وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

# دليل وصف البرنامج الأكاديمي والمقرر الدراسي

**2024**

المقدمة:

يُعد البرنامج التعليمي بمثابة حزمة منسقة ومنظمة من المقررات الدراسية التي تشتمل على إجراءات وخبرات تنظم بشكل مفردات دراسية الغرض الأساس منها بناء وصقل مهارات الخريجين مما يجعلهم مؤهلين لتلبية متطلبات سوق العمل يتم مراجعته وتقييمه سنوياً عبر إجراءات وبرامج التدقيق الداخلي أو الخارجي مثل برنامج الممتحن الخارجي.

يقدم وصف البرنامج الأكاديمي ملخص موجز للسمات الرئيسة للبرنامج ومقرراته مبيناً المهارات التي يتم العمل على اكسابها للطلبة مبنية على وفق اهداف البرنامج الأكاديمي وتتجلى أهمية هذا الوصف لكونه يمثل الحجر الأساس في الحصول على الاعتماد البرامجي ويشترك في كتابته الملكات التدريسية بإشراف اللجان العلمية في الأقسام العلمية.

ويتضمن هذا الدليل بنسخته الثانية وصفاً للبرنامج الأكاديمي بعد تحديث مفردات وفقرات الدليل السابق في ضوء مستجدات وتطورات النظام التعليمي في العراق والذي تضمن وصف البرنامج الأكاديمي بشكلها التقليدي نظام (سنوي، فصلي) فضلاً عن اعتماد وصف البرنامج الأكاديمي المعمم بموجب كتاب دائرة الدراسات ت م2906/3 في 2023/5/3 فيما يخص البرامج التي تعتمد مسار بولونيا أساساً لعملها.

وفي هذا المجال لا يسعنا إلا أن نؤكد على أهمية كتابة وصف البرامج الاكاديمية والمقررات الدراسية لضمان حسن سير العملية التعليمية.

مفاهيم ومصطلحات:

وصف البرنامج الأكاديمي: يوفر وصف البرنامج الأكاديمي ايجازاً مقتضباً لرؤيته ورسالته وأهدافه متضمناً وصفاً دقيقاً لمخرجات التعلم المستهدفة على وفق استراتيجيات تعلم محددة.

وصف المقرر: يوفر إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ويكون مشتق من وصف البرنامج.

رؤية البرنامج: صورة طموحة لمستقبل البرنامج الأكاديمي ليكون برنامجاً متطوراً وملهماً ومحفزاً وواقعياً وقابلاً للتطبيق.

رسالة البرنامج: توضح الأهداف والأنشطة اللازمة لتحقيقها بشكل موجز كما يحدد مسارات تطور البرنامج واتجاهاته.

اهداف البرنامج: هي عبارات تصف ما ينوي البرنامج الأكاديمي تحقيقه خلال فترة زمنية محددة وتكون قابلة للقياس والملاحظة.

هيكلية المنهج: كافة المقررات الدراسية / المواد الدراسية التي يتضمنها البرنامج الأكاديمي على وفق نظام التعلم المعتمد (مسار بولونيا) سواء كانت متطلب (وزارة، جامعة، كلية وقسم علمي) مع عدد الوحدات الدراسية.

مخرجات التعلم: مجموعة متوافقة من المعارف والمهارات والقيم التي اكتسبها الطالب بعد انتهاء البرنامج الأكاديمي بنجاح ويجب أن يُحدد مخرجات التعلم لكل مقرر بالشكل الذي يحقق اهداف البرنامج.

استراتيجيات التعليم والتعلم: بأنها الاستراتيجيات المستخدمة من قبل عضو هيئة التدريس لتطوير تعليم وتعلم الطالب وهي خطط يتم إتباعها للوصول إلى أهداف التعلم. أي تصف جميع الأنشطة الصفية واللاصفية لتحقيق نتائج التعلم للبرنامج.

# نموذج وصف البرنامج الأكاديمي

اسم الجامعة: الجامعة التقنية الشمالية

الكلية/ المعهد: الكلية التقنية الهندسية للحاسوب والذكاء الاصطناعي – الموصل

القسم العلمي: هندسة تقنيات الحاسوب

اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة تقنيات الحاسوب

اسم الشهادة النهائية: بكالوريوس في .... هندسة الحاسبات.

النظام الدراسي: مسار بولونا

تاريخ اعداد الوصف: 2024/**10**/1

تاريخ ملء الملف: 2024/**10**/1

**التوقيع:**

**اسم رئيس القسم: د. عمر أحمد أبراهيم السيف**

**التوقيع:**

**اسم** المعاون **العلمي: د. زكريا نور الدين محمود**

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: نور قحطان يونس

التاريخ

التوقيع

مصادقة السيد العميد: أ.م.د. عمر أبراهيم دلال باشي

# نموذج وصف البرنامج الأكاديمي

اسم الجامعة: الجامعة التقنية الشمالية

الكلية/ المعهد: الكلية التقنية الهندسية للحاسوب والذكاء الاصطناعي – الموصل

القسم العلمي: هندسة تقنيات الحاسوب

اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة تقنيات الحاسوب

اسم الشهادة النهائية: بكالوريوس في .... هندسة الحاسبات.

النظام الدراسي: مسار بولونا

تاريخ اعداد الوصف: 2024/**10**/1

تاريخ ملء الملف: 2024/**10**/1

**التوقيع:**

**اسم رئيس القسم: د. عمر أبراهيم أحمد السيف**

**التاريخ:**

**التوقيع:**

**اسم المعاون العلمي: د. زكريا نور الدين محمود**

**التاريخ:**

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: نور قحطان يونس

التاريخ : ١٢/٢٩/ ٢٠٢٤

التوقيع

مصادقة السيد العميد: أ.م.د. عمر أبراهيم دلال باشي

| 1. رؤية البرنامج |
| --- |
| يسعى قسم هندسة تقنيات الحاسوب ليكون قسما متميزا وابداعيا ورافدا من روافد العلم والتطور التقني. كما يسعى القسم الى رفع مخرجات التعليم والتعلم وخلق بيئة تتكيف مع التطورات الحضارية وتواكب التقدم التكنولوجي وتعزز الابداع والتفكير النقدي ومهارات حل المشكلات التقنية والهندسية لدى الطلبة والباحثين ويتطلع القسم الى المساهمة في التقدم العلمي من خلال تطوير وتنفيذ حلول متقدمة في مجالي الاجهزة والبرمجيات. |

| 2. رسالة البرنامج |
| --- |
| يسهم قسم هندسة تقنيات الحاسوب بتعزيز المعرفة والمهارات في مجال هندسة الحاسوب وتكنولوجيا المعلومات. من خلال التركيز على التطبيقات العملية وحل المشكلات، وتزويد الطلاب بمفاهيم متقدمة في هذين المجالين ويعمل على تأهيل خريجين مؤهلين ومبدعين، قادرين على التكيف مع التقدم التكنولوجي وتحقيق تأثير إيجابي على المجتمع من خلال إنتاج أفراد قادرين على المساهمة بفعالية في مجالات متنوعة في هذا المجال العلمي المتطور بسرعة. |

| 3. اهداف البرنامج |
| --- |
| 1. **تطوير المعرفة والمهارات :**تعزيز فهم الطلاب وتطوير مهاراتهم في مجال هندسة الحاسوب وتقنيات المعلومات بمختلف توجهاتها. |
| 2. **التركيز على التطبيقات العملية :**توجيه البرامج الدراسية والأبحاث نحو التطبيقات العملية وحل المشكلات الحقيقية في هذا المجال. |
| 3. **تزويد الطلاب بمفاهيم متقدمة :**توفير تعليم يركز على المفاهيم المتقدمة في هندسة الحاسوب وتكنولوجيا المعلومات. |
| 4. **اعداد خريجين مؤهلين :**تطوير برامج التعليم لضمان أن الطلاب يتخرجون بمهارات ومعرفة تجعلهم مؤهلين للدخول في سوق العمل. |
| 5. **تعزيز الإبداع والقدرة على حل المشكلات :**تشجيع الطلاب على تطوير مهارات الإبداع وحل المشكلات، مما يمكّنهم من التفاعل مع التحديات التكنولوجية المستقبلية. |
| 6. **تعزيز التكيف مع التطور التكنولوجي :**تهدف إلى تأهيل الطلاب للتكيف مع التقدم السريع في التكنولوجيا وتحفيزهم لاستمرار التعلم وتحسين مهاراتهم. |
| 7. **تحقيق تأثير إيجابي على المجتمع :**تسعى إلى إنتاج خريجين قادرين على المساهمة بشكل فعّال |

| |
|---|
| في مختلف المجالات وتحقيق تأثير إيجابي على المجتمع من خلال التكنولوجي |

| 4. الاعتماد البرامجي |
|---|
| قيد المطابقة |

| 5. المؤثرات الخارجية الأخرى |
|---|
| لا يوجد |

6. هيكلية البرنامج

| هيكل البرنامج | عدد المقررات | وحدة دراسية | النسبة المئوية | ملاحظات * |
|---|---|---|---|---|
| متطلبات المؤسسة | 6 | 12 | 8 | مقرر اساسي |
| متطلبات الكلية | 8 | 12 | 10 | |
| متطلبات القسم | 55 | 120 | 82 | |
| التدريب الصيفي | 2 | 2 | | |
| أخرى | | | | |

* ممكن ان تتضمن الملاحظات فيما إذا كان المقرر أساسي او اختياري.

