودة تُسهم في تحقيق مخرجات تعليمية متميزة وفعالة، وذلك من خلال تنمية المهارات التقنية، وقدرات التفكير النقدي، والمهارات الاجتماعية والشخصية، وقيم العمل في بيئة متغيرة باستمرار في مجالات الهندسة الكهربائية والميكانيكية وهندسة التيار المتردد. ويُعزز التعاون والعمل الجماعي بين أعضاء الكادر الأكاديمي والفني والإداري في القسم فهم الطلاب للبرنامج، ويُحسن مهاراتهم العملية في بيئة علمية عالية التقنية وتنافسية للغاية.

## 2. مهمة البرنامج

إعداد كوادر هندسية تقنية متميزة في مجالات هندسة الميكاترونكس من خلال مناهج علمية متقدمة، ومختبرات تطبيقية حديثة، وبحوث عملية تخدم سوق العمل وتواكب أحدث التطورات، مع تعزيز الشراكات المحلية والإقليمية والدولية لتحقيق التنمية المستدامة.

## 3. أهداف البرنامج

1. إعداد مهندسين تقنيين ذوي معرفة متقدمة ومهارات عملية في تشخيص الأعطال، وتشغيل وصيانة مختلف أنواع أنظمة الميكاترونك.
2. تمكين الخريجين من مواكبة التطورات السريعة في أنظمة الميكاترونك، مع القدرة على توظيف التقنيات الحديثة لتعزيز كفاءة الأداء.
3. تأهيل الطلاب لتصميم وتنفيذ وإدارة أنظمة الميكاترونك المستخدمة في المباني السكنية والتجارية والصناعية، والمصانع قيد التطوير.
4. تنمية قدرات الطلاب على صيانة ومعايرة أنظمة الميكاترونك، لضمان استمرار تشغيلها بأعلى مستويات الكفاءة والموثوقية.
5. تعزيز مهارات الخريجين في البحث عن بدائل وحلول مبتكرة للمكونات التقنية، مما يساهم في خفض التكاليف وتحسين الأداء.
6. إعداد كوادر قادرة على تخطيط وتنفيذ الصيانة الوقائية والدورية باستخدام أساليب إدارة الصيانة الحديثة.
7. رفع مستوى وعي الطلاب بأهمية السلامة المهنية، وكفاءة الطاقة، وحماية البيئة عند تصميم وتشغيل أنظمة الميكاترونك.

## 4. اعتماد البرنامج

لا يحظى البرنامج بأي اعتماد.

## 5. مؤثرات خارجية

رصد التطورات الحديثة في هندسة الميكاترونكس ومواءمة المناهج لتلبية احتياجات سوق العمل واستثمار الموارد التعليمية الدولية.

| ١. هيكل البرنامج |             |                  |            |          |
|------------------|-------------|------------------|------------|----------|
| هيكل البرنامج    | عدد الدورات | الساعات المعتمدة | نسبة مئوية | ملاحظات* |
| متطلبات المؤسسة  |             |                  | %          | اساسي    |
| متطلبات الكلية   |             |                  | %          | اساسي    |
| متطلبات القسم    |             |                  | %          | اساسي    |
| التدريب الصيفي   |             |                  | %          |          |

## أهداف البرنامج الأكاديمي:

- ١- تأهيل الخريج للعمل كمهندس تقني في تخصص هندسة الميكاترونكس.
- ٢- تزويد الخريج بالمعلومات العلمية والتقنية لدخول حقل العمل.
- ٣- تزويد الخريج بالمعلومات الكافية للاستمرار في المجال الأكاديمي والحصول على الشهادات العليا.
- ٤- تزويد الخريج بالتدريب العملي الضروري للعمل في مجال هندسة الميكاترونكس بكافة أنواعها من خلال مقررات التدريب الصيفي اثناء الدراسة.
- ٥- تأهيل الخريج للعمل كمهندس نصب وتشغيل منظومات الميكاترونكس.
- ٦- تأهيل الخريج لممارسة العمل بنزاهة وشفافية وتطبيق أخلاقيات المهنة من خلال تدريس القوانين المرتبطة بعمله مثل قانون العمل وقانون نقابة المهندسين.....الخ.

## أ- الأهداف المعرفية

- القدرة على تحليل وتجزئة مكونات أنظمة هندسة الميكاترونكس
- القدرة على تشخيص الأعطال والمشكلات التشغيلية في منظومات الميكاترونكس المختلفة (منزلية، صناعية، وتجارية).
- القدرة على إيجاد الحلول الفنية والهندسية المناسبة للأعطال وتحسين كفاءة الأنظمة.
- القدرة على وضع وتنفيذ خطط صيانة وقائية وتصحيحية لأنظمة الميكاترونكس لضمان استمرارية عملها وتقليل الأعطال.
- القدرة على تصميم ودراسة الشروط والمعايير الفنية الخاصة بتركيب وتشغيل أنظمة الميكاترونكس بما يتوافق مع معايير السلامة والجودة وكفاءة الطاقة.

## ب- أهداف التأهيل للبرنامج:

- تأهيل خريجين قادرين على تشغيل وصيانة وتشخيص أعطال أنظمة الميكاترونكس.
- تمكين الخريجين من تصميم وتنفيذ أنظمة الميكاترونكس بما يتوافق مع المتطلبات البيئية ومعايير السلامة وكفاءة الطاقة.
- إعداد كوادرات مؤهلة للعمل في المستشفيات، المصانع، الأبنية السكنية والتجارية من خلال إدارة وتشغيل منظومات الميكاترونكس.
- إكساب الخريج القدرة على استخدام الأجهزة الحديثة وأدوات القياس والسيطرة الخاصة بأنظمة الميكاترونكس.
- تأهيل الطالب لاستخدام البرامج الهندسية والتقنية الحديثة في تحليل وتصميم الأنظمة.
- تطوير القدرة على التواصل المهني والعمل ضمن فريق في المشاريع الميدانية أو الورش الفنية.
- إعداد الخريج ليكون قادراً على مواكبة التطورات التكنولوجية في مجال هندسة الميكاترونكس والأنظمة الذكية الموفرة للطاقة.

## طرق التدريس والتعلم

المحاضرات النظرية والمختبرات العملية والندوات العلمية والدورات التدريبية والمعارض المتخصصة في منظومات الميكاترونكس.

## طرق التقييم

الامتحانات اليومية، والامتحانات الفصلية، والحضور اليومي، والتقارير المعملية، والتقييم السنوي.

## ت- الأهداف الوجدانية والقيمية

- ١ - تصميم وصيانة والإشراف على منظومات الميكاترونكس
- ٢ - تقديم المشورة العلمية والعملية

## ث- تخطيط التنمية الشخصية

- تنظيم زيارات علمية ميدانية إلى مشاريع الأبنية، المصانع، والمختبرات المتخصصة في هندسة الميكاترونكس.
- المشاركة في المعارض والمؤتمرات المتخصصة في مجال هندسة الميكاترونكس.
- إقامة دورات تدريبية وورش عمل تطبيقية بالتعاون مع الشركات العالمية والمحلية المصنعة لأنظمة الميكاترونكس.
- تشجيع الطلبة على الانخراط في التدريب الصيفي داخل المؤسسات والشركات لرفع كفاءتهم العملية وربط الجانب النظري بالتطبيقي.

## ج- معايير القبول

- -خريجو الدراسة الثانوية العامة الفرع العلمي.
- الطلبة من خريجي المعاهد التقنية والمهنية.
- الطلبة من خريجي الاعداديات المهنية الصناعية.



هندسة الميكاترونكس

المرحلة الأولى

**UGI**



# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                           |                               |                                                                                                                                                                                                                        |
|------------------------------------|---------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                           |                               |                                                                                                                                                                                                                        |
| Module Title                       | حقوق الانسان والديمقراطية |                               | Module Delivery                                                                                                                                                                                                        |
| Module Type                        | Basic                     |                               | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><b>Lab</b><br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input type="checkbox"/> Seminar |
| Module Code                        | MECT 100                  |                               |                                                                                                                                                                                                                        |
| ECTS Credits                       | 2                         |                               |                                                                                                                                                                                                                        |
| SWL (hr/sem)                       | 60                        |                               |                                                                                                                                                                                                                        |
| Module Level                       | UGx1 1                    | Semester of Delivery          |                                                                                                                                                                                                                        |
| Administering Department           | قسم الميكاترونيك          | College                       |                                                                                                                                                                                                                        |
| Module Leader                      | م.م. عمار حسين            | e-mail                        |                                                                                                                                                                                                                        |
| Module Leader's Acad. Title        | Lecturer                  | Module Leader's Qualification | Master in Law                                                                                                                                                                                                          |
| Module Tutor                       | م.م. عمار حسين            | e-mail                        | E-mail                                                                                                                                                                                                                 |
| Peer Reviewer Name                 |                           | e-mail                        | E-mail                                                                                                                                                                                                                 |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠                 | Version Number                |                                                                                                                                                                                                                        |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                                                  |                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b><br>أهداف المادة الدراسية                      | تعريف الطلبة بالنظام الديمقراطي واساسياته .<br>تعريف الطلبة بحقوقه وواجباته التي يتمتع بها في ظل النظام السياسي الديمقراطي .<br>تعريف الطلبة بكافة حقوقهم الانسانية وكيفية الحفاظ عليها والدفاع عنها وحمايتها .<br>تعريف الطلبة بالنظام السياسي الديمقراطي في العراق ودستور العراق الدائم لعام ٢٠٠٣ . |
| <b>Module Learning Outcomes</b><br>مخرجات التعلم للمادة الدراسية | أ- المعرفة والفهم : من خلال القاء المحاضرات النظرية الصفية .<br>ب- تكليف الطلبة بقراءة كتاب معين .<br>ت- تكليف الطلبة بواجب بيتي باعداد تقرير عن موضوع معين .<br>ث- الامتحانات الشفهية                                                                                                                |
| <b>Indicative Contents</b><br>المحتويات الإرشادية                | يتكون المقرر من جزئين الأول يختص بالتعريف بحقوق الانسان واهم المواضيع التي يتعرف من خلالها الطلبة على حقوقهم .<br>وتضمن الجزء الثاني التعريف بالديمقراطية وطبيعة النظم الديمقراطية وكيفية الحكم بالنظام الديمقراطي فضلا عن التعرف بالنظام الديمقراطي في العراق                                        |

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

|                   |                                                             |
|-------------------|-------------------------------------------------------------|
| <b>Strategies</b> | محاضرات شرحية مكتوبة – اسئلة واجوبة – الاطلاع ع مصادر معينة |
|-------------------|-------------------------------------------------------------|

## Student Workload (SWL)

### الحمل الدراسي للطلاب

|                                                                                |  |                                                                           |  |
|--------------------------------------------------------------------------------|--|---------------------------------------------------------------------------|--|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطلاب خلال الفصل       |  | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطلاب أسبوعيا       |  |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطلاب خلال الفصل |  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطلاب أسبوعيا |  |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطلاب خلال الفصل              |  |                                                                           |  |





## Module Evaluation

### تقييم المادة الدراسية

| As                   |                 | Time/Number | Weight (Marks)   | Week Due | Relevant Learning Outcome |
|----------------------|-----------------|-------------|------------------|----------|---------------------------|
| Formative assessment | Quizzes         | 2           | 10% (10)         | 5, 10    | LO #1, 2, .. 10           |
|                      | Assignments     | 2           | 10% (10)         | 3, 8     | LO # 3,7,8                |
|                      | Projects / Lab. | 1           | 10% (10)         | 8        | LO # 1,2, ...11           |
|                      | Report          | 1           | 10% (10)         | 11       | LO # 7-10                 |
| Summative assessment | Midterm Exam    | 2 hr        | 10% (10)         | 10       | LO # 1-10                 |
|                      | Final Exam      | 3 hr        | 50% (50)         | 16       | All                       |
| Total assessment     |                 |             | 100% (100 Marks) |          |                           |

## Delivery Plan (Weekly Syllabus)

### المناهج الاسبوعي العملي

| weeks | Material Covered                                                                                                                                                                                                                                                                                      |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | حقوق الانسان . تعريفها . اهدافها<br>حقوق الإنسان في الحضارات القديمة وفي الشرائع السماوية                                                                                                                                                                                                             |
| 2     | حقوق الإنسان في التاريخ المعاصر والحديث: الاعتراف بحقوق الإنسان منذ الحرب العالمية الأولى وعصبة الأمم المتحدة<br>الاعتراف الإقليمي بحقوق الإنسان الاتفاقية الأوروبية لحقوق الإنسان ١٩٥٠ الاتفاقية الأمريكية لحقوق الإنسان ١٩٦٩ الميثاق الإفريقي لحقوق الإنسان ١٩٨١. الميثاق العربي لحقوق الإنسان ١٩٩٤ |
| 3     | المنظمات الغير حكومية وحقوق الانسان ( ١ - اللجنة الدولية للصليب الاحمر ، ٢ - منظمة العفو الدولية<br>منظمة مراقبة حقوق الانسان ، المنظمات الوطنية لحقوق الانسان<br>حقوق الانسان في الدستور العراقي ( ا لحقوق والحريات في دستور جمهورية العراق لسنة ٢٠٠٥ )                                              |
| 4     | العلاقة بين حقوق الانسان والحريات العامة في الاعلان العالمي لحقوق الانسان<br>في الإعلان العالمي لحقوق الإنسان<br>في المواثيق الإقليمية والدساتير الوطنية<br>حقوق الانسان الاقتصادية والاجتماعية والبيئية والثقافية والتنموية وحقوق الانسان المدنية والسياسية.                                         |
| 5     | حقوق الانسان الحديثة ( الحق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين )<br>ضمانات احترام وحماية حقوق الانسان على الصعيد الوطني . الضمانات في الدستور والقوانين                                                                                                            |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | الضمانات في مبدأ سيادة القانون الضمانات في الرقابة الدستورية الضمانات في حرية الصحافة<br>والرأي العام دور المنظمات الغير حكومية في احترام وحماية حقوق الانسان                                                                                                                                                                                                                                                                            |
| 6  | ضمانات احترام وحماية حقوق الانسان على الصعيد الدولي<br>دور الامم المتحدة ووكالاتها المختصة في توفير الضمانات<br>دور المنظمات الاقليمية ( الجامعة العربية ، الاتحاد الاوربي ، الاتحاد الافريقي ، منظمة الدول الامريكية )<br>دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان<br>النظرية العامة للحريات ، اصل الحقوق والحريات ، موقف الشرع من الحقوق والحريات المعلنه ، استخدام مصطلح الحريات العامة |
| 7  | دولة القانون وضمانات دولة القانون<br>تنظيم الحريات العامة من قبل السلطات العامة                                                                                                                                                                                                                                                                                                                                                          |
| 8  | المساواة : التطور التاريخي لمفهوم المساواة<br>التطور الحديث لمفهوم المساواة<br>المساواة بين الجنسين<br>المساواة بين الافراد حسب معتقداتهم وعنصرهم                                                                                                                                                                                                                                                                                        |
| ٩  | الديمقراطية تعريفها وانواعها                                                                                                                                                                                                                                                                                                                                                                                                             |
| ١٠ | مقومات ومعوقات الديمقراطية                                                                                                                                                                                                                                                                                                                                                                                                               |
| ١١ | النظام الديمقراطي في دستور العراق لسنة ٢٠٠٣ - الانتخابات - الاحزاب السياسية -                                                                                                                                                                                                                                                                                                                                                            |
| ١٢ | ، الحريات الاساسية ، الحريات الفكرية ، الحريات الاقتصادية والاجتماعية مفهوم الحريات وتصنيف الحريات العامة                                                                                                                                                                                                                                                                                                                                |
| ١٣ | التقدم العلمي والتقني والحريات العامة<br>مستقبل الحريات العامة                                                                                                                                                                                                                                                                                                                                                                           |
| ١٤ | المفهوم العام للوعي ( تعريف الوعي البيئي والوعي المائي والحاجة لدراسته )<br>مفهوم الوعي البيئي<br>وسائل تحقيق الوعي البيئي<br>ابعاد الوعي المائي<br>التحديات التي تواجه الامن المائي في العراق<br>جراءات مقترحة لحل ازمة نقص المياه العذبة                                                                                                                                                                                               |
| ١٥ | تعريف الابداء الجماعية ، اتفاقية الامم المتحدة بشأن الابداء الجماعية<br>عمليات الابداء الجماعية ، محاكم الابداء الجماعية ، جرائم الابداء الجماعية ، الجرائم ضد الانسانية<br>جرائم حزب البعث الاشتراكي<br>حقوق ذوي الاعاقة                                                                                                                                                                                                                |