7. وصف البرنامج

| السنة / المستوى | رمز المقرر أو المساق | اسم المقرر أو المساق | الساعات المعتمدة(النظري, العملي) | |
|---|---|---|---|---|
| المستوى الاول/الفصل الاول | CTE100 | منطق رقمي | 2 | 2 |
| | TECCAI100 | رياضيات | 3 | |
| | CTE102 | تركيب الحاسوب | 2 | 2 |
| | CTE103 | رسم هندسي | 1 | 2 |
| | CTE101 | مبادئ الهندسةالكهربائية | 2 | 2 |
| | NTU101 | لغة انكليزية | 2 | |
| | NTU100 | ديمقراطية وحقوق انسان | 2 | |

| | | | | |
|---|---|---|---|---|
| المستوى الاول/الفصل الثاني | CTE104 | دوائر منطقية | 2 | 2 |
| | CTE105 | رياضيات هندسية | 3 | |
| | TECCAI101 | برمجة الحاسوب | 2 | 2 |
| | CTE107 | ورشة الكترونية | | 2 |
| | CTE106 | دوائر كهربائية | 2 | 2 |
| | NTU103 | لغة عربية | 2 | |
| | NTU 102 | مبادئ الحاسوب | 1 | 2 |
| المستوى الثاني/الفصل الاول | CTE200 | المعالجات الدقيقة | 2 | 2 |
| | CTE201 | اساسيات الالكترونيك التناظري | 2 | 2 |
| | CTE202 | البرمجة الشيئية | 2 | 2 |
| | CTE203 | الرياضيات التطبيقية | 3 | |
| | CTE204 | هياكل بيانات | 2 | 2 |
| | CTE205 | القياسات والمتحسسات | 1 | 1 |
| | NTU200 | جرائم حزب البعث البائد | 2 | |
| المستوى الثاني/الفصل الثاني | CTE206 | معمارية الحاسوب | 2 | 2 |
| | CTE207 | دوائر الكترونية | 2 | 2 |
| | CTE209 | تطبيقات الحاسوب | 1 | 2 |
| | CTE208 | اسس الاتصالات | 2 | 2 |
| | CTE210 | تصميم مواقع الكترونية | 1 | 2 |
| | CTE211 | التدريب الصيفي1 | | 5 |
| | NTU203 | لغة عربية | 2 | |
| المستوى الثالث/الفصل الاول (فرع الشبكات والاتصالات) | CTE300 | هندسة السيطرة | 2 | 2 |
| | CTE301 | الشرائح الداعمة للمعالج | 2 | 2 |
| | CTE302 | معالجة اشارة رقمية | 2 | 2 |
| | CTE303 | تحليلات هندسية | 2 | 2 |
| | CTE304 | اساسيات الاتصالات الرقمية | 2 | 2 |
| | CTE305 | اسس شبكات الحاسوب | 2 | 2 |
| المستوى الثالث/الفصل الثاني (فرع الشبكات والاتصالات) | CTE306 | مسيطرات | 2 | 2 |
| | CTE307 | انظمة تشغيل | 2 | 2 |
| | CTE308 | اشارات ونظم | 2 | 2 |
| | CTE309 | شبكة المتحسسات اللاسلكية وانترنت الاشياء | 2 | 2 |
| | CTE310 | انظمة اتصالات رقمية | 2 | 2 |
| | CTE311 | انظمة شبكات الحاسوب | 2 | 2 |

| | | | | |
|---|---|---|---|---|
| | CTE312 | التدريب الصيفي2 | 5 | |
| المستوى الثالث/ الفصل الاول (الالكترونيات) | CTE300 | هندسة السيطرة | 2 | 2 |
| | CTE301 | الشرائح الداعمة للمعالج | 2 | 2 |
| | CTE302 | معالجة اشارة رقمية | 2 | 2 |
| | CTE303 | تحليلات هندسية | 2 | 2 |
| | CTE304 | اساسيات الاتصالات الرقمية | 2 | 2 |
| | CTE313 | مسيطرات دقيقة | 2 | 2 |
| المستوى الثالث/ الفصل الثاني (الالكترونيات) | CTE314 | رسومات حاسوبية | 2 | 2 |
| | CTE307 | انظمة تشغيل | 2 | 2 |
| | CTE308 | اشارات ونظم | 2 | 2 |
| | CTE309 | شبكة المتحسسات اللاسلكية وانترنت الاشياء | 2 | 2 |
| | CTE310 | انظمة اتصالات رقمية | 2 | 2 |
| | CTE315 | متحكمات رقمية | 2 | 2 |
| | CTE312 | التدريب الصيفي2 | 5 | |
| المستوي الرابع/ الفصل الاول (الشبكات والاتصالات) | CTE400 | نظرية المعلومات والترميز | 2 | 2 |
| | CTE401 | امنية الحاسوب | 2 | 2 |
| | CTE402 | بروتوكولات الحاسوب | 2 | 2 |
| | CTE403 | الانظمة الذكية | 2 | 2 |
| | CTE404 | ادارة مشاريع | 2 | 2 |
| | CTE405 | المشروع1 | | 2 |
| المستوى الرابع/ الفصل الثاني (الشبكات والاتصالات) | CTE406 | الاتصالات اللاسلكية | 2 | 2 |
| | CTE407 | الالكترونيات الرقمية المتقدمة | 2 | 2 |
| | CTE408 | بروتوكولات شبكات الحاسوب | 2 | 2 |
| | CTE409 | الحوسبة السحابية | 2 | 2 |
| | CTE410 | حوسبة الوسائط المتعددة | 2 | 2 |
| | CTE411 | المشروع2 | | 2 |
| المستوى الرابع/ الفصل الاول (الالكترونيات) | CTE412 | لغة وصف الكيانات المادية | 2 | 2 |
| | CTE413 | تكنلوجيا الحاسوب المتقدم | 2 | 2 |
| | CTE414 | اساسيات شبكات الحاسوب | 2 | 2 |
| | CTE403 | الانظمة الذكية | 2 | 2 |
| | CTE404 | ادارة | 2 | 2 |
| | CTE405 | المشروع1 | | 2 |
| المستوى الرابع/ الفصل الثاني | CTE415 | انظمة مدمجة | 2 | 2 |
| | CTE416 | نبائط الكترونية | 2 | 2 |

| | | | | |
|---|---|---|---|---|
| (الالكترونيات) | CTE417 | انظمة شبكات الحاسوب | 2 | 2 |
| | CTE418 | معمارية الحاسوب المتقدم | 2 | 2 |
| | CTE410 | حوسبة الوسائط المتعددة | 2 | 2 |
| | CTE411 | المشروع2 | | 2 |
| | | | | |