## Learning and Teaching Resources

### مصادر التعلم والتدريس

|                   | Text                                                                                                                                                                | Available in the Library? |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Required Texts    | ملزمة حقوق الانسان والديمقراطية الجامعة التقنية الوسطى                                                                                                              | No                        |
| Recommended Texts | د. فاروق السامرائي ، حقوق الانسان في القرآن الكريم ، مركز دراسات الوحدة العربية ، بيروت ، ٢٠٠٢<br>رعد ناجي الجدة واخرون ، حقوق الانسان والطفل والديمقراطية ، ٢٠٠٩ . | No                        |
| Websites          | -                                                                                                                                                                   |                           |

## Grading Scheme

### مخطط الدرجات

| Group                       | Grade            | التقدير             | Marks (%) | Definition                            |
|-----------------------------|------------------|---------------------|-----------|---------------------------------------|
| Success Group<br>(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<br>(0 - 49)      | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                             | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

*Ammar Hussain*

اسم التدريسي: م.م. عمار حسين  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                    |                               |                                                                                                                                                                                                                                                     |
|------------------------------------|--------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                    |                               |                                                                                                                                                                                                                                                     |
| Module Title                       | Mathematics        |                               | Module Delivery                                                                                                                                                                                                                                     |
| Module Type                        | Core               |                               | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input checked="" type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input type="checkbox"/> Seminar |
| Module Code                        | MECT 110           |                               |                                                                                                                                                                                                                                                     |
| ECTS Credits                       | 6                  |                               |                                                                                                                                                                                                                                                     |
| SWL (hr/sem)                       | 180                |                               |                                                                                                                                                                                                                                                     |
| Module Level                       | UGx11 1            | Semester of Delivery          | 1                                                                                                                                                                                                                                                   |
| Administering Department           | Type Dept. Code    | College                       | Type College Code                                                                                                                                                                                                                                   |
| Module Leader                      | م.م رقية علاء      | e-mail                        |                                                                                                                                                                                                                                                     |
| Module Leader's Acad. Title        | Assistant lecturer | Module Leader's Qualification | MSc                                                                                                                                                                                                                                                 |
| Module Tutor                       | م.م رقية علاء      | e-mail                        | E-mail                                                                                                                                                                                                                                              |
| Peer Reviewer Name                 | Name               | e-mail                        | E-mail                                                                                                                                                                                                                                              |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠          | Version Number                | 1.0                                                                                                                                                                                                                                                 |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |

| Module Aims, Learning Outcomes and Indicative Contents   |                                                                                                                                                        |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية |                                                                                                                                                        |
| Module Aims                                              | Teaching the student the basic and advanced principles of calculus and its applications to develop the students mental abilities to solve problems and |

|                                                                      |                                                                              |
|----------------------------------------------------------------------|------------------------------------------------------------------------------|
| أهداف المادة الدراسية                                                | make use of available information in the other scientific materials.         |
| <b>Module Learning Outcomes</b><br><br>مخرجات التعلم للمادة الدراسية | To apply the knowledge of mathematics, science and engineering fundamentals. |
| <b>Indicative Contents</b><br>المحتويات الإرشادية                    |                                                                              |

| <b>Learning and Teaching Strategies</b><br>استراتيجيات التعلم والتعليم |                                                                                    |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Strategies</b>                                                      |  |

| <b>Student Workload (SWL)</b><br>الحمل الدراسي للطالب                          |     |                                                                            |   |
|--------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------|---|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 101 | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعياً       | 7 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 79  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعياً | 6 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | 180 |                                                                            |   |

| <b>Module Evaluation</b><br>تقييم المادة الدراسية |                |             |                |          |                           |
|---------------------------------------------------|----------------|-------------|----------------|----------|---------------------------|
| As                                                |                | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
| <b>Formative</b>                                  | <b>Quizzes</b> | 2           | 10% (15)       | 5, 10    | LO #1, 2, 7 and 9         |

|                      |                 |      |                  |      |                    |
|----------------------|-----------------|------|------------------|------|--------------------|
| assessment           | Assignments     | 4    | 10% (15)         | 2, 8 | LO # 3, 4, 5 and 6 |
|                      | Projects / Lab. | 0    | 0                | 0    |                    |
|                      | Report          | 2    | 10% (10)         | 7,14 | LO # 5, 6 and 10   |
| Summative assessment | Midterm Exam    | 2 hr | 10% (10)         | 8    | LO # 1-7           |
|                      | Final Exam      | 2hr  | 50% (50)         | 16   | All                |
| Total assessment     |                 |      | 100% (100 Marks) |      |                    |

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

| Week    | Material Covered                                                                                                      |
|---------|-----------------------------------------------------------------------------------------------------------------------|
| Week 1  | Determinants, properties, Grammar's rule, application of determinant                                                  |
| Week 2  | Vectors, vectors in space, unit vector, Scalar product, vector product                                                |
| Week 3  | Trigonometric functions & relation, Graphing of functions, Trigonometric equations                                    |
| Week 4  | Function of limits, Algebraic limit, Trigonometric limit, Infinity as limit                                           |
| Week 5  | Derivative rule, Algebraic & Trigonometric derivative, Chain rule, velocity & acceleration                            |
| Week 6  | Inverse trigonometric functions & its derivative, Logarithm & Exponential functions & its derivative                  |
| Week 7  | Hyperbolic functions & its derivative, Inverse hyperbolic functions & its derivative                                  |
| Week 8  | Integration, integrals of trigonometric & inverse functions, Integrals of logarithm & Exponential functions           |
| Week 9  | Integrals of logarithm & Exponential functions, Integrals of hyperbolic functions & its derivative, L'Hopital's rules |
| Week 10 | Integration methods; Integration by parts, Integration by partial fraction                                            |
| Week 11 | Integration by trigonometric substitution, Integration of $ax^2 + bx + c$                                             |
| Week 12 | Application of Integration, Area under the curve & between two curves                                                 |
| Week 13 | Surface area generated, Length of the curve                                                                           |
| Week 14 | Volume generated by rotation of curve, Simple differential equations                                                  |
| Week 15 | Simpson rule for area, Trapezoidal rule for area, applications                                                        |
| Week 16 | Preparatory week before the final Exam                                                                                |

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| Week   | Material Covered |
|--------|------------------|
| Week 1 |                  |
| Week 2 |                  |
| Week 3 |                  |

|        |  |
|--------|--|
| Week 4 |  |
| Week 5 |  |
| Week 6 |  |
| Week 7 |  |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس |      |                           |
|----------------------------------------------------------|------|---------------------------|
|                                                          | Text | Available in the Library? |
| Required Texts                                           |      |                           |
| Recommended Texts                                        |      |                           |
| Websites                                                 |      |                           |

| Grading Scheme<br>مخطط الدرجات                                                                                                                                                                                                                                                                                                                                                       |                  |                     |           |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|-----------|---------------------------------------|
| Group                                                                                                                                                                                                                                                                                                                                                                                | Grade            | التقدير             | Marks (%) | Definition                            |
| Success Group<br>(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<br>(0 – 49)                                                                                                                                                                                                                                                                                                                                                               | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                                                                                                                                                                                                                                                                                                                                                                      | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                                                                                                                                                                                                                                                                                                                                                                                      |                  |                     |           |                                       |
| <b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. |                  |                     |           |                                       |



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

اسم التدريسي: م.م رقية علاء  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                       |                               |                                                                                                                                                                                                                                                                |
|------------------------------------|-----------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                       |                               |                                                                                                                                                                                                                                                                |
| Module Title                       | Engineering Mechanics |                               | Module Delivery                                                                                                                                                                                                                                                |
| Module Type                        | Core                  |                               | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input checked="" type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | MECT 102              |                               |                                                                                                                                                                                                                                                                |
| ECTS Credits                       | ٨                     |                               |                                                                                                                                                                                                                                                                |
| SWL (hr/sem)                       | ٢٤٠                   |                               |                                                                                                                                                                                                                                                                |
| Module Level                       | UGx11 1               | Semester of Delivery          | 1                                                                                                                                                                                                                                                              |
| Administering Department           | Type Dept. Code       | College                       | Type College Code                                                                                                                                                                                                                                              |
| Module Leader                      | م.م رقية نصر          | e-mail                        | E-mail                                                                                                                                                                                                                                                         |
| Module Leader's Acad. Title        |                       | Module Leader's Qualification | M.Sc                                                                                                                                                                                                                                                           |
| Module Tutor                       | م.م رقية نصر          | e-mail                        | E-mail                                                                                                                                                                                                                                                         |
| Peer Reviewer Name                 | Name                  | e-mail                        | E-mail                                                                                                                                                                                                                                                         |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠             | Version Number                | 1.0                                                                                                                                                                                                                                                            |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |

| Module Aims, Learning Outcomes and Indicative Contents    |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية  |                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Module Aims<br>أهداف المادة الدراسية                      | Through this module, students will develop the necessary skills to analyze and solve engineering problems involving forces, motion, and equilibrium.                                                                                                                                                                                                                                                                         |
| Module Learning Outcomes<br>مخرجات التعلم للمادة الدراسية | By the end of the engineering mechanics module, students should be able to: <ol style="list-style-type: none"> <li>1. Understand and apply the principles of statics and dynamics in engineering systems.</li> <li>2. Analyze and solve problems related to forces, moments, equilibrium, and motion of particles.</li> <li>3. Apply vector mathematics and coordinate systems to engineering mechanics problems.</li> </ol> |

|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                   | 4. Identify and analyze different types of supports in structures and machines.<br>5. Interpret and draw free body diagrams to represent the forces acting on a system.<br>6. Utilize computational tools for solving engineering mechanics problems.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Indicative Contents</b><br>المحتويات الإرشادية | Indicative content includes the following.<br>1. Introduction to Engineering Mechanics <ul style="list-style-type: none"> <li>Overview of mechanics and its applications in engineering</li> <li>Fundamental concepts and principles</li> </ul> 2. Statics <ul style="list-style-type: none"> <li>Forces and vectors</li> <li>Equilibrium of particles and rigid bodies</li> <li>Moment of a force and its applications</li> <li>Friction and its effects</li> <li>Center of Mass and Centroid</li> </ul> 3. Dynamics <ul style="list-style-type: none"> <li>Motion of particles: kinematics and kinetics</li> <li>Newton's laws of motion</li> <li>Work, energy, and power</li> <li>Impulse and momentum</li> </ul> 4. Problem-Solving and Applications <ul style="list-style-type: none"> <li>Engineering problem-solving techniques</li> <li>Case studies and practical examples</li> </ul> |

| <b>Learning and Teaching Strategies</b><br>استراتيجيات التعلم والتعليم |                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b>                                                      | 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. |

| <b>Student Workload (SWL)</b><br>الحمل الدراسي للطالب                          |     |                                                                            |    |
|--------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------|----|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 181 | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعياً       | 13 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 59  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعياً | 4  |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | 240 |                                                                            |    |





| Module Evaluation<br>تقييم المادة الدراسية |                 |             |                  |            |                           |
|--------------------------------------------|-----------------|-------------|------------------|------------|---------------------------|
| As                                         |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
| Formative assessment                       | Quizzes         | 2           | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11       |
|                                            | Assignments     | 2           | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7        |
|                                            | Projects / Lab. | 1           | 10% (10)         | Continuous |                           |
|                                            | Report          | 1           | 10% (10)         | 13         | LO # 5, 8 and 10          |
| Summative assessment                       | Midterm Exam    | 2 hr        | 10% (10)         | 7          | LO # 1-7                  |
|                                            | Final Exam      | 2hr         | 50% (50)         | 16         | All                       |
| Total assessment                           |                 |             | 100% (100 Marks) |            |                           |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري |                                                              |
|------------------------------------------------------------|--------------------------------------------------------------|
| Week                                                       | Material Covered                                             |
| Week 1                                                     | Fundamental Concepts, Vectors Quantities and Forces Analysis |
| Week 2                                                     | Moment                                                       |
| Week 3                                                     | Force Resultants                                             |
| Week 4                                                     | Equilibrium of the Forces System                             |
| Week 5                                                     | Equilibrium of Bodies                                        |
| Week 6                                                     | Friction                                                     |
| Week 7                                                     | Center of Mass and Centroid                                  |
| Week 8                                                     | Mid-term Exam                                                |
| Week 9                                                     | The Moment of Inertia                                        |
| Week 10                                                    | Introduction to Dynamics                                     |
| Week 11                                                    | Kinematics of a Particle: Rectilinear Motion                 |
| Week 12                                                    | Kinematics of a Particle: Curvilinear Motion                 |
| Week 13                                                    | Kinetics of a Particle: Force and Acceleration               |
| Week 14                                                    | Kinetics of a Particle: Work and Energy                      |
| Week 15                                                    | Kinetics of a Particle: Impulse and momentum                 |
| Week 16                                                    | Preparatory week before the final Exam                       |