| 8. مخرجات التعلم المتوقعة للبرنامج | |
|---|---|
| المعرفة | |
| **أ-الأهداف المعرفية** | أ1. إعداد طاقم من المهندسين الفنيين يتمتعون بمستوى عال من الفهم والمعرفة<br>أ2. التطوير المستمر للبرامج الأكاديمية من خلال التعاون مع الأقسام المعنية بما يتماشى مع متطلبات التنمية المحلية<br>أ3. تزويد الطلاب بالمعرفة المتعلقة بتطوير مشاريع البرمجة الكبيرة والمتوسطة الحجم ضمن أطر زمنية محددة ونحو أهداف محددة.<br>أ4. تمكين الخريجين من تقييم الحلول البديلة للمشاكل التي يواجهونها في عملهم |
| المهارات | |
| ب- **الاهداف المهارتية** | ب. المهارات التخصصية<br>ب1. 1. إجراء البحوث العلمية البحتة والتطبيقية لمواكبة التقدم العلمي.<br>ب2. بناء الجسور مع المجتمع من خلال تنظيم الدورات والندوات وورش العمل العلمية لخدمته. |
| القيم | |
| **ج-الأهداف الوجدانية والقيمية** | ج.1. تحفيز الفضول والاهتمام: تحفيز الطلاب لاكتساب الفضول حيال مفاهيم قواعد البيانات وكيفية تطبيقها في مجالات مختلفة.<br>ج.2. توسيع الرؤية: توسيع وجدان الطلاب بشأن أهمية قواعد البيانات في حياتهم اليومية وفي مجالات الأعمال والتكنولوجيا.<br>ج.3. تعزيز الثقة بالنفس: تعزيز الثقة بالنفس لدي الطلاب في التعامل مع البيانات والاستفادة من قواعد البيانات في حل المشكلات.<br>ج.4. تحفيز الإبداع: تحفيز الطلاب لتطوير حلول إبداعية باستخدام قواعد البيانات في تصميم تطبيقات أو حلول تقنية |
| | |

| 9. استراتيجيات التعليم والتعلم |
|---|
| التعليم المدمج (الكتروني وحضوري) افلام علمية وفيديوهات، المختبرات، التدريب الصيفي والمهني ومشاريع التخرج |

| 10. طرائق التقييم |
|---|
| الامتحانات الأسبوعية والشهرية واليومية وامتحان نهاية السنة. |

11. الهيئة التدريسية

أعضاء هيئة التدريس

| الاسم | التخصص | | المتطلبات/المهارات الخاصة (ان وجدت) | | اعداد الهيئة التدريسية | |
|---|---|---|---|---|---|---|
| | عام | خاص | | | ملاك | محاضر |
| د.عمر ابراهيم حمد | هندسة الكترونيات واتصالات | هندسة الكترونية | | | ملاك | |
| د.عماد احمد محمد | هندسة الكترونيك واتصالات | شبكات الحاسبات | | | ملاك | |
| د.احمد فالح محمود | هندسة حاسبات | | | | ملاك | |
| د.بسمة محمد كمال يونس | هندسة حاسبات | معمارية معالجات دقيقة | | | ملاك | |
| د.زياد سعيد محمد سليم | هندسة كهربائية | | | | ملاك | |

| | | | | | | |
|---|---|---|---|---|---|---|
| د.احمد خزعل يونس | هندسة حاسبات | انظمة مدمجة | | | ملاك | |
| د.ميسلون عبد قاسم محمد | هندسة كهرباء | الكترونيك واتصالات | | | ملاك | |
| د.احمد وليد قاسم | علوم فيزياء | فيزياء الحالة الصلبة | | | ملاك | |
| د.عيشة ابراهيم محمد | لغة عربية | ادب حديث | | | ملاك | |
| د.ثبات فخري يونس | هندسة كهرباء | الكترونيك | | | ملاك | |
| خالص اسعد محمد | هندسة كهرباء | الكترونيك واتصالات | | | ملاك | |
| نقاء لقمان محمد | هندسة تقنيات الحاسبات | / | | | ملاك | |
| زيد غانم محمد | هندسة تقنيات الحاسبات | / | | | ملاك | |
| نجوان زهير ويسي | علوم حاسبات | / | | | ملاك | |
| حكم مروان زيدان | هندسة الحاسبات | / | | | ملاك | |
| ازهار وليد طلب | هندسة تقنيات الحاسبات | / | | | ملاك | |
| نور سعدالله عناد | هندسة اتصالات | / | | | ملاك | |
| ضحى عبدالمنعم محمد | الهندسة الكهربائية | / | | | ملاك | |
| رشا بشار محمد | هندسة | / | | | ملاك | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | الاتصالات | | | | | |
| احمد هاشم احمد | هندسة كهرباء | قدرة ومكائن | | | ملاك | |
| زيد عبدالستار عبدالرزاق | علوم في هندسة الحاسوب والمعلوماتية | / | | | ملاك | |
| عمر زياد طارق | هندسة الحاسبات | / | | | ملاك | |
| ياسر مصلح عبدال | هندسة تقنيات الحاسبات | / | | | ملاك | |
| لباب حارث سامي | هندسة تقنيات الحاسبات | / | | | ملاك | |
| اريج محمود اسعد | هندسة تقنيات الحاسبات | / | | | ملاك | |

| التطوير المهني |
|---|
| توجيه أعضاء هيئة التدريس الجدد |
| 1. تطوير برنامج توجيهي لتعريف أعضاء هيئة التدريس الجدد بالمؤسسة وسياساتها وإجراءاتها.<br>2. إقران أعضاء هيئة التدريس الجدد بمرشدين ذوي خبرة لتقديم التوجيه والدعم والمشورة<br>3. تنظيم ورش عمل تدريبية منتظمة حول مناهج التدريس والتقييم وتقنيات البحث<br>4. إنشاء آلية ردود فعل لأعضاء هيئة التدريس الجدد لتلقي ردود فعل بناءة حول أدائهم ومجالات التحسين<br>5. تشجيع المشاركة في المؤتمرات والندوات ومشاريع البحث لتعزيز النمو المهني |

| |
|---|
| 6. تقديم الدعم المستمر من خلال الاجتماعات المنتظمة والموارد والوصول إلى مواد التطوير المهني |
| التطوير المهني لأعضاء هيئة التدريس |
| 1. تقييم مهارات أعضاء هيئة التدريس لدراسة احتياجاتهم التعليمية والفنية.<br>2. تقديم دورات تدريبية للمساعدة في تطوير مهارات أعضاء هيئة التدريس في مجالات مثل التعليم المتقدم وتقنيات التعليم والتقييم الدقيق.<br>3. تشجيع العمل الجماعي بين أعضاء هيئة التدريس لتبادل الخبرات والمعرفة.<br>4. تقديم تحديثات مستمرة حول أحدث ما توصل إليه العلم في مجالات التعليم وتقنيات التعليم.<br>5. تقديم الدعم المستمر لأعضاء هيئة التدريس للمساعدة في حل المشكلات والتحديات التي يواجهونها.<br>6. إجراء تقييمات دورية لمراجعة التطوير المهني لأعضاء هيئة التدريس وتحديد المزايا والعيوب |

| 12. معيار القبول |
|---|
| • القسم العلمي.<br>• الدراسة المهنية. |

| 13. أهم مصادر المعلومات عن البرنامج |
| --- |
| 1. موقع الجامعة الإلكتروني.<br>2. موقع القسم.<br>3. ملفات الوصف الأكاديمي ومواصفات البرنامج.<br>4. نموذج مراجعة البرنامج الأكاديمي.<br>5. مواقع البحث في الكلية. |

| 14. خطة تطوير البرنامج |
| --- |
| 1- تحديث البرمجيات الخاصة بالمختبرات<br>2- استخدام المصادر الحديثة. |

| مخطط مهارات البرنامج | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | مخرجات التعلم المطلوبة من البرنامج | | | | | | | | | | | | | | |
| السنة / المستوى | رمز المقرر | اسم المقرر | اساسي أم اختياري | المعرفة | | | | المهارات | | | | القيم | | | | | |
| | | | | أ1 | أ2 | أ3 | أ4 | ب 1 | ب 2 | ب 3 | ب 4 | ج1 | ج2 | ج3 | ج4 | | |
| الاول | CTE100 | منطق رقمي | اساسي | * | * | | * | | * | | * | * | * | * | * | | |
| | NTU100 | الديمقراطية وحقوق الانسان | اساسي | | * | | | * | | | | * | | | | | |
| الثاني | CTE206 | معمارية الحاسوب | اساسي | * | * | | * | | * | | * | | * | * | * | | |
| | CTE207 | دوائر الكترونية | اساسي | | * | | * | | * | | * | | * | * | | | |
| الثالث | CTE302 | معالج اشارة رقمية | اساسي | * | * | * | * | * | | * | * | * | | * | * | | |
| | CTE303 | التحليلات الهندسية | اساسي | * | * | * | * | | * | * | | * | * | | * | | |
| الرابع | CTE408 | بروتوكولات الحاسوب | اساسي | * | * | | * | * | * | | * | * | | * | * | | |
| | CTE404 | ادارة | اساسي | * | | * | | * | | * | | * | | | * | | |

يرجى وضع اشارة في المربعات المقابلة لمخرجات التعلم الفردية من البرنامج الخاضعة للتقييم

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Digital Logic** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | CTE100 | | | | |
| **ECTS Credits** | **7** | | | | |
| **SWL (hr./seem)** | **175** | | | | |
| **Module Level** | UGx11 1 | | **Semester of Delivery** | 1 | |
| **Administering Department** | **Department of Computer Techniques Engineering** | | **College** | **Northern Technical University Engineering Technical College for Computer and Artificial Intelligence /Mosul** | |
| **Module Leader** | Khalkis A. Mohammed | | **e-mail** | Khalis_am@ntu.edu.iq | |
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | M.Sc. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 21/09/2024 | | **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
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

| | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | 1. To learn the basic techniques and methodologies for designing and analyzing digital systems and how to apply these techniques to build specific circuits.<br>2. Define the problem (Inputs and Outputs), write its functions<br>3. Implement functions using Combinational digital circuit.<br>4. Minimize functions using any type of minimizing algorithms (Boolean algebra, Karnaugh-Map or Tabulation Method).<br>5. Have knowledge in analyzing and designing procedures of Combinational digital circuits. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Learning about the different number systems.<br>2. Learning the arithmetic operations related to different number systems.<br>3. Learning the different logic gates of computer system and their work.<br>4. Ability to design, simplify and implement different logical and arithmetic circuits that considered the basic of digital system.<br>5. Ability to design, simplify and implement different sequential circuits, counters and shift registers. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part 1 – Numbers Systems, Operations, and Codes<br>Different Number Systems, Data representation ( integer and fraction) using different number systems. Conversion Between Different Numbers Systems. Arithmetic operations using different number systems, and Digital Codes (BCD, Parity, Gray, Excess-3 ….. etc.) [14 hrs]<br>• Part 2- Logic Gates<br>The Inverter (NOT Gate), AND Gate, OR Gate, NAND Gate, NOR Gate, the Exclusive-OR Gate and Exclusive-NOR Gates. [12 hrs]<br>• Part 3 Boolean Algebra and Logic Simplification<br>Boolean Operations and Expressions, Laws and Rules of Boolean Algebra, Simplification Using Boolean Algebra, DE Morgan's theorems, The Karnaugh Map ( 1, 2 , 3 and 4 variables ) , SOP and POS Minimization. [16 hrs.]<br>• Part 4 Combinational Logic Analysis<br>Basic Combinational Logic Circuits, Implementing Combinational Logic, Combinational Logic Using NAND and NOR Gates, Logic Circuit Operation with Pulse Waveform Inputs. [10 hrs.]<br>• Revision problem classes [six hrs.] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 74 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.93 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 101 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 6.73 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 175 | | |

## Module Evaluation

| تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 8 | 10% (10) | 4,6,10,12 | LO #1, 2, 10 and 11 |
| | **Assignments** | 8 | 10% (10) | 2, 5,8,11 | LO # 3, 4, 6 and 7 |
| | **Projects / Lab.** | 15 | 10% (10) | Continuous | All |
| | **Report** | 8 | 10% (10) | 1,3,9,13 | LO # 5, 8 and 10 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 15 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| **Delivery Plan (Weekly Syllabus)**<br>المنهاج الاسبوعي النظري | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | **1- Numbers Systems, Operations, and Codes:** Decimal Numbers, Binary numbers. |
| **Week 2** | **1- Numbers Systems, Operations, and Codes**: Hexadecimal Numbers, Octal numbers. |
| **Week 3** | **1- Numbers Systems, Operations, and Codes**:<br>Data representation (integer and fraction) using different number systems.<br>Conversion Between Different Numbers Systems. |
| **Week 4** | **1- Numbers Systems, Operations, and Codes**:<br>Arithmetic operations using 9's and 10's Complements of Decimal Numbers.<br>Arithmetic operations using 1's and 2's Complements of Binary Numbers. |
| **Week 5** | **1- Numbers Systems, Operations, and Codes:**<br>Signed Numbers, Arithmetic Operations with Signed Numbers. |
| **Week 6** | **1- Numbers Systems, Operations, and Codes:**<br>Digital Codes (BCD, Excess-3, Parity, Gray ..... etc.). |
| **Week 7** | **2- Logic Gates:** The Inverter (NOT Gate), The AND Gate, The OR Gate. |
| **Week 8** | **2- Logic Gates:** NAND Gate, NOR Gate, Exclusive-OR Gate and Exclusive-NOR Gates. |
| **Week 9** | **3- Boolean Algebra and Logic Simplification**: Boolean Operations and Expressions. |
| **Week10** | **3- Boolean Algebra and Logic Simplification:** Laws and Rules of Boolean Algebra. |
| **Week11** | **3- Boolean Algebra and Logic Simplification**<br>Simplification Using Boolean Algebra.<br>DE Morgan's theorems. |
| **Week12** | **3- Boolean Algebra and Logic Simplification**<br>The Karnaugh Map (1, 2, 3 and 4 variables), SOP and POS Minimization. |
| **Week13** | **4- Combinational Logic Analysis:**<br>Basic Combinational Logic Circuits.<br>Implementing Combinational Logic. |
| **Week14** | **4- Combinational Logic Analysis:**<br>Combinational Logic Using NAND and NOR Gates.<br>Logic Circuit Operation with Pulse Waveform Inputs. |
| **Week15** | **Final Exam** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: Introduction to digital laboratory kit operation |
| **Week 2** | Lab 2: Logic Gates (AND, OR, NOT, NAND, NOR). |
| **Week 3** | Lab 3: Logic Gates (XOR, XNOR). |
| **Week 4** | Lab 4: Design of (AND, OR, NOT) gates Using NAND gates. |

| | |
|---|---|
| **Week 5** | Lab 5: Design of (AND, OR, NOT) gates Using NOR gates. |
| **Week 6** | Lab 6: Implementation of logic circuits using NANAD-gate only. |
| **Week 7** | Lab 7: Implementation of logic circuits using NOR-gate only. |
| **Week 8** | Lab 8: Implementation of DE Morgan theory, 1st Law |
| **Week 9** | Lab 9: Implementation of DE Morgan theory, 2nd Law |
| **Week 10** | Lab 10: Design of combinational logic circuits. Part 1 |
| **Week 11** | Lab 11: Design of combinational logic circuits. Part 2 |
| **Week 12** | Lab 12: Realization of Boolean equation. Part 1 |
| **Week 13** | Lab 13: Realization of Boolean equation. Part 2 |
| **Week 14** | Lab 14: Review |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Thomas L. Floyd, Digital Fundamentals, 11th Edition, Pearson Education 2015 | Yes |
| **Recommended Texts** | M. Morris Mano, Michael D. Colette, Digital Design, 5th edition, Pearson Education 2013 | No |
| **Websites** | Digital Systems: From Logic Gates to Processors: /learn/digital-systemshttps://www.coursera.org | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Mathematics** | | | **Module Delivery** | |
| **Module Type** | **Basic** | | | ✓ **Theory**<br>✓ **Lecture**<br>**Lab**<br>✓ **Tutorial**<br>**Practical**<br>✓ **Seminar** | |
| **Module Code** | TECCAI100 | | | | |
| **ECTS Credits** | **5** | | | | |
| **SWL (hr./sem)** | **125** | | | | |
| **Module Level** | UGx11 1 | | **Semester of Delivery** | 1 | |
| **Administering Department** | **Department of Computer Techniques Engineering** | | **College** | **Northern Technical University Engineering Technical College for Computer and Artificial Intelligence /Mosul** | |
| **Module Leader** | Ayhan A. khaleel | | **e-mail** | Ay_ahmed@ntu.edu.iq | |
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | M.Sc. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 21/09/2024 | | **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 Objectives**<br>أهداف المادة الدراسية | Mathematics is an important tool for understanding modern and scientific technologies, and the modern world today relies heavily on mathematics. Mathematics is also characterized by multiple benefits, including that it is an intellectual tool, a strong communication method, and it is in itself a way of thinking, through which the capabilities of individuals develop, and it helps us in advanced |