## Learning and Teaching Resources

مصادر التعلم والتدريس

|                          | Text                                                                                                                                     | Available in the Library? |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Required Texts</b>    | ENGINEERING MECHANICS, STATIC, FOURTEENTH EDITION, R. C. HIBBELER<br>ENGINEERING MECHANICS, DYNAMICS, FOURTEENTH EDITION, R. C. HIBBELER |                           |
| <b>Recommended Texts</b> | J.L. MERIAM, L.G. KRAIGE and J. N . BOLTON, ENGINEERING MECHANICS STATICS, EIGHTH EDITION                                                |                           |
| <b>Websites</b>          |                                                                                                                                          |                           |

## Grading Scheme

مخطط الدرجات

| Group                               | Grade                   | التقدير             | Marks (%) | Definition                            |
|-------------------------------------|-------------------------|---------------------|-----------|---------------------------------------|
| <b>Success Group<br/>(50 - 100)</b> | <b>A – Excellent</b>    | امتياز              | 90 - 100  | Outstanding Performance               |
|                                     | <b>B - Very Good</b>    | جيد جدا             | 80 - 89   | Above average with some errors        |
|                                     | <b>C – Good</b>         | جيد                 | 70 - 79   | Sound work with notable errors        |
|                                     | <b>D – Satisfactory</b> | متوسط               | 60 - 69   | Fair but with major shortcomings      |
|                                     | <b>E – Sufficient</b>   | مقبول               | 50 - 59   | Work meets minimum criteria           |
| <b>Fail Group<br/>(0 – 49)</b>      | <b>FX – Fail</b>        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                     | <b>F – Fail</b>         | راسب                | (0-44)    | Considerable amount of work required  |
|                                     |                         |                     |           |                                       |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

اسم التدريسي: م.م. رقية نصر  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                                  |                               |                                                                                                                                                                                                                                                                           |
|------------------------------------|----------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                                  |                               |                                                                                                                                                                                                                                                                           |
| Module Title                       | Engineering Drawing with AutoCAD |                               | Module Delivery                                                                                                                                                                                                                                                           |
| Module Type                        | Core                             |                               | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input checked="" type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input checked="" type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | MECT 103                         |                               |                                                                                                                                                                                                                                                                           |
| ECTS Credits                       | 8                                |                               |                                                                                                                                                                                                                                                                           |
| SWL (hr/sem)                       | 240                              |                               |                                                                                                                                                                                                                                                                           |
| Module Level                       | UGx11 1                          | Semester of Delivery          | 1                                                                                                                                                                                                                                                                         |
| Administering Department           | Type Dept. Code                  | College                       | Type College Code                                                                                                                                                                                                                                                         |
| Module Leader                      | م.م علي توفيق                    | e-mail                        |                                                                                                                                                                                                                                                                           |
| Module Leader's Acad. Title        | Assistant lecturer               | Module Leader's Qualification | MSc                                                                                                                                                                                                                                                                       |
| Module Tutor                       | م.م علي توفيق                    | e-mail                        | E-mail                                                                                                                                                                                                                                                                    |
| Peer Reviewer Name                 | Name                             | e-mail                        | E-mail                                                                                                                                                                                                                                                                    |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠                        | Version Number                | 1.0                                                                                                                                                                                                                                                                       |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                                                  |                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b><br>أهداف المادة الدراسية                      | The AutoCAD for Beginners book provides a learn-by-doing approach for users to learn AutoCAD. It is written for students and engineers who are interested to learn Auto CAD for creating designs and drawing of components or anyone who communicates through technical drawings as part of their work .                                                                                      |
| <b>Module Learning Outcomes</b><br>مخرجات التعلم للمادة الدراسية | Engineering and assemblies to learn about their components, parts, mechanics and principle. Organizing the student's thought to develop a specific and sequential strategy for drawing and compiling, And dismantling engineering projects and parts of machinery and equipment. Provide the student with the skill of drawing lines, Geometric shapes, perspective objects, and projections. |
| <b>Indicative Contents</b><br>المحتويات الإرشادية                |                                                                                                                                                                                                                                                                                                                                                                                               |

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

|                   |                                                                                     |
|-------------------|-------------------------------------------------------------------------------------|
| <b>Strategies</b> |  |
|-------------------|-------------------------------------------------------------------------------------|

## Student Workload (SWL)

### الحمل الدراسي للطالب

|                                                                                |     |                                                                           |    |
|--------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------|----|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 157 | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعيا       | 11 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 83  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 6  |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | 240 |                                                                           |    |

| Module Evaluation     |                 |             |                  |            |                           |
|-----------------------|-----------------|-------------|------------------|------------|---------------------------|
| تقييم المادة الدراسية |                 |             |                  |            |                           |
| As                    |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
| Formative assessment  | Quizzes         | 2           | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11       |
|                       | Assignments     | 2           | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7        |
|                       | Projects / Lab. | 1           | 10% (10)         | Continuous |                           |
|                       | Report          | 1           | 10% (10)         | 13         | LO # 5, 8 and 10          |
| Summative assessment  | Midterm Exam    | 2 hr        | 10% (10)         | 7          | LO # 1-7                  |
|                       | Final Exam      | 2hr         | 50% (50)         | 16         | All                       |
| Total assessment      |                 |             | 100% (100 Marks) |            |                           |

| Delivery Plan (Weekly Syllabus) |                                                                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| المنهاج الاسبوعي النظري         |                                                                                                                                                                       |
| Week                            | Material Covered                                                                                                                                                      |
| Week 1                          | Define the Engineering Drawing the Tool used in Engineering drawing-Types of drawing Sheets, types of lines                                                           |
| Week 2                          | Geometric Construction, types of lines and arc-Geometric Construction , types of regular polygons, Quadrilateral-Geometric Construction, types of circles and ellipse |
| Week 3                          | Isometric Views                                                                                                                                                       |
| Week 4                          | Dimensions - Exercises-Center translation                                                                                                                             |
| Week 5                          | Theory of Projection                                                                                                                                                  |
| Week 6                          | Drawing the three projection views                                                                                                                                    |
| Week 7                          | Theory of Section                                                                                                                                                     |
| Week 8                          | Screw drawing                                                                                                                                                         |
| Week 9                          | Nuts drawing                                                                                                                                                          |
| Week 10                         | Assembly drawing                                                                                                                                                      |
| Week 11                         | Disassembly drawing                                                                                                                                                   |
| Week 12                         | Bearing drawing                                                                                                                                                       |
| Week 13                         | Gears drawing                                                                                                                                                         |
| Week 14                         | Cam and Rollers drawing                                                                                                                                               |
| Week 15                         | Full parts assembly drawing-Full parts projection                                                                                                                     |
| Week 16                         | Preparatory week before the final Exam                                                                                                                                |

## Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| Week    | Material Covered                                                                                                                                                      |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Week 1  | Define the Engineering Drawing the Tool used in Engineering drawing-Types of drawing Sheets, types of lines                                                           |
| Week 2  | Geometric Construction, types of lines and arc-Geometric Construction , types of regular polygons, Quadrilateral-Geometric Construction, types of circles and ellipse |
| Week 3  | Isometric Views                                                                                                                                                       |
| Week 4  | Dimensions - Exercises-Center translation                                                                                                                             |
| Week 5  | Theory of Projection                                                                                                                                                  |
| Week 6  | Drawing the three projection views                                                                                                                                    |
| Week 7  | Theory of Section                                                                                                                                                     |
| Week 8  | Screw drawing                                                                                                                                                         |
| Week 9  | Nuts drawing                                                                                                                                                          |
| Week 10 | Assembly drawing                                                                                                                                                      |
| Week 11 | Disassembly drawing                                                                                                                                                   |
| Week 12 | Bearing drawing                                                                                                                                                       |
| Week 13 | Gears drawing                                                                                                                                                         |
| Week 14 | Cam and Rollers drawing                                                                                                                                               |
| Week 15 | Full parts assembly drawing-Full parts projection                                                                                                                     |

## Learning and Teaching Resources

مصادر التعلم والتدريس

|                   | Text                                    | Available in the Library? |
|-------------------|-----------------------------------------|---------------------------|
| Required Texts    | Modern Control Engineering - Ogata - E4 | yes                       |
| Recommended Texts | Modern Control Engineering - Ogata - E4 | yes                       |
| Websites          | --                                      |                           |



| Grading Scheme<br>مخطط الدرجات                                                                                                                                                                                                                                                                                                                                                       |                  |                     |           |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|-----------|---------------------------------------|
| Group                                                                                                                                                                                                                                                                                                                                                                                | Grade            | التقدير             | Marks (%) | Definition                            |
| Success Group<br>(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<br>(0 – 49)                                                                                                                                                                                                                                                                                                                                                               | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                                                                                                                                                                                                                                                                                                                                                                      | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                                                                                                                                                                                                                                                                                                                                                                                      |                  |                     |           |                                       |
| <b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. |                  |                     |           |                                       |



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٥ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

*Ali Tawfeeq*

اسم التدريسي: م.م علي توفيق  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                         |                               |                                                                                                                                                                                                                                                     |
|------------------------------------|-------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                         |                               |                                                                                                                                                                                                                                                     |
| Module Title                       | Electrical Fundamentals |                               | Module Delivery                                                                                                                                                                                                                                     |
| Module Type                        | Core                    |                               | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input checked="" type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input type="checkbox"/> Seminar |
| Module Code                        | MECT 105                |                               |                                                                                                                                                                                                                                                     |
| ECTS Credits                       | 6                       |                               |                                                                                                                                                                                                                                                     |
| SWL (hr/sem)                       | 180                     |                               |                                                                                                                                                                                                                                                     |
| Module Level                       | UGx11 1                 | Semester of Delivery          | 1                                                                                                                                                                                                                                                   |
| Administering Department           | Type Dept. Code         | College                       | Type College Code                                                                                                                                                                                                                                   |
| Module Leader                      | م.م مرتضى عباس          | e-mail                        |                                                                                                                                                                                                                                                     |
| Module Leader's Acad. Title        | Assistant lecturer      | Module Leader's Qualification | MSc                                                                                                                                                                                                                                                 |
| Module Tutor                       | م.م مرتضى عباس          | e-mail                        | E-mail                                                                                                                                                                                                                                              |
| Peer Reviewer Name                 | Abduallah Adil Nassif   | e-mail                        | <a href="mailto:aa@mtu.edu.iq">aa@mtu.edu.iq</a>                                                                                                                                                                                                    |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠               | Version Number                | 1.0                                                                                                                                                                                                                                                 |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b><br>أهداف المادة الدراسية                      | <ol style="list-style-type: none"> <li>1. Introduce fundamental principles of circuit theory commonly used in engineering science applications.</li> <li>2. To understand voltage, current, resistance, impedance.</li> <li>3. To understanding Techniques and principles of electrical circuit analysis including basic concepts like Ohm's law.</li> <li>4. This course deals with the basic electric circuit analysis techniques, resistive circuits, circuits with DC and sinusoidal sources, energy and power.</li> <li>5. This is the basic subject for all electrical and electronic circuits.</li> <li>6. To understand Kirchhoff's current and voltage Laws problems.</li> <li>7. To perform mesh and Nodal analysis and superposition theorem.</li> </ol> |
| <b>Module Learning Outcomes</b><br>مخرجات التعلم للمادة الدراسية | <ol style="list-style-type: none"> <li>1. To develop problem solving skills and understanding of circuit theory through the application of techniques and principles of electrical circuit analysis to common circuit problems.</li> <li>2. To develop an understanding of the fundamental laws and elements of electric circuits.</li> <li>3. To learn the energy properties of electric elements and the techniques to measure voltage and current.</li> <li>4. To be able to understand basic electrical properties as well as understand waveforms, signals and RLC circuits.</li> <li>5. To develop the ability to apply circuit analysis to DC and AC circuits.</li> </ol>                                                                                    |
| <b>Indicative Contents</b><br>المحتويات الإرشادية                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

|                   |                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b> | <p>The primary approach to be employed in teaching this module aims to promote active engagement of students in the exercises, while also enhancing their ability to think critically. This objective will be accomplished through a combination of interactive classes, tutorials, and the inclusion of captivating sampling activities that pique the students' interest.</p> |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





## Student Workload (SWL)

### الحمل الدراسي للطالب

|                                                                                |     |                                                                            |   |
|--------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------|---|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 107 | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعياً       | 8 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 73  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعياً | 5 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | 180 |                                                                            |   |

## Module Evaluation

### تقييم المادة الدراسية

| As                   |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
|----------------------|-----------------|-------------|------------------|------------|---------------------------|
| Formative assessment | Quizzes         | 2           | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11       |
|                      | Assignments     | 2           | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7        |
|                      | Projects / Lab. | 1           | 10% (10)         | Continuous |                           |
|                      | Report          | 1           | 10% (10)         | 13         | LO # 5, 8 and 10          |
| Summative assessment | Midterm Exam    | 2 hr        | 10% (10)         | 7          | LO # 1-7                  |
|                      | Final Exam      | 2hr         | 50% (50)         | 16         | All                       |
| Total assessment     |                 |             | 100% (100 Marks) |            |                           |

## Delivery Plan (Weekly Syllabus)

### المنهاج الأسبوعي النظري

| Week          | Material Covered                                                                                                                                              |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Week 1</b> | Systems of Units, Charge and Current, Voltage, Power and Energy, The Resistance, Ohm's law, Effect of Temperature on Resistance, Conductance and Conductivity |
| <b>Week 2</b> | Reading Resistor Colour Code, Nodes, Branches, Loops, and Kirchhoff's Current Law (KCL)                                                                       |
| <b>Week 3</b> | Kirchhoff's Voltage Law (KVL), Series Resistors and Voltage Division, and Parallel Resistors and Current Division                                             |
| <b>Week 4</b> | Wye-Delta Transformations: Delta to Wye Conversion; Wye to Delta Conversion                                                                                   |
| <b>Week 5</b> | Methods of Analysis: Nodal Analysis; Nodal Analysis with Voltage Sources                                                                                      |
| <b>Week 6</b> | Methods of Analysis: Mesh Analysis; Mesh Analysis with Current Sources, supposition                                                                           |

|                |                                                                                            |
|----------------|--------------------------------------------------------------------------------------------|
|                | theorem                                                                                    |
| <b>Week 7</b>  | Source Transformation; Thevenin's Theorem                                                  |
| <b>Week 8</b>  | Norton's Theorem; Maximum Power Transfer                                                   |
| <b>Week 9</b>  | Capacitors and Inductors: Capacitors; Capacitors in series; Capacitors in Parallel         |
| <b>Week 10</b> | Capacitors and Inductors: Inductors; Inductors in series; Inductors in Parallel            |
| <b>Week 11</b> | Sinusoids and Phasors                                                                      |
| <b>Week 12</b> | Phasor Relationships for Circuit Elements (Resistance, Inductance and Capacitor)           |
| <b>Week 13</b> | Impedance and Admittance; Impedance Combinations (Series and Parallel)                     |
| <b>Week 14</b> | AC Power Analysis: Instantaneous and Average Power; Maximum Average Power Transfer         |
| <b>Week 15</b> | AC Power Analysis: Apparent Power and Power Factor; Complex Power; Power Factor Correction |
| <b>Week 16</b> | <b>Preparatory week before the final Exam</b>                                              |

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| Week           | Material Covered                                                                                                                              |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Week 1</b>  | Introduction to Electrical Laboratory: Lab Safety, Tools, DC Sources, Metering, Resistors Color Code, Groups Arrangement and Report Preparing |
| <b>Week 2</b>  | Ohm's Law                                                                                                                                     |
| <b>Week 3</b>  | Resistance connected in series                                                                                                                |
| <b>Week 4</b>  | Resistance connected in parallel                                                                                                              |
| <b>Week 5</b>  | Resistance connected in series and parallel                                                                                                   |
| <b>Week 6</b>  | Kirchhoff's Current Law                                                                                                                       |
| <b>Week 7</b>  | Kirchhoff's Voltage Law                                                                                                                       |
| <b>Week 8</b>  | Current Divider Rule and Voltage Divider Rule                                                                                                 |
| <b>Week 9</b>  | Nodal Analysis                                                                                                                                |
| <b>Week 10</b> | Mid Semester Lab. Exam                                                                                                                        |
| <b>Week 11</b> | Thevenin's Theorem                                                                                                                            |
| <b>Week 12</b> | Norton's Theorem                                                                                                                              |
| <b>Week 13</b> | RLC in series                                                                                                                                 |
| <b>Week 14</b> | RLC in Parallel                                                                                                                               |
| <b>Week 15</b> | Final Semester Lab. Exam                                                                                                                      |

### Learning and Teaching Resources

## مصادر التعلم والتدريس

|                          | Text                                                                                                                                                                                          | Available in the Library? |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Required Texts</b>    | Introductory Circuit Analysis by Robert L. Boylestad.                                                                                                                                         | yes                       |
| <b>Recommended Texts</b> | Fundamentals of Electric Circuits by Charles K. Alexander, A<br>Textbook of Electrical Technology by B.L. Theraja                                                                             | No                        |
| <b>Websites</b>          | <a href="https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering">https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering</a> |                           |

## Grading Scheme

### مخطط الدرجات

| Group                               | Grade                   | التقدير             | Marks (%) | Definition                            |
|-------------------------------------|-------------------------|---------------------|-----------|---------------------------------------|
| <b>Success Group<br/>(50 - 100)</b> | <b>A – Excellent</b>    | امتياز              | 90 - 100  | Outstanding Performance               |
|                                     | <b>B - Very Good</b>    | جيد جدا             | 80 - 89   | Above average with some errors        |
|                                     | <b>C – Good</b>         | جيد                 | 70 - 79   | Sound work with notable errors        |
|                                     | <b>D – Satisfactory</b> | متوسط               | 60 - 69   | Fair but with major shortcomings      |
|                                     | <b>E – Sufficient</b>   | مقبول               | 50 - 59   | Work meets minimum criteria           |
| <b>Fail Group<br/>(0 – 49)</b>      | <b>FX – Fail</b>        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                     | <b>F – Fail</b>         | راسب                | (0-44)    | Considerable amount of work required  |
|                                     |                         |                     |           |                                       |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54). The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



عميد الكلية : أ.د. هارون عبد الكاظم شهيد  
التاريخ : ٢٠٢٥ / ٩ / ٣٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

اسم التدريسي: م.م. مرتضى عباس  
التاريخ : ٢٠٢٥ / ٩ / ٢٠



## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

| Module Information                 |                                   |                      |                                                                                                                                                                                                                                                                |                               |
|------------------------------------|-----------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| معلومات المادة الدراسية            |                                   |                      |                                                                                                                                                                                                                                                                |                               |
| Module Title                       | Measurements and Instrumentations |                      | Module Delivery                                                                                                                                                                                                                                                |                               |
| Module Type                        | Elective                          |                      | <input type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input checked="" type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input checked="" type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |                               |
| Module Code                        | MECT 104                          |                      |                                                                                                                                                                                                                                                                |                               |
| ECTS Credits                       | 6.00                              |                      |                                                                                                                                                                                                                                                                |                               |
| SWL (hr/sem)                       | 180                               |                      |                                                                                                                                                                                                                                                                |                               |
| Module Level                       | UGx1 1                            | Semester of Delivery |                                                                                                                                                                                                                                                                | 1                             |
| Administering Department           | Mechatronics                      |                      | College                                                                                                                                                                                                                                                        | Technical Engineering college |
| Module Leader                      | م.م اسراء حيدر                    |                      | e-mail                                                                                                                                                                                                                                                         |                               |
| Module Leader's Acad. Title        | Asst. Lecturer                    |                      | Module Leader's Qualification                                                                                                                                                                                                                                  | M.Sc.                         |
| Module Tutor                       | م.م اسراء حيدر                    |                      | e-mail                                                                                                                                                                                                                                                         | E-mail                        |
| Peer Reviewer Name                 | Oday isam wadeea                  |                      | e-mail                                                                                                                                                                                                                                                         |                               |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠                         |                      | Version Number                                                                                                                                                                                                                                                 | 1.0                           |

| Relation with other Modules       |      |  |          |  |
|-----------------------------------|------|--|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |  |          |  |
| Prerequisite module               | None |  | Semester |  |
| Co-requisites module              | None |  | Semester |  |



### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b>              | <ol style="list-style-type: none"> <li>1. Introduce students to measurements, instruments, and Lab devices.</li> <li>2. Students become familiar with various types of instruments and perform various experiments according to a particular procedure.</li> <li>3. Topics include measurement methods of resistance, inductance, capacitance, frequency and voltage, current, and power.</li> <li>4. Understand the identification, classification, construction, components, working principle and application of various meters used for measuring.</li> </ol>                                      |
| <b>Module Learning Outcomes</b> | <p>Upon completion of the course, students should be able to:</p> <ol style="list-style-type: none"> <li>6. In-depth knowledge and understanding of the characteristics of the measuring instruments and ability to choose the most suitable instrument to perform the required measurement.</li> <li>7. Understand the relationship between analytical predictions and experimental results.</li> <li>8. Ability to use Lab. devices: major components, different meters, function generator, oscilloscopes, and etc.</li> <li>9. Understand the utilization of most necessary Lab meters.</li> </ol> |
| <b>Indicative Contents</b>      | Indicative content includes the following.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

### Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

|                   |                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b> | Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing. |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|

### Student Workload (SWL)

الحمل الدراسي للطالب

|                                 |  |                               |  |
|---------------------------------|--|-------------------------------|--|
| <b>Structured SWL (h/sem)</b>   |  | <b>Structured SWL (h/w)</b>   |  |
| <b>Unstructured SWL (h/sem)</b> |  | <b>Unstructured SWL (h/w)</b> |  |
| <b>Total SWL (h/sem)</b>        |  |                               |  |



## Module Evaluation

### تقييم المادة الدراسية

| As                   |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
|----------------------|-----------------|-------------|------------------|------------|---------------------------|
| Formative assessment | Quizzes         | 2           | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11       |
|                      | Assignments     | 2           | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7        |
|                      | Projects / Lab. | 1           | 10% (10)         | Continuous |                           |
|                      | Report          | 1           | 10% (10)         | 13         | LO # 5, 8 and 10          |
| Summative assessment | Midterm Exam    | 3 hr        | 10% (10)         | 7          | LO # 1-7                  |
|                      | Final Exam      | 3hr         | 50% (50)         | 16         | All                       |
| Total assessment     |                 |             | 100% (100 Marks) |            |                           |

## Delivery Plan (Weekly Syllabus)

### المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

| Week    | Material Covered                                                                                                                   |
|---------|------------------------------------------------------------------------------------------------------------------------------------|
| Week 1  | Standard of measurements and description of measurement devices                                                                    |
| Week 2  | Types of Measuring Instrumentation and Classification of Secondary Instruments                                                     |
| Week 3  | Errors in Measurement: Types of errors and Statistical Analysis                                                                    |
| Week 4  | Moving coil instruments (PMMC): DC Ammeter                                                                                         |
| Week 5  | Moving coil instruments (PMMC): DC Voltmeter                                                                                       |
| Week 6  | AC Measuring Instrument: Review on alternating signals, root mean square value, Dynamometer and clamp on meters                    |
| Week 7  | Bridge Circuits and Their Applications                                                                                             |
| Week 8  | DC Bridge: Wheatstone bridge, Kelvin bridge and Kelvin double bridge                                                               |
| Week 9  | AC Bridge: Comparison Bridge and Maxwell Bridge                                                                                    |
| Week 10 | AC Bridge: Hay Bridge, Schering Bridge, and Wien Bridge                                                                            |
| Week 11 | Electronic Measuring Instruments: Amplifier, Half wave rectifier, and Full wave rectifier                                          |
| Week 12 | Electronic Measuring Instruments: Basic Rectifier Type Voltmeter, AC Voltmeter with full wave rectifier, and Electronic Multimeter |
| Week 13 | Oscilloscopes: CRT deflection, probes and functions                                                                                |

|                                                                         |                                                                                                                                    |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Week 14</b>                                                          | Oscilloscopes: Measurement Techniques and Types                                                                                    |
| <b>Week 15</b>                                                          | Energy and Power: Power measurement in DC-DC circuits. Measuring power in AC-AC circuits. Measuring power in three-phase circuits. |
| <b>Delivery Plan (Weekly Lab. Syllabus)</b><br>المنهاج الاسبوعي للمختبر |                                                                                                                                    |
| <b>Week</b>                                                             | <b>Material Covered</b>                                                                                                            |
| <b>Week 1</b>                                                           | Introduction to Measurements devices, devices operation, errors, accuracy definition and report preparing                          |
| <b>Week 2</b>                                                           | Multimeters and the Loading effect on voltmeters                                                                                   |
| <b>Week 3</b>                                                           | Measurement of large and small value of resistance by AV method                                                                    |
| <b>Week 4</b>                                                           | Galvanometers and their sensitivity                                                                                                |
| <b>Week 5</b>                                                           | Measurement of Medium Resistance by Wheatstone Bridge                                                                              |
| <b>Week 6</b>                                                           | Exam 1                                                                                                                             |
| <b>Week 7</b>                                                           | Oscilloscope device: Measuring voltage and frequency                                                                               |
| <b>Week 8</b>                                                           | Oscilloscope device: Measuring phase shift using Lissajous Figures                                                                 |
| <b>Week 9</b>                                                           | AC Meters Using Half and Full-Wave Rectifier                                                                                       |
| <b>Week 10</b>                                                          | Exam 2                                                                                                                             |
| <b>Week 11</b>                                                          | Measurement of Capacitance using Schering Bridge                                                                                   |
| <b>Week 12</b>                                                          | Measurement of Inductance using Maxwell Bridge                                                                                     |
| <b>Week 13</b>                                                          | Measurement of Frequency using Wein Bridge                                                                                         |
| <b>Week 14</b>                                                          | Measuring Power and energy                                                                                                         |
| <b>Week 15</b>                                                          | Final Exam                                                                                                                         |

|                                                                 |                                                                                                                                                                                                                                                      |                                  |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <b>Learning and Teaching Resources</b><br>مصادر التعلم والتدريس |                                                                                                                                                                                                                                                      |                                  |
|                                                                 | <b>Text</b>                                                                                                                                                                                                                                          | <b>Available in the Library?</b> |
| <b>Recommended Texts</b>                                        | <ul style="list-style-type: none"> <li>➤ Electronic Instrumentation and Measurement Techniques by W. D. Cooper</li> <li>➤ Electronic Measurements and Instrumentation by R. S. Sedha,</li> <li>➤ Electronic Instrumentation by H.S. Kalsi</li> </ul> | No                               |

| Grading Scheme<br>مخطط الدرجات                                                                                                                                                                                                                                                                                                                                                       |                  |                     |           |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|-----------|---------------------------------------|
| Group                                                                                                                                                                                                                                                                                                                                                                                | Grade            | التقدير             | Marks (%) | Definition                            |
| Success Group<br>(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<br>(0 – 49)                                                                                                                                                                                                                                                                                                                                                               | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                                                                                                                                                                                                                                                                                                                                                                      | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                                                                                                                                                                                                                                                                                                                                                                                      |                  |                     |           |                                       |
| <b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. |                  |                     |           |                                       |



عميد الكلية : أ.د. هارون عبد الكاظم شهيد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