| | |
|---|---|
| | logical thinking. It also helps the student to understand the laws and issues needed for solving simple and complex electrical circuits. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | 6. Learning about the basic Matrix and Determinants<br>7. Learning the Algebraic functions, natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions.<br>8. Learning the Derivatives formula and chain rule.<br>9. Learning the Integration, Indefinite and Definite Integral<br>10. Learning the Integration method |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>**Part A –** the basic Matrix and Determinants<br>Matrix, properties, and operations, Determinants and properties of determinants<br>Inverse of square matrix by determinants, Solving linear System equations using the inverse of the coefficient matrix and Cramer's rule. [13 hrs.]<br>**Part B –** Algebraic functions<br>Review of natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions. [10 hrs.]<br>**Part C –** Derivatives of natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions.<br>Applications of differentiation. [20 hrs.]<br>**Part D:** Review of Integration, Indefinite and Definite Integral, Integration method and Applications of integration, approximation(trapezoidal rule, Simpson's rule )<br>Area between curves [10 hrs.]<br>Revision problem classes [6 hrs.] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in exercises, while improving and expanding their mathematical reasoning skills. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 59 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 66 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.4 |
| **Total SWL (h/sem)**<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** | 8 | 10% (10) | 5, 10 | LO #1, 2, 10 and 11 |
| | **Assignments** | 13 | 10% (10) | Continuous | All |
| | **Projects / Lab.** | 0 | 0 | | |
| | **Report** | 0 | 0 | | |
| **Summative assessment** | **Midterm Exam** | 2 hr | 20% (20) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | Matrix, properties, and operations |
| **Week 2** | Determinants and properties of determinants<br>Inverse of square matrix by determinants |
| **Week 3** | Solving linear System equations using the inverse of the coefficient matrix and<br>**Cramer's rule** |
| **Week 4** | Algebraic functions |
| **Week 5** | Review of natural logarithm, the exponential function, trigonometric functions |
| **Week 6** | inverse trigonometric functions and hyperbolic functions |
| **Week 7** | Derivatives formula and chain rule. |
| **Week 8** | Derivatives of natural logarithm, the exponential function, trigonometric functions |
| **Week 9** | inverse trigonometric functions and hyperbolic functions. |
| **Week 10** | Applications of differentiation. |
| **Week 11** | Review of Integration, Indefinite and Definite Integral |
| **Week 12** | Integration method |
| **Week 13** | Integration method |
| **Week 14** | Applications of integration, approximation(trapezoidal rule, Simpson's rule )<br>**Area between curves** |
| **Week 15** | Final Exam |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **Advance Engineering Mathematics, Alan Jeffrey, 2002** | Yes |
| **Recommended Texts** | **Calculus I, Paul Dawkins, 2007** | No |
| **Websites** | https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx | |

**APPENDIX:**

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

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Technology Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **COMPUTER ORGANIZATION** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE102** | | |
| **ECTS Credits** | **4** | | |
| **SWL (hr/sem)** | **100** | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 1 |
| **Administering Department** | **Department of Computer Technology Engineering** | **College** | **Northern Technical University Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Mohammed G. Ayoub | **e-mail** | Mohammed.ghanim@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | M.Sc. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 14/09/2024 | **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 Objectives**<br>أهداف المادة الدراسية | **At the end of this course, following learning objectives are expected to be achieved:**<br>-To understand principles of computer organization and the basic architectural concepts.<br>-To understand the structure, function and characteristics of computer systems.<br>-To understand how the various components of Computer Systems fit together and interact.<br>-To explain the function of each element of a memory hierarchy. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | 11. Understand the basic concepts and structure of computers.<br>12. Understand the main architectures of computer systems.<br>13. Learn the concept of memory hierarchy.<br>14. Understand the architecture and functionality of memory and storage in the computer systems.<br>15. Understand the theory and architecture of central processing unit. |

| | |
|---|---|
| | 16. Understand the architecture and functionality of I/O units.<br>17. To be familiar with fundamental programming concepts and methodology.<br>18. Understand the theory and architecture of Intel Microprocessors. |
| **Indicative Contents**<br>المحتويات الإرشادية | 1. **Introduction to Computer Systems:** [2 hr.]<br>a. Overview of Computer Characteristics<br>b. Introduction to Software and Hardware<br>c. Comparison of different Computers Categories<br>2. **Introduction to Computer Architecture:** [2 hr.]<br>a. Von Neumann and Harvard architectures<br>b. Advantages and disadvantages of both architectures<br>3. **The Memory Hierarchy:** [4 hr.]<br>a. Overview of memory hierarchy in computer systems<br>b. Comparison of different memory types such as Registers, Caches, Main Memory<br>c. Calculation of Average Memory Access Time<br>d. Overview of Cache Miss and Cache Hit<br>4. **Types of CPU Register and their Functions:** [2 hr.]<br>a. Operations of CPU Registers<br>b. Types and Functions of CPU Registers<br>5. **Computer Bus \| Types and Functions:** [2 hr.]<br>a. Data Bus, Address Bus, Control Bus<br>b. Internal and External Buses<br>6. **Semiconductor Memory Types & Technologies:** [6 hr.]<br>a. Memory Array, Capacity and Addressing<br>b. Read and Write Operations in Memory<br>c. SRAM, DRAM, RAM Family, ROM Family<br>d. Flash Memory, Magnetic Storage,<br>e. Optical Storage and Cloud Storage System<br>7. **Basic Operation of Processors:** [2 hr.]<br>a. Fetch/Execute Cycle<br>b. Pipelining and Processor Elements<br>8. **Levels of Programming Languages:** [2 hr.]<br>a. Assembly Language and Machine Language<br>9. **Introduction to the Intel Microprocessors:** [6 hr.]<br>a. Pre-Pentium Intel Process<br>b. 4004,8080/8085,8086/8086 80386,80486 and Multicore |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 58 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4.2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 42 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3 |
| **Total SWL (h/sem)**<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** | 4 | 8% (8) | 3, 6, 9, 12 | LO #1-2, 3-5, 6-8 and 10-11 |
| | **Assignments** | 4 | 8% (8) | 2, 5, 11, 14 | LO # 1, 3, 7-9 and 12-13 |
| | **Lab.** | 4 | 8% (8) | Continuous | All |
| | **Report** | 5 | 10% (10) | Continuous | All |
| | **Seminar** | 1 | 6% (6) | 10 | LO 1-8 |
| **Summative assessment** | **Midterm Exam** | 2 hr. | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr. | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | Introduction to Computer Systems |
| **Week 2** | Introduction to Computer Architecture |
| **Week 3** | The Memory Hierarchy |
| **Week 4** | Average Memory Access Time (AMAT) |
| **Week 5** | Types of CPU Register and their Functions |
| **Week 6** | Computer Bus \| Types and Functions |
| **Week 7** | Basics of Semiconductor Memory \| Types & Technologies Parts I |
| **Week 8** | Basics of Semiconductor Memory \| Types & Technologies Parts II |
| **Week 9** | Basics of Semiconductor Memory \| Types & Technologies Parts III |
| **Week 10** | Basic Operation of Processors |
| **Week 11** | Levels of Programming Languages |
| **Week 12** | Introduction to the Intel Microprocessors Parts I |
| **Week 13** | Introduction to the Intel Microprocessors Parts II |
| **Week 14** | Introduction to the Intel Microprocessors Parts III |
| **Week 15** | Final Exam |

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

| Week | Material Covered |
|---|---|
| **Week 1** | Lab 1: Introduction to Computer System Parts |
| **Week 2** | Lab 2: Peripherals Devices |
| **Week 3** | Lab 3: Computer Monitors |
| **Week 4** | Lab 4: Computer Cables |
| **Week 5** | Lab 5: Types of Microprocessors |

| | |
|---|---|
| **Week 6** | Lab 6: Types of Memory in Computer System |
| **Week 7** | Lab 7: Storage in Computer System |
| **Week 8** | Lab 8: Motherboards and Graphics Card |
| **Week 9** | Lab 9: Types of Computer Ports |
| **Week 10** | Lab 10: Computer Software Part I |
| **Week 11** | Lab 11: Computer Software Part II |
| **Week 12** | Lab 12: Programming Languages |
| **Week 13** | Lab 13: Computer Networks |
| **Week 14** | Lab 14: Review |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Recommended Texts** | 1. 1- Computer Architecture & Organisation by Atul. P. Godse, Deepali. A. Godse. Publisher: Technical Publication 2019.<br>**2.** 2- Computer Systems Architecture by Yadin, Aharon. Publisher: Taylor & Francis Group, Year: 2016. | No |
| **Websites** | https://www.coursera.org, https//www.udemy.com | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Technology Engineering

# MODULE DESCRIPTOR FORM
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Engineering Drawing** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ ✓ **Lecture**<br>✓ ✓ **Lab**<br>✓ ✓ **Tutorial**<br>✓ ✓ **Practical**<br>✓ ✓ **Seminar** | |
| **Module Code** | **CTE103** | | |
| **ECTS Credits** | **3** | | |
| **SWL (hr/sem)** | **75** | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 1 |
| **Administering Department** | Department of Computer Techniques Engineering | **College** | Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul |
| **Module Leader** | Naqaa L. Mohammed | **e-mail** | |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | M.Sc. |
| **Module Tutor** | None | **e-mail** | Naqaa_alhamo@ntu.edu.iq |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 12/09/2024 | **Version Number** | 1.0 |