اسم التدريسي: م.م اسراء حيدر  
التاريخ : ٢٠٢٥ / ٩ / ٢٠



المرحلة الأولى/ الفصل الدراسي الثاني

## MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

| Module Information                 |                        |                               |                                                                                                                                                                                                                                                     |
|------------------------------------|------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                        |                               |                                                                                                                                                                                                                                                     |
| Module Title                       | Digital Logic Design I |                               | Module Delivery                                                                                                                                                                                                                                     |
| Module Type                        | Core                   |                               | <input checked="" type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input checked="" type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | MECT 106               |                               |                                                                                                                                                                                                                                                     |
| ECTS Credits                       | 6.00                   |                               |                                                                                                                                                                                                                                                     |
| SWL (hr/sem)                       | 150                    |                               |                                                                                                                                                                                                                                                     |
| Module Level                       | UGx1 1                 | Semester of Delivery          |                                                                                                                                                                                                                                                     |
| Administering Department           | Mechatronics           | College                       | Technical Engineering college                                                                                                                                                                                                                       |
| Module Leader                      | Hussein Fadhil         | e-mail                        |                                                                                                                                                                                                                                                     |
| Module Leader's Acad. Title        | Prof. Dr.              | Module Leader's Qualification | PhD                                                                                                                                                                                                                                                 |
| Module Tutor                       | Hussein Fadhil         | e-mail                        | E-mail                                                                                                                                                                                                                                              |
| Peer Reviewer Name                 |                        | e-mail                        |                                                                                                                                                                                                                                                     |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠              | Version Number                | 1.0                                                                                                                                                                                                                                                 |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



| <b>Module Aims, Learning Outcomes and Indicative Contents</b><br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b>                                                                                                        | <ol style="list-style-type: none"> <li>1. To teach various number systems, binary codes and their applications</li> <li>2. To familiarize the students the importance of error detection and error correction codes.</li> <li>3. To inculcate concepts of K-MAP to simplify a Boolean expression</li> <li>4. To facilitate students in designing a logic gate circuit.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Module Learning Outcomes</b>                                                                                           | <p>Upon completion of the course, students should be able to:</p> <ol style="list-style-type: none"> <li>10. Use number systems and complements</li> <li>11. Identify the importance of minimization of Boolean formulas in general and digital circuits.</li> <li>12. Minimize functions using any type of minimizing algorithms.</li> <li>13. Student should be able to analyze Digital Circuits using Boolean Algebra, K-maps, and Binary Number systems.</li> <li>14. Analyze the design procedures of logic gate circuits.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Indicative Contents</b>                                                                                                | <p>Indicative content includes the following.</p> <ol style="list-style-type: none"> <li>1. <b>Binary Systems – Five Lectures</b> <ul style="list-style-type: none"> <li>○ Introduction</li> <li>○ Number Systems and Conversions</li> <li>○ Arithmetic with number systems</li> <li>○ Signed and unsigned number systems and their arithmetic</li> <li>○ Binary Codes</li> </ul> </li> <li>2. <b>Boolean Algebra &amp; Logic Gates – Five Lectures</b> <ul style="list-style-type: none"> <li>○ Boolean Postulates &amp; Theorems</li> <li>○ Boolean Functions and their Complements</li> <li>○ Sum of Product Terms &amp; Product of Sum Terms</li> <li>○ Standard forms &amp; Canonical Forms</li> <li>○ Digital logic gates</li> </ul> </li> <li>3. <b>Gate level Minimization – Five Lectures</b> <ul style="list-style-type: none"> <li>○ Karnaugh maps</li> <li>○ Multi-variable (2,3,4,5) K-maps</li> <li>○ Don't care conditions</li> <li>○ Digital Circuits using Basic and Universal Gates</li> </ul> </li> </ol> |



## Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

|                   |                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b> | Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing. |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|

## Student Workload (SWL)

الحمل الدراسي للطالب

|                                 |  |                               |  |
|---------------------------------|--|-------------------------------|--|
| <b>Structured SWL (h/sem)</b>   |  | <b>Structured SWL (h/w)</b>   |  |
| <b>Unstructured SWL (h/sem)</b> |  | <b>Unstructured SWL (h/w)</b> |  |
| <b>Total SWL (h/sem)</b>        |  |                               |  |

## Module Evaluation

تقييم المادة الدراسية

| As                          |                     | Time/Number | Weight (Marks)   | Week Due | Relevant Learning Outcome |
|-----------------------------|---------------------|-------------|------------------|----------|---------------------------|
| <b>Formative assessment</b> | <b>Quizzes</b>      | 4           | 20% (20)         |          |                           |
|                             | <b>Assignments</b>  | 2           | 10% (10)         |          |                           |
|                             | <b>Seminar</b>      | 1           | 10% (10)         |          |                           |
| <b>Summative assessment</b> | <b>Midterm Exam</b> | 2 hr        | 10% (10)         |          |                           |
|                             | <b>Final Exam</b>   | 3hr         | 50% (50)         |          |                           |
| <b>Total assessment</b>     |                     |             | 100% (100 Marks) |          |                           |

## Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

| Week          | Material Covered                                        |
|---------------|---------------------------------------------------------|
| <b>Week 1</b> | Introduction                                            |
| <b>Week 2</b> | Number Systems and Conversions                          |
| <b>Week 3</b> | Arithmetic with number systems                          |
| <b>Week 4</b> | Signed and unsigned number systems and their arithmetic |
| <b>Week 5</b> | Binary Codes                                            |
| <b>Week 6</b> | Boolean Postulates & Theorems                           |
| <b>Week 7</b> | Boolean Functions and their Complements                 |

|                |                                                  |
|----------------|--------------------------------------------------|
| <b>Week 8</b>  | Sum of Product Terms & Product of Sum Terms      |
| <b>Week 9</b>  | Standard forms & Canonical Forms                 |
| <b>Week 10</b> | Digital logic gates                              |
| <b>Week 11</b> | MID EXAM                                         |
| <b>Week 12</b> | Karnaugh maps                                    |
| <b>Week 13</b> | Multi-variable (2,3,4,5) K-maps                  |
| <b>Week 14</b> | Don't care conditions                            |
| <b>Week 15</b> | Digital Circuits using Basic and Universal Gates |

| <b>Delivery Plan (Weekly Lab. Syllabus)</b><br>المنهاج الاسبوعي للمختبر |                                                                              |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <b>Week</b>                                                             | <b>Material Covered</b>                                                      |
| <b>Week 1</b>                                                           | Instructions to Logic design Lab, devices, groups, report preparing          |
| <b>Week 2</b>                                                           | Introduction to logic gates and different digital ICs                        |
| <b>Week 3</b>                                                           | NOT, AND, OR Gates                                                           |
| <b>Week 4</b>                                                           | NAND, NOR Gates                                                              |
| <b>Week 5</b>                                                           | XOR gate                                                                     |
| <b>Week 6</b>                                                           | Exam 1                                                                       |
| <b>Week 7</b>                                                           | Truth tables and simplification using Boolean algebra                        |
| <b>Week 8</b>                                                           | Truth tables and K-maps                                                      |
| <b>Week 9</b>                                                           | Construction of adders, subtractors, magnitude comparators using basic gates |
| <b>Week 10</b>                                                          | Construction of BCD adder and Adder/Subtractor circuit Objective             |
| <b>Week 11</b>                                                          | Exam 2                                                                       |
| <b>Week 12</b>                                                          | Multiplexers                                                                 |
| <b>Week 13</b>                                                          | Decoders                                                                     |
| <b>Week 14</b>                                                          | Preparing to Final Exam                                                      |
| <b>Week 15</b>                                                          | Final EXAM                                                                   |



| Learning and Teaching Resources |                                                                                                                                                                                            |                           |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| مصادر التعلم والتدريس           |                                                                                                                                                                                            |                           |
|                                 | Text                                                                                                                                                                                       | Available in the Library? |
| <b>Recommended Texts</b>        | ➤ Recommended Text Books: Mano, M Morris; Digital Design 5th Ed, Dorling Kindsley Pearson Education, 2016, ISBN: 9789332535763                                                             |                           |
| <b>Reference Books:</b>         | ➤ Digital Systems; Principles and Applications. Tocci, Widmer & Moss. 10th Edition<br>➤ Jain, R.P.; Logic Design<br>➤ Digital Principles, 3rd Ed, Roger L Tokheim; Shaum's Outlines Series |                           |

| Grading Scheme                                                                                                                                                                                                                                                                                                                                                                       |                         |                     |           |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------|-----------|---------------------------------------|
| مخطط الدرجات                                                                                                                                                                                                                                                                                                                                                                         |                         |                     |           |                                       |
| Group                                                                                                                                                                                                                                                                                                                                                                                | Grade                   | التقدير             | Marks (%) | Definition                            |
| <b>Success Group</b><br>(50 - 100)                                                                                                                                                                                                                                                                                                                                                   | <b>A</b> – Excellent    | امتياز              | 90 - 100  | Outstanding Performance               |
|                                                                                                                                                                                                                                                                                                                                                                                      | <b>B</b> - Very Good    | جيد جدا             | 80 - 89   | Above average with some errors        |
|                                                                                                                                                                                                                                                                                                                                                                                      | <b>C</b> – Good         | جيد                 | 70 - 79   | Sound work with notable errors        |
|                                                                                                                                                                                                                                                                                                                                                                                      | <b>D</b> – Satisfactory | متوسط               | 60 - 69   | Fair but with major shortcomings      |
|                                                                                                                                                                                                                                                                                                                                                                                      | <b>E</b> – Sufficient   | مقبول               | 50 - 59   | Work meets minimum criteria           |
| <b>Fail Group</b><br>(0 – 49)                                                                                                                                                                                                                                                                                                                                                        | <b>FX</b> – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                                                                                                                                                                                                                                                                                                                                                                      | <b>F</b> – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                                                                                                                                                                                                                                                                                                                                                                                      |                         |                     |           |                                       |
| <b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. |                         |                     |           |                                       |



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

اسم التدريسي: . أ.د. حسين فاضل  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                     |                               |                                                                                                                                                                                                                                          |
|------------------------------------|---------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                     |                               |                                                                                                                                                                                                                                          |
| Module Title                       | Applied mathematics |                               | Module Delivery                                                                                                                                                                                                                          |
| Module Type                        | Supply              |                               | <input checked="" type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | MECT 107            |                               |                                                                                                                                                                                                                                          |
| ECTS Credits                       | 4                   |                               |                                                                                                                                                                                                                                          |
| SWL (hr/sem)                       | 100                 |                               |                                                                                                                                                                                                                                          |
| Module Level                       | UGx11 1             | Semester of Delivery          | 2                                                                                                                                                                                                                                        |
| Administering Department           | Mechatronics        | College                       | Technical college                                                                                                                                                                                                                        |
| Module Leader                      | Ahmed Mohammed Ali  | e-mail                        |                                                                                                                                                                                                                                          |
| Module Leader's Acad. Title        | Assistant prof.     | Module Leader's Qualification | PhD                                                                                                                                                                                                                                      |
| Module Tutor                       | Ahmed Mohammed Ali  | e-mail                        | E-mail                                                                                                                                                                                                                                   |
| Peer Reviewer Name                 | Name                | e-mail                        | E-mail                                                                                                                                                                                                                                   |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠           | Version Number                | 1.0                                                                                                                                                                                                                                      |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



## Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                                                  |                                                                                                                                                                                                                            |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b><br>أهداف المادة الدراسية                      | Teaching the student the basic and applied principles of calculus and its applications to develop the students mental abilities to solve problems and make use of available information in the other scientific materials. |
| <b>Module Learning Outcomes</b><br>مخرجات التعلم للمادة الدراسية | To apply the knowledge of mathematics, science and engineering fundamentals.                                                                                                                                               |
| <b>Indicative Contents</b><br>المحتويات الإرشادية                |                                                                                                                                                                                                                            |

## Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

|                   |  |
|-------------------|--|
| <b>Strategies</b> |  |
|-------------------|--|

## Student Workload (SWL)

الحمل الدراسي للطالب

|                                                                                |     |                                                                            |   |
|--------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------|---|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 45  | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعياً       | 3 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 55  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعياً | 4 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | 100 |                                                                            |   |



| Module Evaluation     |                 |             |                  |          |                           |
|-----------------------|-----------------|-------------|------------------|----------|---------------------------|
| تقييم المادة الدراسية |                 |             |                  |          |                           |
| As                    |                 | Time/Number | Weight (Marks)   | Week Due | Relevant Learning Outcome |
| Formative assessment  | Quizzes         | 2           | 10% (15)         | 5, 10    | LO #1, 2, 7 and 9         |
|                       | Assignments     | 4           | 10% (15)         | 2, 8     | LO # 3, 4, 5 and 6        |
|                       | Projects / Lab. | 0           | 0                | 0        |                           |
|                       | Report          | 2           | 10% (10)         | 7,14     | LO # 5, 6 and 10          |
| Summative assessment  | Midterm Exam    | 2 hr        | 10% (10)         | 8        | LO # 1-7                  |
|                       | Final Exam      | 2hr         | 50% (50)         | 16       | All                       |
| Total assessment      |                 |             | 100% (100 Marks) |          |                           |

| Delivery Plan (Weekly Syllabus) |                                |
|---------------------------------|--------------------------------|
| المنهاج الاسبوعي النظري         |                                |
| Week                            | Material Covered               |
| Week 1                          | definition of special function |
| Week 2                          | examples and application       |
| Week 3                          | bessel polynomial              |
| Week 4                          | examples and application       |
| Week 5                          | legendre polynomial            |
| Week 6                          | Hermite polynomial             |
| Week 7                          | chebycheve polynomial          |
| Week 8                          | lagurre polynomial             |
| Week 9                          | gamma and beta functions       |
| Week 10                         | mid exam                       |
| Week 11                         | fourier series                 |
| Week 12                         | examples and applications      |
| Week 13                         | fourier transform              |
| Week 14                         | examples and applications      |



## Learning and Teaching Resources

مصادر التعلم والتدريس

|                   | Text     | Available in the Library? |
|-------------------|----------|---------------------------|
| Required Texts    | Calculus |                           |
| Recommended Texts | Calculus | Calculus                  |
| Websites          | Calculus |                           |

## Grading Scheme

مخطط الدرجات

| Group                       | Grade            | التقدير             | Marks (%) | Definition                            |
|-----------------------------|------------------|---------------------|-----------|---------------------------------------|
| Success Group<br>(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<br>(0 – 49)      | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                             | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54). The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



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التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