## Relation with Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | |
| **Co-requisites module** | None | **Semester** | |

## Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

**Module Aims**
أهداف المادة الدراسية

1. Define engineering drawing material, its uses and Engineering drawing tools
2. Introduction to Engineering drawing through AutoCAD software
3. Developing the student's mental and abilities in drawing simple and complex shapes
4. Decomposes 3D shapes into binary projections

| | |
|---|---|
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 19. Learning types of engineering lines and their uses and how to draw<br>20. Drawing geometric shapes such as square, rectangular, parallelogram and circle<br>21. Learning dimensions in engineering drawing and how to put them on the drawing<br>22. Learning Fundamentals of projection in engineering drawing<br>23. Ability of drawing an anthropomorphic shape |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – AutoCAD interface<br>Setup, save, limits, grid, object snap and ortho mode [3 hrs.]<br>• Part B- Coordinate method<br>Direct distance method, Absolute coordinate, Relative coordinate, Polar coordinate[3hrs]<br>• Part C Draw menu<br>Line, polyline, rectangle, arc, circle, ellipse and hatch [12hrs]<br>• Part D Modify and Properties menu<br>Copy, move, offset, erase, extend, trim and array, line shape and line size [9 hrs.]<br>• Part D Projection<br>Front, side and top ortho projections [6 hrs.]<br>• Part E stereoscopic shapes<br>Method for drawing stereoscopic shapes[6hrs]<br>• Revision problem classes [8 hrs.] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 45 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 30 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2 |
| **Total SWL (h/sem)**<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 | 3 | 10% (10) | 5, 10 | LO #1, 2, 10 and 11 |
| | Assignments | 3 | 5% (10) | 2, 12 | LO # 3, 4, 6 and 7 |
| | Projects / Lab. | 1 | 5% (10) | Continuous | All |
| | Report | 0 | 0% (0) | 0 | 0 |
| Summative assessment | Midterm Exam | 2 hr | 30% (10) | 7 | LO # 1-7 |
| | Final Exam | 3 hr | 50% (50) | 16 | All |
| Total assessment | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| Week 1 | -Get a quick introduction to AutoCAD<br>-Drawing Setup in AutoCAD<br>-Use precision drawing tools such as Grid, Object Snap, and Limits to create accurate measurements in drawings. |
| Week 2 | Coordinate method (Direct distance method, Absolute coordinate, Relative coordinate, Polar coordinate) |
| Week 3 | Draw menu<br>(line, poly line, polygon, rectangle). |
| Week 4 | Drawing objects of Pentagonal, hexagonal and octagonal shapes |
| Week 5 | Draw menu<br>( arc, circle, ellipse, point and text). |
| Week 6 | Draw several shapes containing circles and texts |
| Week 7 | Modify menu<br>(erase, copy, mirror, move offset, ) |
| Week 8 | Modify menu<br>(rotate, trim, extend, explode) |
| Week 9 | Properties and Layers in AutoCAD and dimension |
| Week 10 | Orthographic projection |
| Week 11 | Draw the three projection(front, side and top) of some shapes |
| Week 12 | Basics of drawing stereoscopic shapes |
| Week 13 | Draw stereoscopic shape |
| Week 14 | Printing the graphic |
| Week 15 | **Preparatory Week** |
| Week 16 | **Final Exam** |

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

| Week | Material Covered |
|---|---|
| Week 1 | Lab 1: Definition of AutoCAD interface |
| Week 2 | **Lab 2**: Applications of Coordinate method |
| Week 3 | **Lab 3: Draw figures of lines, polygons and rectangle** |
| Week 4 | **Lab 4: Drawing objects of Pentagonal, hexagonal and octagonal shapes** |
| Week 5 | **Lab 5:Drawing figures of circles and ellipse** |
| Week 6 | **Lab 6: Draw several shapes containing circles and texts** |
| Week 7 | **Lab 7: Applications of some order in modify menu** |
| Week 8 | **Lab 8: Applications of other order in modify menu** |
| Week 9 | **Lab 9: Practicing of using layers** |
| Week 10 | **Lab 10:Practicing of projection of simple figure** |

| | |
|---|---|
| **Week 11** | **Lab 11: Draw three projection of figure** |
| **Week 12** | **Lab 12: Practicing of drawing stereoscopic shapes** |
| **Week 13** | **Lab 13: Draw stereoscopic shape** |
| **Week 14** | **Lab 14: Practicing of Printing the graphic** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | AutoCAD 2017 2D Fundamentals Randy H. Shih ® Tutorial First Level by Randy H. Shih | No |
| **Recommended Texts** | Introduction to AutoCAD 2011 2D and 3D Design, Alf Yarwood | No |
| **Websites** | **Introduction to AutoCad 2017 Tutorial series** https://youtu.be/XFO8VQT731M | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Fundamentals of electrical engineering** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE101** | | |
| **ECTS Credits** | **7** | | |
| **SWL (hr/sem)** | **175** | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 1 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Maysaloon Abed Qasim | **e-mail** | Maysloon.alhashim@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | PhD |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **Version Number** | 1.0 |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

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

## Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

| | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | This course focuses on direct current (DC) circuit analysis and aims to:<br>1-Understanding of the fundamental laws and elements of electrical circuits design and application.<br>2-Understand the techniques to analyze different circuit configuration<br>3- Analyze resistive circuits and laws/theorems including Kirchhoff's Superposition, Thevenin's, Nortons, and Maximum Power Transfer.<br>4- Develop students computational skills. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | Having successfully completed the course, students will be able to:<br>1- Know the various types of electric circuits.<br>2-Know the Elements of electric circuits and their roles<br>3-Apply different techniques to analyze electric circuits.<br>4-Solve Problem of different electric circuits<br>5-Compare the application of different type of electric circuits. |

| | |
|---|---|
| | 6-Appreciate the importance of electric circuit elements.<br>7-Compare and contrast the operation of different types of electrical elements.<br>8-Derive equations related to the circuit's performance and design.<br>9-Identify different types of electrical elements and their applications. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – General Electric System.<br>Constituent parts of an electrical system (source, load, communication & control), Current flow in a circuit, Electromotive force and potential difference, Electrical units.<br>Ohm's law, Resistors, Resistivity, Temperature rise & Temperature coefficient of resistance, Voltage & Current sources [8 hrs]<br>• Part B DC circuits.<br>Series circuits, Parallel circuits. Kirchhoff's laws. Power and energy [14 hrs]<br>• Part C Network Theorems<br>. Star-delta & delta-star transformation. Sources transformations Mesh analysis. Nodal analysis. Superposition theorem. Thevnin's theorem. Norton's theorem. Maximum power transfer theorem. [32 hrs]<br>• Revision problem classes [4 hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | 1-**Hands-on Experiments:** Engage students in practical experiments to deepen their understanding of circuits.<br>2-**Simulation Software:** Use circuit simulation software for virtual circuit design and analysis.<br>3-**Problem-solving Exercises:** Include various problem-solving exercises to apply circuit analysis techniques.<br>4-**Group Projects:** Assign collaborative projects for circuit design and construction.<br>5-**Real-world Applications:** Discuss practical applications of circuits in different devices and systems.<br>5-**Interactive Discussions:** Encourage student participation and critical thinking through open-ended questions.<br>6-**Conceptual Understanding:** Focus on intuitive understanding alongside mathematical analysis.<br>7-**Assessment Variety:** Use diverse assessment methods to gauge student understanding.<br>8-**Office Hours and Support:** Offer individualized assistance through office hours or online support. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 58 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 117 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 7 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 175 | | |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 8 | 10% (10) | 5, 10 | LO #1, 2, 10 and 11 |
| | **Assignments** | 8 | 10% (10) | 2, 12 | LO # 3, 4, 6 and 7 |
| | **Projects / Lab.** | 15 | 10% (10) | Continuous | All |

| | | | | | |
|---|---|---|---|---|---|
| | **Report** | 8 | 10% (10) | 13 | LO # 5, 8 and 10 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | Constituent parts of an electrical system, Current flow in a circuit, Electromotive force and potential difference, Electrical units. |
| **Week 2** | Ohm's law, Resistors, Resistivity, Temperature rise & Temperature coefficient of resistance, Voltage & Current sources |
| **Week 3** | Series circuits , Parallel circuits. |
| **Week 4** | Kirchhoff's laws. |
| **Week 5** | Power and energy. |
| **Week 6** | Star-delta & delta-star transformation |
| **Week 7** | Sources transformations |
| **Week 8** | Mesh analysis. |
| **Week 9** | Nodal analysis. |
| **Week 10** | Superposition theorem. |
| **Week 11** | Thevnin's theorem |
| **Week 12** | Nortan's theorem |
| **Week 13** | Maximum power transfer theorem. |
| **Week 14** | Reciprocity theorem |
| **Week 15** | **Final Exam** |