اسم التدريسي: أ.م.د. أحمد محمد  
علي التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                    |                               |                                                                                                                                                                                                                                                     |
|------------------------------------|--------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                    |                               |                                                                                                                                                                                                                                                     |
| Module Title                       | Electronic I       |                               | Module Delivery                                                                                                                                                                                                                                     |
| Module Type                        | Core               |                               | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input checked="" type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input type="checkbox"/> Seminar |
| Module Code                        | MECT 108           |                               |                                                                                                                                                                                                                                                     |
| ECTS Credits                       | 5                  |                               |                                                                                                                                                                                                                                                     |
| SWL (hr/sem)                       | 125                |                               |                                                                                                                                                                                                                                                     |
| Module Level                       | UG1 1              | Semester of Delivery          | 1                                                                                                                                                                                                                                                   |
| Administering Department           | Type Dept. Code    | College                       | Type College Code                                                                                                                                                                                                                                   |
| Module Leader                      | م.م حسين علي حسين  | e-mail                        |                                                                                                                                                                                                                                                     |
| Module Leader's Acad. Title        | Assistant lecturer | Module Leader's Qualification | MSc                                                                                                                                                                                                                                                 |
| Module Tutor                       | م.م حسين علي حسين  | e-mail                        |                                                                                                                                                                                                                                                     |
| Peer Reviewer Name                 |                    | e-mail                        |                                                                                                                                                                                                                                                     |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠          | Version Number                | 1.0                                                                                                                                                                                                                                                 |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b><br>أهداف المادة الدراسية                      | 8. Course Objectives:<br>9. 1. This course aims to provide a good platform to Mechatronics students to understand, model and appreciate concept of electronic circuit.<br>10. 2. To prepare them to carry out experimental investigation and analysis at later<br>11. Stages of graduation.                                                                                                                                                     |
| <b>Module Learning Outcomes</b><br>مخرجات التعلم للمادة الدراسية | 15. Course Outcomes:<br>16. 1. To apply the knowledge of mathematics, science and engineering fundamentals<br>17. to model the electronic circuits<br>18. 2. To identify and formulate electronic circuits on the fundamentals laws of electric engineering.<br>19. 3. To instill envisage appropriate experiments related to electronic circuits<br>20. 4. To investigate the effectiveness of electronic circuits for the benefit of mankind. |
| <b>Indicative Contents</b><br>المحتويات الإرشادية                | -                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

|                   |   |
|-------------------|---|
| <b>Strategies</b> | - |
|-------------------|---|

## Student Workload (SWL)

### الحمل الدراسي للطالب

|                                                                                |     |                                                                           |   |
|--------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------|---|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 59  | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعيا       | 4 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 66  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 5 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | 125 |                                                                           |   |



| Module Evaluation     |                 |             |                  |            |                           |
|-----------------------|-----------------|-------------|------------------|------------|---------------------------|
| تقييم المادة الدراسية |                 |             |                  |            |                           |
| As                    |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
| Formative assessment  | Quizzes         | 2           | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11       |
|                       | Assignments     | 2           | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7        |
|                       | Projects / Lab. | 1           | 10% (10)         | Continuous |                           |
|                       | Report          | 1           | 10% (10)         | 13         | LO # 5, 8 and 10          |
| Summative assessment  | Midterm Exam    | 2 hr        | 10% (10)         | 7          | LO # 1-7                  |
|                       | Final Exam      | 2hr         | 50% (50)         | 16         | All                       |
| Total assessment      |                 |             | 100% (100 Marks) |            |                           |

| Delivery Plan (Weekly Syllabus) |                                         |
|---------------------------------|-----------------------------------------|
| المنهاج الاسبوعي النظري         |                                         |
| Week                            | Material Covered                        |
| Week 1                          | Semiconductor physics                   |
| Week 2                          | PN-junction                             |
| Week 3                          | Diodes                                  |
| Week 4                          | Characteristics of different diodes     |
| Week 5                          | Diodes applications                     |
| Week 6                          | Diodes applications                     |
| Week 7                          | Photo cell, Photo diode                 |
| Week 8                          | Light emitting diode                    |
| Week 9                          | Bipolar transistor                      |
| Week 10                         | Biasing of bipolar transistor           |
| Week 11                         | Biasing of bipolar transistor           |
| Week 12                         | Modeling and analysis of FET transistor |
| Week 13                         | Small signal model of transistor        |
| Week 14                         | Small signal amplifier                  |
| Week 15                         | Input and output impedance              |
| Week 16                         | Preparatory week before the final Exam  |



### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| Week    | Material Covered                                   |
|---------|----------------------------------------------------|
| Week 1  | To obtain V-I characteristics of PN junction diode |
| Week 2  | Half wave rectifier                                |
| Week 3  | Half wave rectifier with filter                    |
| Week 4  | Bridge rectifier with filter                       |
| Week 5  | Clipping circuits                                  |
| Week 6  | Clamping circuits                                  |
| Week 7  | Zener diode characteristic                         |
| Week 8  | Photo diode                                        |
| Week 9  | Common base Transistor                             |
| Week 10 | Self-biasing                                       |
| Week 11 | Voltage divider biasing                            |
| Week 12 | Finding H-parameter                                |
| Week 13 | Finding input / output impedance                   |
| Week 14 | Small signal amplifier                             |
| Week 15 | FET characteristic                                 |

### Learning and Teaching Resources

مصادر التعلم والتدريس

|                   | Text                                                              | Available in the Library? |
|-------------------|-------------------------------------------------------------------|---------------------------|
| Required Texts    | Mechatronics – circuits analysis and design / by Donald A. Neamen | yes                       |
| Recommended Texts | -                                                                 | -                         |
| Websites          | -                                                                 | -                         |



| Grading Scheme<br>مخطط الدرجات                                                                                                                                                                                                                                                                                                                                                       |                  |                     |           |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|-----------|---------------------------------------|
| Group                                                                                                                                                                                                                                                                                                                                                                                | Grade            | التقدير             | Marks (%) | Definition                            |
| Success Group<br>(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<br>(0 – 49)                                                                                                                                                                                                                                                                                                                                                               | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                                                                                                                                                                                                                                                                                                                                                                      | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                                                                                                                                                                                                                                                                                                                                                                                      |                  |                     |           |                                       |
| <b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. |                  |                     |           |                                       |



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

*Hussain Ali Hussain*

اسم التدريسي: م.م. حسين علي حسين  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                    |                               |                                                                                                                                                                                                                               |
|------------------------------------|--------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                    |                               |                                                                                                                                                                                                                               |
| Module Title                       | Workshops          |                               | Module Delivery                                                                                                                                                                                                               |
| Module Type                        | Basic              |                               | <input type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input checked="" type="checkbox"/> Practical<br><input type="checkbox"/> Seminar |
| Module Code                        | MECT 109           |                               |                                                                                                                                                                                                                               |
| ECTS Credits                       | 4                  |                               |                                                                                                                                                                                                                               |
| SWL (hr/sem)                       | 100                |                               |                                                                                                                                                                                                                               |
| Module Level                       | UG1 1              | Semester of Delivery          | 2                                                                                                                                                                                                                             |
| Administering Department           | Type Dept. Code    | College                       | Type College Code                                                                                                                                                                                                             |
| Module Leader                      | م.م رقية نصر       | e-mail                        |                                                                                                                                                                                                                               |
| Module Leader's Acad. Title        | Assistant Lecturer | Module Leader's Qualification | MSc                                                                                                                                                                                                                           |
| Module Tutor                       | م.م رقية نصر       | e-mail                        | E-mail                                                                                                                                                                                                                        |
| Peer Reviewer Name                 | Name               | e-mail                        | E-mail                                                                                                                                                                                                                        |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠          | Version Number                | 1.0                                                                                                                                                                                                                           |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                                                  |                                                                                                                                                                      |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b><br>أهداف المادة الدراسية                      | The student will be able of getting a hand intelligent by applying machining and industrial operations with using different kinds of hand tools and measuring tools. |
| <b>Module Learning Outcomes</b><br>مخرجات التعلم للمادة الدراسية |                                                                                                                                                                      |
| <b>Indicative Contents</b><br>المحتويات الإرشادية                |                                                                                                                                                                      |

### Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

|                   |   |
|-------------------|---|
| <b>Strategies</b> | - |
|-------------------|---|

### Student Workload (SWL)

الحمل الدراسي للطالب

|                                                                                |     |                                                                           |   |
|--------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------|---|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 87  | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعيا       | 6 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 13  | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | 100 |                                                                           |   |





## Module Evaluation

### تقييم المادة الدراسية

| As                   |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
|----------------------|-----------------|-------------|------------------|------------|---------------------------|
| Formative assessment | Quizzes         | 2           | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11       |
|                      | Assignments     | 2           | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7        |
|                      | Projects / Lab. | 1           | 10% (10)         | Continuous |                           |
|                      | Report          | 1           | 10% (10)         | 13         | LO # 5, 8 and 10          |
| Summative assessment | Midterm Exam    | 2 hr        | 10% (10)         | 7          | LO # 1-7                  |
|                      | Final Exam      | 2hr         | 50% (50)         | 16         | All                       |
| Total assessment     |                 |             | 100% (100 Marks) |            |                           |

## Delivery Plan (Weekly Syllabus)

### المنهاج الاسبوعي النظري

| Week   | Material Covered                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Week 1 | Foundry workshop: -                                                                                                                                                                                                                                                                                                                                                                                                           |
| Week 2 | Metal casting and its importance, purpose of using casts in industry, casting work shop equipment's, industrial safety regulation in works shop, making sand mold for one piece pattern and cores types, resources of sand and mold properties, additives materials, mixing processes and percentage of quality, using sand mixing, sand treatment and sand handling equipment's, making manual sand mold for one piece cast. |
| Week 3 | Making sand mold for one piece cast with runner and risers, cast cleaning make core and baking it in baking furnace, make sand mold for two pieces pattern with core.                                                                                                                                                                                                                                                         |
| Week 4 | Making sand mold with core, melting the metal, pouring the metal. take out the cast from the mold, cleaning the cast,                                                                                                                                                                                                                                                                                                         |
| Week 5 | Melting furnaces of metals: types, specifications, its uses (rotary, crucible) heat treatment and cat inspection, visual surface defects and its causes.                                                                                                                                                                                                                                                                      |
| Week 6 | Measuring cast dimension and insure equal to original dimension.                                                                                                                                                                                                                                                                                                                                                              |
| Week 7 | Filing Workshop: -                                                                                                                                                                                                                                                                                                                                                                                                            |
| Week 8 | Vernier types, measuring methods , measuring height and depth, sketching process on sheet metal plate, tools used, scratching pointer, strip divider, bended edge divider, 90 degree square ruler, bended rulers,                                                                                                                                                                                                             |

|                |                                                                                                                                                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Week 9</b>  | Files, files and filling process: filing types and its specifications, clamp vices types, processes of fixing work piece on it, the uses of different types of fillings, filing cleaning process, filling methods, exercises on scratching method and simple file. |
| <b>Week 10</b> | Saw cutting, hand saw, saw blade, fixing the saw blade, the saw blade condition available for sawing process, exercises for saw cutting process.                                                                                                                   |
| <b>Week 11</b> | Lath Workshop: -                                                                                                                                                                                                                                                   |
| <b>Week 12</b> | Lathe machine, specifications its uses, accessory lathe parts , lathe operation, lathe cutting tools types , uses of measuring instruments.                                                                                                                        |
| <b>Week 13</b> | Turning Processes: -                                                                                                                                                                                                                                               |
| <b>Week 14</b> | Facing , simple steps, learning using measuring instruments.                                                                                                                                                                                                       |
| <b>Week 15</b> | Internal and external taper turning, making exercises for both methods.                                                                                                                                                                                            |

| Learning and Teaching Resources |      |                           |
|---------------------------------|------|---------------------------|
| مصادر التعلم والتدريس           |      |                           |
|                                 | Text | Available in the Library? |
| <b>Required Texts</b>           |      | yes                       |
| <b>Recommended Texts</b>        | -    | -                         |
| <b>Websites</b>                 |      |                           |

| Grading Scheme                      |                         |                     |           |                                       |
|-------------------------------------|-------------------------|---------------------|-----------|---------------------------------------|
| مخطط الدرجات                        |                         |                     |           |                                       |
| Group                               | Grade                   | التقدير             | Marks (%) | Definition                            |
| <b>Success Group<br/>(50 - 100)</b> | <b>A – Excellent</b>    | امتياز              | 90 - 100  | Outstanding Performance               |
|                                     | <b>B - Very Good</b>    | جيد جدا             | 80 - 89   | Above average with some errors        |
|                                     | <b>C – Good</b>         | جيد                 | 70 - 79   | Sound work with notable errors        |
|                                     | <b>D – Satisfactory</b> | متوسط               | 60 - 69   | Fair but with major shortcomings      |
|                                     | <b>E – Sufficient</b>   | مقبول               | 50 - 59   | Work meets minimum criteria           |
| <b>Fail Group</b>                   | <b>FX – Fail</b>        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                     | <b>F – Fail</b>         | راسب                | (0-44)    | Considerable amount of work required  |



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 automatic rounding outlined above marks awarded by the original

عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٦ / ٩ / ٢٠

اسم التدريسي: م.م رقية نصر  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                           |                               |                                                                                                                                                                                                                                                     |
|------------------------------------|---------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                           |                               |                                                                                                                                                                                                                                                     |
| Module Title                       | Smart material technology |                               | Module Delivery                                                                                                                                                                                                                                     |
| Module Type                        | E                         |                               | <input checked="" type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input checked="" type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | MECT 110                  |                               |                                                                                                                                                                                                                                                     |
| ECTS Credits                       | 4                         |                               |                                                                                                                                                                                                                                                     |
| SWL (hr/sem)                       | 100                       |                               |                                                                                                                                                                                                                                                     |
| Module Level                       | UGx1 UGII                 | Semester of Delivery          |                                                                                                                                                                                                                                                     |
| Administering Department           |                           | College                       |                                                                                                                                                                                                                                                     |
| Module Leader                      | م.م رحاب فاضل             | e-mail                        |                                                                                                                                                                                                                                                     |
| Module Leader's Acad. Title        | Assistant lecturer        | Module Leader's Qualification | MSc                                                                                                                                                                                                                                                 |
| Module Tutor                       | م.م رحاب فاضل             | e-mail                        | E-mail                                                                                                                                                                                                                                              |
| Peer Reviewer Name                 |                           | e-mail                        |                                                                                                                                                                                                                                                     |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠                 | Version Number                | 1.0                                                                                                                                                                                                                                                 |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



## Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                 |                                                                                                                                                                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b>              | 1. This course aims to provide a good platform to mechatronics engineering students to understand, the formation of alloys and there classification then to deal with the manufacturing process for the alloys<br>2. To prepare them for the selection of the proper alloy and use it in application location. |
| <b>Module Learning Outcomes</b> | To apply the knowledge of materials engineering and the manufacturing processes due to the selection of materials for robot production                                                                                                                                                                         |
| <b>Indicative Contents</b>      | -                                                                                                                                                                                                                                                                                                              |

## Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

|                   |                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b> | Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing. |
|-------------------|-------------------------------------------------------------------------------------------------------------|

## Student Workload (SWL)

الحمل الدراسي للطالب

|                                 |     |                               |   |
|---------------------------------|-----|-------------------------------|---|
| <b>Structured SWL (h/sem)</b>   | 59  | <b>Structured SWL (h/w)</b>   | 4 |
| <b>Unstructured SWL (h/sem)</b> | 41  | <b>Unstructured SWL (h/w)</b> | 3 |
| <b>Total SWL (h/sem)</b>        | 100 |                               |   |



## Module Evaluation

تقييم المادة الدراسية

| As                          |                    | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|-----------------------------|--------------------|-------------|----------------|----------|---------------------------|
| <b>Formative assessment</b> | <b>Quizzes</b>     | 4           | 20% (20)       | 3,5,6,10 | LO #1,2,.....10           |
|                             | <b>Assignments</b> | 2           | 10% (10)       | 7, 8     | LO # 8                    |
|                             | <b>Seminar</b>     | 1           | 10% (10)       | 11       | LO # 11                   |

|                             |                     |      |                  |    |           |
|-----------------------------|---------------------|------|------------------|----|-----------|
| <b>Summative assessment</b> | <b>Midterm Exam</b> | 2 hr | 10% (10)         | 12 | LO # 1-12 |
|                             | <b>Final Exam</b>   | 3hr  | 50% (50)         | 16 | All       |
| <b>Total assessment</b>     |                     |      | 100% (100 Marks) |    |           |

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

| Week    | Material Covered                                                                     |
|---------|--------------------------------------------------------------------------------------|
| Week 1  | Introduction to Materials Engineering, bonds and crystal structures of materials,    |
| Week 2  | theoretical density Crystal lattice, dislocation, point defect,                      |
| Week 3  | solidification and dendrite (The microstructures of metals under microscope)         |
| Week 4  | Scanning electron microscope (microstructures of metals)                             |
| Week 5  | The mechanical properties of materials (tensile, Impact, Hardness                    |
| Week 6  | Phase diagrams of 2 metals (revers lever rule) Solubility of metals (Phase diagrams) |
| Week 7  | Eutectic structures                                                                  |
| Week 8  | Iron- Carbon phase diagram ,Microstructure of steel and cast iron                    |
| Week 9  | Classification of steel (steel, stainless steel)                                     |
| Week 10 | Heat treatment of steel (annealing, quenching, normalizing, tempering)               |
| Week 11 | Aluminum and it's alloys, copper and it's alloys                                     |
| Week 12 | Light alloys Mg Ti                                                                   |
| Week 13 | introduction to manufacturing processes,                                             |
| Week 14 | casting of metals (sand casting, centrifuge casting, die casting...etc)              |
| Week 15 | cutting of metals (lathe milling drilling ,broaching )                               |



### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| Week   | Material Covered |
|--------|------------------|
| Week 1 |                  |
| Week 2 |                  |
| Week 3 |                  |

|        |  |
|--------|--|
| Week 4 |  |
| Week 5 |  |
| Week 6 |  |
| Week 7 |  |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس |                                                                                            |                           |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------|
|                                                          | Text                                                                                       | Available in the Library? |
| Recommended Texts                                        | ➤ Materials_Science_and_Engineering_-<br>_An_Introduction 7th by William D. Callister, Jr. | yes                       |

| Grading Scheme<br>مخطط الدرجات |                  |                     |           |                                       |
|--------------------------------|------------------|---------------------|-----------|---------------------------------------|
| Group                          | Grade            | التقدير             | Marks (%) | Definition                            |
| Success Group<br>(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<br>(0 - 49)         | FX – Fail        | راسب (فيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                                |                  |                     |           |                                       |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54). The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠٥٦

Rehab Fadhil

اسم التدريسي: م.م. رحاب فاضل  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                      |                               |                                                                                                                                                                                                                                                     |
|------------------------------------|----------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                      |                               |                                                                                                                                                                                                                                                     |
| Module Title                       | Engineering Material |                               | Module Delivery                                                                                                                                                                                                                                     |
| Module Type                        | E                    |                               | <input checked="" type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input checked="" type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | MECT 111             |                               |                                                                                                                                                                                                                                                     |
| ECTS Credits                       | 4                    |                               |                                                                                                                                                                                                                                                     |
| SWL (hr/sem)                       | 100                  |                               |                                                                                                                                                                                                                                                     |
| Module Level                       |                      | Semester of Delivery          |                                                                                                                                                                                                                                                     |
| Administering Department           |                      | College                       |                                                                                                                                                                                                                                                     |
| Module Leader                      | م.م رحاب فاضل        | e-mail                        |                                                                                                                                                                                                                                                     |
| Module Leader's Acad. Title        | Assistant lecturer   | Module Leader's Qualification | MSc                                                                                                                                                                                                                                                 |
| Module Tutor                       | م.م رحاب فاضل        | e-mail                        | E-mail                                                                                                                                                                                                                                              |
| Peer Reviewer Name                 |                      | e-mail                        |                                                                                                                                                                                                                                                     |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠            | Version Number                | 1.0                                                                                                                                                                                                                                                 |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



| Module Aims, Learning Outcomes and Indicative Contents   |                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية |                                                                                                                                                                                                                                                                                                                |
| <b>Module Aims</b>                                       | 1. This course aims to provide a good platform to mechatronics engineering students to understand, the formation of alloys and there classification then to deal with the manufacturing process for the alloys<br>2. To prepare them for the selection of the proper alloy and use it in application location. |
| <b>Module Learning Outcomes</b>                          | To apply the knowledge of materials engineering and the manufacturing processes due to the selection of materials for robot production                                                                                                                                                                         |
| <b>Indicative Contents</b>                               | -                                                                                                                                                                                                                                                                                                              |

| Learning and Teaching Strategies |                                                                                                             |
|----------------------------------|-------------------------------------------------------------------------------------------------------------|
| استراتيجيات التعلم والتعليم      |                                                                                                             |
| <b>Strategies</b>                | Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing. |

| Student Workload (SWL)          |     |                               |   |
|---------------------------------|-----|-------------------------------|---|
| الحمل الدراسي للطالب            |     |                               |   |
| <b>Structured SWL (h/sem)</b>   | 59  | <b>Structured SWL (h/w)</b>   | 4 |
| <b>Unstructured SWL (h/sem)</b> | 41  | <b>Unstructured SWL (h/w)</b> | 3 |
| <b>Total SWL (h/sem)</b>        | 100 |                               |   |

| Module Evaluation           |                     |             |                  |          |                           |
|-----------------------------|---------------------|-------------|------------------|----------|---------------------------|
| تقييم المادة الدراسية       |                     |             |                  |          |                           |
| As                          |                     | Time/Number | Weight (Marks)   | Week Due | Relevant Learning Outcome |
| <b>Formative assessment</b> | <b>Quizzes</b>      | 4           | 20% (20)         | 3,5,6,10 | LO #1,2,.....10           |
|                             | <b>Assignments</b>  | 2           | 10% (10)         | 7, 8     | LO # 8                    |
|                             | <b>Seminar</b>      | 1           | 10% (10)         | 11       | LO # 11                   |
| <b>Summative assessment</b> | <b>Midterm Exam</b> | 2 hr        | 10% (10)         | 12       | LO # 1-12                 |
|                             | <b>Final Exam</b>   | 3hr         | 50% (50)         | 16       | All                       |
| <b>Total assessment</b>     |                     |             | 100% (100 Marks) |          |                           |



### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

| Week    | Material Covered                                                                     |
|---------|--------------------------------------------------------------------------------------|
| Week 1  | Introduction to Materials Engineering, bonds and crystal structures of materials,    |
| Week 2  | theoretical density Crystal lattice, dislocation, point defect,                      |
| Week 3  | solidification and dendrite (The microstructures of metals under microscope)         |
| Week 4  | Scanning electron microscope (microstructures of metals)                             |
| Week 5  | The mechanical properties of materials (tensile, Impact, Hardness                    |
| Week 6  | Phase diagrams of 2 metals (revers lever rule) Solubility of metals (Phase diagrams) |
| Week 7  | Eutectic structures                                                                  |
| Week 8  | Iron- Carbon phase diagram ,Microstructure of steel and cast iron                    |
| Week 9  | Classification of steel (steel, stainless steel)                                     |
| Week 10 | Heat treatment of steel (annealing, quenching, normalizing, tempering)               |
| Week 11 | Aluminum and it's alloys, copper and it's alloys                                     |
| Week 12 | Light alloys Mg Ti                                                                   |
| Week 13 | introduction to manufacturing processes,                                             |
| Week 14 | casting of metals (sand casting, centrifuge casting, die casting...etc)              |
| Week 15 | cutting of metals (lathe milling drilling ,broaching )                               |

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| Week   | Material Covered |
|--------|------------------|
| Week 1 |                  |
| Week 2 |                  |
| Week 3 |                  |
| Week 4 |                  |
| Week 5 |                  |
| Week 6 |                  |
| Week 7 |                  |



## Learning and Teaching Resources

مصادر التعلم والتدريس

|                   | Text                                                                                       | Available in the Library? |
|-------------------|--------------------------------------------------------------------------------------------|---------------------------|
| Recommended Texts | ➤ Materials_Science_and_Engineering_-<br>_An_Introduction 7th by William D. Callister, Jr. | yes                       |

## Grading Scheme

مخطط الدرجات

| Group                       | Grade            | التقدير             | Marks (%) | Definition                            |
|-----------------------------|------------------|---------------------|-----------|---------------------------------------|
| Success Group<br>(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<br>(0 – 49)      | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                             | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                             |                  |                     |           |                                       |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

Rehab Fadhil

اسم التدريسي: م.م. رحاب فاضل  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

| Module Information                 |                                  |                               |                                                                                                                                                                                                                                          |
|------------------------------------|----------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                                  |                               |                                                                                                                                                                                                                                          |
| Module Title                       | Computer Systems and Programming |                               | Module Delivery                                                                                                                                                                                                                          |
| Module Type                        | Core                             |                               | <input type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input checked="" type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | MECT 112                         |                               |                                                                                                                                                                                                                                          |
| ECTS Credits                       | 3                                |                               |                                                                                                                                                                                                                                          |
| SWL (hr/sem)                       | 75                               |                               |                                                                                                                                                                                                                                          |
| Module Level                       | UGx11 UGII                       | Semester of Delivery          | 2                                                                                                                                                                                                                                        |
| Administering Department           | Mechatronics Dept.               | College                       | Technical Engineering College                                                                                                                                                                                                            |
| Module Leader                      | Dr. Hayder Kareem                | e-mail                        |                                                                                                                                                                                                                                          |
| Module Leader's Acad. Title        | Assistant Lecturer               | Module Leader's Qualification | PhD                                                                                                                                                                                                                                      |
| Module Tutor                       | Dr. Hayder Kareem                | e-mail                        | None                                                                                                                                                                                                                                     |
| Peer Reviewer Name                 |                                  | e-mail                        |                                                                                                                                                                                                                                          |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠                        | Version Number                | 1.0                                                                                                                                                                                                                                      |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | None | Semester |  |
| Co-requisites module              | None | Semester |  |



## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

|                                                                  |                                                                                                                                                                                                                     |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Aims</b><br>أهداف المادة الدراسية                      | The aim of this course is to provide students with knowledge about computer system and abilities to design system programs using modern methodologies and to implement their design using modern development tools. |
| <b>Module Learning Outcomes</b><br>مخرجات التعلم للمادة الدراسية | <ol style="list-style-type: none"> <li>1. To apply the knowledge about computer system environment.</li> <li>2. To enable students make programs in C++ Programming Language.</li> </ol>                            |
| <b>Indicative Contents</b><br>المحتويات الإرشادية                |                                                                                                                                                                                                                     |

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

|                   |                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b> | Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing. |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|

## Student Workload (SWL)

### الحمل الدراسي للطالب

|                                                                                |    |                                                                            |   |
|--------------------------------------------------------------------------------|----|----------------------------------------------------------------------------|---|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 31 | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطالب أسبوعياً       | 2 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 44 | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطالب أسبوعياً | 3 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطالب خلال الفصل              | 75 |                                                                            |   |



| Module Evaluation     |                 |             |                  |            |                           |
|-----------------------|-----------------|-------------|------------------|------------|---------------------------|
| تقييم المادة الدراسية |                 |             |                  |            |                           |
| As                    |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
| Formative assessment  | Quizzes         | 2           | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11       |
|                       | Assignments     | 2           | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7        |
|                       | Projects / Lab. | 1           | 10% (10)         | Continuous |                           |
|                       | Report          | 1           | 10% (10)         | 13         | LO # 5, 8 and 10          |
| Summative assessment  | Midterm Exam    | 2 hr        | 10% (10)         | 7          | LO # 1-7                  |
|                       | Final Exam      | 2hr         | 50% (50)         | 16         | All                       |
| Total assessment      |                 |             | 100% (100 Marks) |            |                           |

| Delivery Plan (Weekly Syllabus) |                                          |
|---------------------------------|------------------------------------------|
| المنهاج الاسبوعي النظري         |                                          |
| Week                            | Material Covered                         |
| Week 1                          | An Overview of Microcomputer Systems     |
| Week 2                          | The System Unit                          |
| Week 3                          | Peripheral Devices                       |
| Week 4                          | Memory Fundamentals                      |
| Week 5                          | Types of Storage Devices                 |
| Week 6                          | Communication and Network Fundamentals   |
| Week 7                          | Microprocessors Architecture             |
| Week 8                          | High Level Language                      |
| Week 9                          | Introduction to C++ Programming Language |
| Week 10                         | Variables and Data Types                 |
| Week 11                         | Integers and Integer Representations     |
| Week 12                         | Arrays in C++                            |
| Week 13                         | Compiler Basics                          |
| Week 14                         | Control Flow I                           |
| Week 15                         | Control Flow II                          |
| Week 16                         | Preparatory week before the final Exam   |



## Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

| Week   | Material Covered                                 |
|--------|--------------------------------------------------|
| Week 1 | Lab 1: Introduction to C ++ Programming Language |
| Week 2 | Lab 2: Condition Statements in C++               |
| Week 3 | Lab 3: Condition Statements in C++               |
| Week 4 | Lab 4: Control Flow Statements in C++            |
| Week 5 | Lab 5: Control Flow Statements in C++            |
| Week 6 | Lab 6: Arrays in C++                             |
| Week 7 | Lab 7: Designing Projects                        |

## Learning and Teaching Resources

مصادر التعلم والتدريس

|                   | Text                                                                                                                                        | Available in the Library? |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Recommended Texts | Starting Out with C++: From Control Structures through Objects, 8th Edition                                                                 | No                        |
| Websites          | <a href="https://www.shiksha.com/it-software/c-c-plus-plus-syllabus-chp">https://www.shiksha.com/it-software/c-c-plus-plus-syllabus-chp</a> |                           |

## Grading Scheme

مخطط الدرجات

| Group                       | Grade            | التقدير             | Marks (%) | Definition                            |
|-----------------------------|------------------|---------------------|-----------|---------------------------------------|
| Success Group<br>(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<br>(0 – 49)      | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                             | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                             |                  |                     |           |                                       |

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٦/٣/٣١

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٦/٣/٣١

اسم التدريسي: م.د. حيدر كريم  
التاريخ : ٢٠٢٦/٣/٣١

## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

| Module Information                 |                 |                               |                                                                                                                                                                                                                                          |
|------------------------------------|-----------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| معلومات المادة الدراسية            |                 |                               |                                                                                                                                                                                                                                          |
| Module Title                       | Arabic          |                               | Module Delivery                                                                                                                                                                                                                          |
| Module Type                        | Basic           |                               | <input checked="" type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |
| Module Code                        | MECT 202        |                               |                                                                                                                                                                                                                                          |
| ECTS Credits                       | ٢               |                               |                                                                                                                                                                                                                                          |
| SWL (hr/sem)                       | ٥٠              |                               |                                                                                                                                                                                                                                          |
| Module Level                       | MECT 113        | Semester of Delivery          |                                                                                                                                                                                                                                          |
| Administering Department           | Type Dept. Code | College                       | Type College Code                                                                                                                                                                                                                        |
| Module Leader                      | أ.د. صباح عطوي  | e-mail                        | E-mail                                                                                                                                                                                                                                   |
| Module Leader's Acad. Title        |                 | Module Leader's Qualification | Doctor                                                                                                                                                                                                                                   |
| Module Tutor                       | أ.د. صباح عطوي  | e-mail                        | E-mail                                                                                                                                                                                                                                   |
| Peer Reviewer Name                 | Name            | e-mail                        | E-mail                                                                                                                                                                                                                                   |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠       | 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 and Indicative Contents<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية |                                                               |
|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Module Aims<br>أهداف المادة الدراسية                                                                               | Teaching the student on the simple basics of Arabic languages |
| Module Learning Outcomes<br>مخرجات التعلم للمادة الدراسية                                                          |                                                               |
| Indicative Contents<br>المحتويات الإرشادية                                                                         |                                                               |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم |  |
|-----------------------------------------------------------------|--|
| Strategies                                                      |  |

| Student Workload (SWL)<br>الحمل الدراسي للطالب                          |    |                                                                     |   |
|-------------------------------------------------------------------------|----|---------------------------------------------------------------------|---|
| Structured SWL (h/sem)<br>الحمل الدراسي المنتظم للطالب خلال الفصل       | 31 | Structured SWL (h/w)<br>الحمل الدراسي المنتظم للطالب أسبوعياً       | 2 |
| Unstructured SWL (h/sem)<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 19 | Unstructured SWL (h/w)<br>الحمل الدراسي غير المنتظم للطالب أسبوعياً | 1 |
| Total SWL (h/sem)<br>الحمل الدراسي الكلي للطالب خلال الفصل              | 50 |                                                                     |   |

| Module Evaluation<br>تقييم المادة الدراسية |                 |             |                  |            |                           |
|--------------------------------------------|-----------------|-------------|------------------|------------|---------------------------|
| As                                         |                 | Time/Number | Weight (Marks)   | Week Due   | Relevant Learning Outcome |
| Formative assessment                       | Quizzes         | 2           | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11       |
|                                            | Assignments     | 2           | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7        |
|                                            | Projects / Lab. | 1           | 10% (10)         | Continuous |                           |
|                                            | Report          | 1           | 10% (10)         | 13         | LO # 5, 8 and 10          |
| Summative assessment                       | Midterm Exam    | 3 hr        | 10% (10)         | 7          | LO # 1-7                  |
|                                            | Final Exam      | 3hr         | 50% (50)         | 16         | All                       |
| Total assessment                           |                 |             | 100% (100 Marks) |            |                           |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري |                                                                  |
|------------------------------------------------------------|------------------------------------------------------------------|
| Week                                                       | Material Covered                                                 |
| Week 1                                                     | مقدمة عن الأخطاء اللغوية التاء المربوطة والطويلة والتاء المفتوحة |
| Week 2                                                     | قواعد كتابة الالف الممدودة والمقصورة الحروف الشمسية والقمرية     |
| Week 3                                                     | الضاد والظاء                                                     |
| Week 4                                                     | كتابة الهمزة                                                     |
| Week 5                                                     | علامات الترقيم                                                   |
| Week 6                                                     | الاسم والفعل والتفريق بينهما                                     |
| Week 7                                                     | المفاعيل                                                         |
| Week 8                                                     | العدد                                                            |
| Week 9                                                     | تطبيقات الأخطاء اللغوية الشائعة                                  |
| Week 10                                                    | النون والتنوين .. معاني حروف الجر                                |
| Week 11                                                    | الجوانب الشكلية للخطاب الإداري                                   |
| Week 12                                                    | لغة الخطاب الإداري                                               |
| Week 13                                                    | نماذج من المراسلات الإدارية                                      |
| Week 14                                                    | مقدمة عن الأخطاء اللغوية التاء المربوطة والطويلة والتاء المفتوحة |
| Week 15                                                    | قواعد كتابة الالف الممدودة والمقصورة الحروف الشمسية والقمرية     |
| Week 16                                                    | Preparatory week before the final Exam                           |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس |      |                           |
|----------------------------------------------------------|------|---------------------------|
|                                                          | Text | Available in the Library? |
| Required Texts                                           |      |                           |
| Recommended Texts                                        |      |                           |
| Websites                                                 |      |                           |

| Grading Scheme<br>مخطط الدرجات |                  |         |           |                                  |
|--------------------------------|------------------|---------|-----------|----------------------------------|
| Group                          | Grade            | التقدير | Marks (%) | Definition                       |
| Success Group<br>(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<br>(0 – 49)                                                                                                                                                                                                                                                                                                                                                               | FX – Fail      | راسب (قيد المعالجة) | (45-49) | More work required but credit awarded |
|                                                                                                                                                                                                                                                                                                                                                                                      | F – Fail       | راسب                | (0-44)  | Considerable amount of work required  |
|                                                                                                                                                                                                                                                                                                                                                                                      |                |                     |         |                                       |
| <b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. |                |                     |         |                                       |



عميد الكلية : أ.د. هارون عبد الكاظم شهد  
التاريخ : ٢٠٢٦ / ٣ / 31

رئيس القسم : أ.د. حسين فاضل حمدان  
التاريخ : ٢٠٢٦ / ٣ / 31

*Sabah Attawi*

اسم التدريسي : ا.د صباح عطوي  
التاريخ : ٢٠٢٦ / ٣ / 31

## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية |                 |                               |                                                                                                                                                                                                                                          |  |  |  |
|-----------------------------------------------|-----------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Module Title                                  | English I       |                               | Module Delivery                                                                                                                                                                                                                          |  |  |  |
| Module Type                                   | B               |                               | <input checked="" type="checkbox"/> Theory<br><input type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><input type="checkbox"/> Tutorial<br><input type="checkbox"/> Practical<br><input checked="" type="checkbox"/> Seminar |  |  |  |
| Module Code                                   | MECT 114        |                               |                                                                                                                                                                                                                                          |  |  |  |
| ECTS Credits                                  | ٢               |                               |                                                                                                                                                                                                                                          |  |  |  |
| SWL (hr/sem)                                  | ٢٥              |                               |                                                                                                                                                                                                                                          |  |  |  |
| Module Level                                  | UGx11 1         | Semester of Delivery          | 2                                                                                                                                                                                                                                        |  |  |  |
| Administering Department                      | Type Dept. Code | College                       | Type College Code                                                                                                                                                                                                                        |  |  |  |
| Module Leader                                 | قمر ضياء        | e-mail                        | E-mail                                                                                                                                                                                                                                   |  |  |  |
| Module Leader's Acad. Title                   |                 | Module Leader's Qualification | Master                                                                                                                                                                                                                                   |  |  |  |

|                                    |           |                |        |
|------------------------------------|-----------|----------------|--------|
| Module Tutor                       | قمر ضياء  | e-mail         | E-mail |
| Peer Reviewer Name                 | Name      | e-mail         | E-mail |
| Scientific Committee Approval Date | ٢٠٢٥/٩/٢٠ | 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 and Indicative Contents<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية |                                                      |
|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Module Aims<br>أهداف المادة الدراسية                                                                               | To make student write reports with excellent grammar |
| Module Learning Outcomes<br>مخرجات التعلم للمادة الدراسية                                                          |                                                      |
| Indicative Contents<br>المحتويات الإرشادية                                                                         |                                                      |



| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم |  |
|-----------------------------------------------------------------|--|
| Strategies                                                      |  |

| Student Workload (SWL)<br>الحمل الدراسي للطالب                          |    |                                                                     |   |
|-------------------------------------------------------------------------|----|---------------------------------------------------------------------|---|
| Structured SWL (h/sem)<br>الحمل الدراسي المنتظم للطالب خلال الفصل       | ٣١ | Structured SWL (h/w)<br>الحمل الدراسي المنتظم للطالب أسبوعياً       | 2 |
| Unstructured SWL (h/sem)<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 19 | Unstructured SWL (h/w)<br>الحمل الدراسي غير المنتظم للطالب أسبوعياً | 1 |
| Total SWL (h/sem)<br>الحمل الدراسي الكلي للطالب خلال الفصل              | 50 |                                                                     |   |

| Module Evaluation<br>تقييم المادة الدراسية |         |                |          |                   |
|--------------------------------------------|---------|----------------|----------|-------------------|
|                                            | Time/Nu | Weight (Marks) | Week Due | Relevant Learning |

| As                   |                 | mber |                  |            | Outcome             |
|----------------------|-----------------|------|------------------|------------|---------------------|
| Formative assessment | Quizzes         | 2    | 10% (10)         | 5, 10      | LO #1, 2, 10 and 11 |
|                      | Assignments     | 2    | 10% (10)         | 2, 12      | LO # 3, 4, 6 and 7  |
|                      | Projects / Lab. | 1    | 10% (10)         | Continuous |                     |
|                      | Report          | 1    | 10% (10)         | 13         | LO # 5, 8 and 10    |
| Summative assessment | Midterm Exam    | 2 hr | 10% (10)         | 7          | LO # 1-7            |
|                      | Final Exam      | 2hr  | 50% (50)         | 16         | All                 |
| Total assessment     |                 |      | 100% (100 Marks) |            |                     |

| <b>Delivery Plan (Weekly Syllabus)</b><br>المنهاج الاسبوعي النظري |                                                                                               |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Week                                                              | Material Covered                                                                              |
| Week 1                                                            | Unit one :hello, Am/are/is, my/your, This is with practice in work                            |
| Week 2                                                            | Unit two :your world, He/she/they, his/her, Questions                                         |
| Week 3                                                            | Unit three: all about                                                                         |
| Week 4                                                            | Unit four :family and friends, Possessive adjectives, Possessive's, Has/have, Adjective+ noun |
| Week 5                                                            | Unit Five :the way I live, Present simple I/you/we/they, A and an                             |
| Week 6                                                            | Adjective + noun                                                                              |
| Week 7                                                            | Unit six : every day, Present simple he/she, Questions and negatives                          |
| Week 8                                                            | Adverbs of frequency                                                                          |
| Week 9                                                            | Unit seven :my favorites, Question words, Pronouns, This and that                             |
| Week 10                                                           | Unit eight :where I live, There is /are..., Prepositions                                      |
| Week 11                                                           | Unit nine :times past, Was /were born, Past simple -irregular verbs                           |
| Week 12                                                           | Unit ten: we had a great time!, Past simple -regular & irregular, Question, Negatives, Ago    |
| Week 13                                                           | Unit eleven: I can do that!, Can /can't, Adverbs, Requests                                    |
| Week 14                                                           | Unit twelve: please and thank you, I'd like..., Some and any, Like and would like             |
| Week 15                                                           | Unit thirteen: here and now, Present continuous, Present simple & present continuous          |
| Week 16                                                           | Preparatory week before the final Exam                                                        |

| <b>Learning and Teaching Resources</b><br>مصادر التعلم والتدريس |                           |                           |
|-----------------------------------------------------------------|---------------------------|---------------------------|
|                                                                 | Text                      | Available in the Library? |
| Required Texts                                                  | New headway plus beginner | yes                       |
| Recommended Texts                                               | -                         | -                         |
| Websites                                                        | -                         |                           |

| Grading Scheme<br>مخطط الدرجات                                                                                                                                                                                                                                                                                                                                                       |                  |                     |           |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|-----------|---------------------------------------|
| Group                                                                                                                                                                                                                                                                                                                                                                                | Grade            | التقدير             | Marks (%) | Definition                            |
| Success Group<br>(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<br>(0 – 49)                                                                                                                                                                                                                                                                                                                                                               | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
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اسم التدريسي: م.م. قمر ضياء  
التاريخ : ٢٠٢٥ / ٩ / ٢٠

**ملاحظة :** قسم هندسة تقنيات الميكاترونكس استحدث في الجامعة في العام الدراسي ٢٠٢٥-٢٠٢٦ لذلك فإن وصف المواد الدراسية أعلاه فقط للمرحلة الاولى للعام الدراسي ٢٠٢٥-٢٠٢٦.

مسؤول شعبة الجودة وتقييم الاداء في الكلية

٢٠٢٥/٩/٢٤