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

| Week | Material Covered |
|---|---|
| **Week 1** | **Lab 1: Connection of resistances in series and parallel.** |
| **Week 2** | **Lab 2: Verification of Ohm's law using hardware .** |
| **Week 3** | **Lab 3: Verification of Ohm's law using digital simulation.** |
| **Week 4** | **Lab 4: Verification of Kirchhoff's current law and Voltage law using hardware.** |
| **Week 5** | **Lab 5: Verification of Kirchhoff's current law and Voltage law using digital simulation.** |
| **Week 6** | **Lab 6: Determination of mesh currents using hardware.** |
| **Week 7** | **Lab 7: Determination of mesh currents using digital simulation.** |
| **Week 8** | **Lab 8: Measurement of nodal voltages using hardware and digital simulation.** |
| **Week 9** | **Lab 9: Verification of superposition theorem using hardware .** |
| **Week 10** | **Lab 10: Verification of superposition theorem using digital simulation.** |
| **Week 11** | **Lab 11: Verification of Thevnin's theorem using hardware.** |
| **Week 12** | **Lab 12: Verification of Thevnin's theorem using hardware.** |
| **Week 13** | **Lab 13: Verification of Nortan's using hardware.** |
| **Week 14** | **Lab 14: Verification of Nortan's using digital simulation.** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

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

| | | |
|---|---|---|
| **Required Texts** | Charles K. Alexander, Matthew N.O. Sdiku Fundamentals of Electrical Engineering, 4th Edition, 2009 | Yes |
| **Recommended Texts** | Tony R. Kuphaldt, Lessons In Electric Circuits, Volume I - DC 5th edition, Pearson Education 2002 | No |
| **Websites** | **Direct Current (DC)**<br>https://www.allaboutcircuits.com/textbook/direct-current/ | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

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

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | Human rights and Democracy | **Module Delivery** | |
| **Module Type** | Suplement | ✓ Theory<br>✓ Lecture<br>Lab<br>Tutorial<br>Practical<br>✓ Seminar | |
| **Module Code** | NTU100 | | |
| **ECTS Credits** | 2 | | |
| **SWL (hr/sem)** | 50 | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 1 |
| **Administering Department** | Department of Computer Techniques Engineering | **College** | Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul |
| **Module Leader** | Dr. Eesha I. Mohammed | **e-mail** | aysha.ibrahim@ntu.edu.iq |
| **Module Leader's Acad. Title** | Assist Prof. | **Module Leader's Qualification** | PHD |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **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 Objectives**<br>أهداف المادة الدراسية | تهدف الديمقراطية وحقوق الانسان للحفاظ على كرامة الفرد وحقوقه الأساسية وتعزيزها كما تحقيق العدالة الاجتماعية وتشجيع التنمية الاقتصادية والاجتماعية للمجتمع وتماسكه فضلا عن توطيد الأمان الوطني وإرساء مناخ مؤات للسلام الدولي وذلك لان حقوق الانسان والديمقراطية مرجعاً أساسياً للجميع لحماية حقوق الإنسان؛ وهي توفر بيئة لحماية حقوق الإنسان وإعمالها إعمالاً فعلياً. واليوم، بعد مضي فترة على تحقيق الديمقراطية في مختلف أنحاء العالم، يبدو أن العديد من النظم الديمقراطية تتراجع. ويظهر أن بعض الحكومات تتعمد إضعاف إجراء عمليات تحقق مستقلة بشأن سلطاتها، والقضاء على أي نقد، وتفكيك الرقابة الديمقراطية وضمان حكمها لمدة طويلة، مع أثر سلبي على حقوق الشعب. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | **1** - فهم ومعرفة وأدراك حقوقه التي اقرها الله له وللبشر جميعاً وبالتالي فهي هبه وليس مكسب من أحد ولا يحق لأي شخص انتزاعها.<br><br>**2**- يعبر الطالب بأسلوبه الخاص عن هذه الحقوق ويدافع عنها.<br><br>**3**- تعليل الظواهر واعطاء التفسيرات لما يحدث امامه من انتهاك لحقوق الانسان وحرياته من خلال تحديد اوجه النقص او الثغرات الموجودة في ضوء المعلومات المتوفرة لديه |

| | |
|---|---|
| | **4-** فهم اهم النظم السياسية والتي تعد ضمانه لحقوق الانسان وحرياته السياسية ومحاولة تطبيقه على ارض الواقع الا وهو النظام الديمقراطي. |
| **Indicative Contents**<br>المحتويات الإرشادية | ❖ حقوق الانسان في التاريخ المعاصر والحديث: الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة (4 ساعات)<br>❖ حقوق الانسان، تعريفها، اهدافها وحقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين (6 ساعات)<br><br>ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي:<br>- دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات<br>- دور المنظمات الاقليمية (الجامعة العربية، الاتحاد الأوربي، الاتحاد الافريقي، منظمة الدول الأمريكية، منظمة آسيان)<br>❖ دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان (12 ساعة)<br>❖ المشاكل والمعوقات ونقاشات الطلبة (6 ساعات) |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | 1-استراتيجية التفكير حسب قدرة الطالب<br>2-استراتيجية مهارة التفكير العالية<br>3-استراتيجية التفكير الناقد في التعلم<br>4-العصف الذهني |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 28 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 22 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1.5 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 50 | | |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 4 | 10% (10) | 5, 10 | LO #1, 2, 10 and 11 |
| | **Assignments** | 0 | 0 | Continuous | All |
| | **Projects / Lab.** | 0 | 0 | | |
| | **Report** | 4 | 10% (10) | | |
| **Summative assessment** | **Midterm Exam** | 2 hr | 20% (20) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | حقوق الانسان، تعريفها، اهدافها |

| | |
|---|---|
| | **حقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين** |
| **Week 2** | **حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الإسلام** |
| **Week 3** | **حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة** |
| **Week 4** | **الاعتراف الاقليمي بحقوق الانسان : الاتفاقية الاوربية لحقوق الانسان 1950 ، الاتفاقية الامريكية لحقوق الانسان 1969 ، الميثاق الافريقي لحقوق الانسان 1981 ، الميثاق العربي لحقوق الانسان 1994** |
| **Week 5** | **حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة** |
| **Week 6** | **حقوق الانسان في الدساتير العراقية بين النظرية والواقع** |
| **Week 7** | **حقوق الانسان الاقتصادية والاجتماعية والثقافية و حقوق الانسان المدنية والسياسية** |
| **Week 8** | **حقوق الانسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين** |
| **Week 9** | ضمانات احترام وحماية حقوق الانسان على الصعيد الوطني ، الضمانات في الدستور والقوانين<br>**الضمانات في الرقابة الدستورية ، الضمانات في حرية الصحافة والرأي العام ، دور المنظمات غير الحكومية في احترام وحماية حقوق الانسان** |
| **Week 10** | ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي :<br>- دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات<br>- دور المنظمات الاقليمية ( الجامعة العربية ، الاتحاد الأوربي ، الاتحاد الافريقي ، منظمة الدول الأمريكية ، منظمة آسيان )<br>**دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان** |
| **Week 11** | **مصطلح الديمقراطية ، نشأته، دلالته، تاريخ الديمقراطية.** |
| **Week 12** | **الاسلام والديمقراطية ومساوئ الحكم الاستبدادي .** |
| **Week 13** | **الانتقادات الموجهة للديمقراطية، ومحاسن النظام الديمقراطي.** |
| **Week 14** | **الأنظمة الديمقراطية في العالم/الديمقراطية في العالم الثالث/ المشاكل التي تواجه البلدان العربية في التحول الديمقراطي** |
| **Week 15** | **الامتحان النهائي** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | حقوق الانسان والديمقراطية – المفاهيم والمرتكزات للدكتور سماح مهدي العلياوي والدكتور سلمان كاظم البهادلي | Yes |
| **Recommended Texts** | الديمقراطية وحقوق الانسان في الاسلام للدكتور راشد الغنوشي | No |
| **Websites** | https://www.neelwafurat.com<br>https://studies.aljazeera.ne | |

**APPENDIX:**

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

Note:

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **English Language** | **Module Delivery** | |
| **Module Type** | **SUPPLEMENT** | ✓ **Theory**<br>✓ **Lecture**<br>**Lab**<br>**Tutorial**<br>**Practical**<br>✓ **Seminar** | |
| **Module Code** | **NTU101** | | |
| **ECTS Credits** | **2** | | |
| **SWL (hr/sem)** | **50** | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 2 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | dr. Younis Anas Younis | **e-mail** | younis.alrozz@ntu.edu.iq |
| **Module Leader's Acad. Title** | **Lecturer** | **Module Leader's Qualification** | **PhD.** |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **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 | To enable the learner to communicate effectively and appropriately in real life situation.<br>To use English effectively for study purposes across the curriculum.<br>To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking, and Writing.<br>To revise and reinforce structure already learned. |

| | |
|---|---|
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | Students will heighten their awareness of the correct usage of English grammar in writing and speaking.<br>Students will improve their speaking ability in English both in terms of fluency and comprehensibility.<br>Students will give oral presentations and receive feedback on their performance.<br>Students will increase their reading speed and comprehension of academic articles.<br>Students will improve their reading fluency skills through extensive reading.<br>Students will enlarge their vocabulary by keeping a vocabulary journal. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>**Part 1 – Grammar [4 hrs]**<br>Tenses, Present tenses: Present Simple, Present Continuous<br>**Part 2 – Vocabulary [6 hrs]**<br>Irregular verbs, making connections, Nouns, verbs, and adjectives, Making negatives.<br>**Part 3 – Speaking [6 hrs]**<br>Information gap, people's lifestyles, comparing cities.<br>**Part 4 – Listening[4 hrs]**<br>Telling stories, Town survey, attitudes to shopping, comparing cities.<br>**Revision [2 hrs]** |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage student's participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and interesting sampling activities for the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 22 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 1 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 28 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1.12 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 50 | | |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 4 | 10% (10) | 3, 7, 11, 14 | LO #1, 2, 10 and 11 |
| | **Assignments** | 0 | 0 | 0 | 0 |
| | **Projects / Lab.** | 0 | 0 | 0 | 0 |
| | **Report** | 4 | 10% (10) | 5, 6, 8, 10, 13 | LO # 5, 8 and 12 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 20% (20) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 60% (60) | 15 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|

| | |
|---|---|
| **Week 1** | Grammar: Tenses, Questions, Questions words<br>Vocabulary: Using a bilingual dictionary, Parts of speech, and Words with more than one meaning.<br>Everyday English: Social expressions. |
| **Week 2** | Reading: the many ways we communicate<br>Speaking: Information gap<br>Listening: Neighbors |
| **Week 3** | Grammar: Present tenses: Present Simple, Present Continuous, have/have got<br>Vocabulary: Describing countries, Collocation<br>Everyday English: Making conversation |
| **Week 4** | Reading: three people talk about their experiences<br>Speaking: people's lifestyles<br>Listening: what annoys you about the people in your life? |
| **Week 5** | Grammar: Past tenses: Past Simple, Past Continuous<br>Vocabulary: Irregular verbs, making connections, Nouns, verbs, and adjectives, Making negatives.<br>Everyday English: Time expressions |
| **Week 6** | Reading: Newspaper stories<br>Speaking: Telling stories<br>Listening: A radio drama |
| **Week 7** | Grammar: Quantity, Articles<br>Vocabulary: Buying things<br>Everyday English: Prices and shopping |
| **Week 8** | Reading: 'The best shopping street in the world'<br>Speaking: Town survey, attitudes to shopping<br>Listening: Buying things |
| **Week 9** | Grammar: Verb patterns 1, Future intentions<br>Vocabulary: Hot verbs<br>Everyday English: How do you feel? |
| **Week 10** | Reading: Hollywood kids<br>Speaking: Being a teenager<br>Listening: You've got a friend |
| **Week 11** | Grammar: Comparative and superlative adjectives<br>Vocabulary: Synonyms and antonyms<br>Everyday English: Directions |
| **Week 12** | Reading: 'A Tale of two millionaires'<br>Speaking: comparing cities<br>Listening: Living in another country |
| **Week 13** | Grammar: Present Perfect and Past Simple<br>Vocabulary: Past participles, Adverbs, Word pairs<br>Everyday English: Short answers |
| **Week 14** | Review |
| **Week 15** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | New Headway Intermediate Students Book | No |
| **Recommended Texts** | | |
| **Websites** | You can visit the course page at the following link:<br>https://youtube.com/playlist?list=PLzQug2pV17x9JD3wR8mk5qst_1EQ1myF6 | |

**APPENDIX:**

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

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

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# MODULE DESCRIPTOR FORM
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Digital Circuits** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE104** | | |
| **ECTS Credits** | **6** | | |
| **SWL (hr/sem)** | **150** | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 2 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul |
| **Module Leader** | Khalis A. Mohammed | **e-mail** | Khalis_am@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | M.Sc. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **Version Number** | 1.0 |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | **Digital Logic** **BCTE101-S1** | **Semester** | 1 |
| **Co-requisites module** | None | **Semester** | |

## Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

| | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | 1. To learn the basic techniques and methodologies for designing and analyzing digital circuits such as Adder – subtractor circuits.<br>2. To learn the Decoder and Encoder circuits.<br>3. To learn the Comparator, Multiplexer and Demultiplexer circuits.<br>4. To learn and analysis sequential circuits such as flip-flop circuits and Registers.<br>5. To learn the types of counters. |

| | |
|---|---|
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 24. Ability to design Adder and Subtractor circuits.<br>25. Knowledge of designing encoder and decoder circuits.<br>26. Knowledge the Comparator, Multiplexer, Demultiplexer and places of use.<br>27. Learn how to design an asynchronous and synchronous counters. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part 1 – Functions of Combinational Logic.<br>Half , Full and Parallel Binary Adders and Subtractors.<br>1's and 2's Complement Subtractor, 2's Complement Adder-Subtractor, BCD Adder, etc. Comparators, Decoders, Encoders, Multiplexers, Demultiplexer [14 hrs]<br>• Part 2- Latches, Flip-Flops, and Timers.<br>Latches, Edge-Triggered Flip-Flops. Flip-Flop operating ( R-S, T, J-K ,D) [12 hrs]<br>• Part 3 Counters<br>Synchronous Counters, Asynchronous Counters. Design of Counters. [26 hrs]<br>• Part 4 Shift Registers<br>Basic Shift Register Operations: SISO, SIPO, PISO, PIPO, Bidirectional and special Types Shift Register. [10 hrs]<br>• Revision problem classes [6 hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 61 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 89 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 6 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 3 | 5% (5) | 4,6,10 | LO # 2, 10 and 11 |
| | **Assignments** | 3 | 5% (5) | 2, 5,8 | LO # 3, 4 and 7 |
| | **Lab.** | 14 | 10%(10) | Continuous | All |
| | **Projects** | 3 | 5% (5) | 3,9,11 | LO # 5, 8 and 10 |
| | **Report** | 6 | 10% (10) | Continuous | All |
| | **Seminars** | 3 | 5% (5) | 4,10,12 | LO # 5, 8 and 10 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 15 | All |

| | | | |
|---|---|---|---|
| **Total assessment** | 100% (100 Marks) | | |

| **Delivery Plan (Weekly Syllabus)**<br>المنهاج الاسبوعي النظري | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | 1- Functions of Combinational Logic.<br>Basic Adders; Half and Full Adders. |
| **Week 2** | 1- Functions of Combinational Logic.<br>Basic Subtractors; Half and Full Subtractors. |
| **Week 3** | 1- Functions of Combinational Logic.<br>Parallel Binary Adders and Subtractors.<br>1's ,2's Complement Subtractor, 2's Complement Adder-Subtractor, BCD Adder, etc. |
| **Week 4** | 1- Functions of Combinational Logic.<br>Comparators, Code converters. |
| **Week 5** | 1- Functions of Combinational Logic.<br>Decoders, Encoders. |
| **Week 6** | 1- Functions of Combinational Logic.<br>Multiplexers (Data Selectors), Demultiplexer. |
| **Week 7** | 2- Latches, Flip-Flops, and Timers.<br>Latches |
| **Week 8** | 2- Latches, Flip-Flops, and Timers.<br>Edge-Triggered Flip-Flops. |
| **Week 9** | 2- Latches, Flip-Flops, and Timers.<br>Flip-Flop operating ( R-S, T, J-K ,D) |
| **Week 10** | 3- Counters<br>Synchronous Counters. |
| **Week 11** | 3- Counters<br>Asynchronous Counters. |
| **Week 12** | 3- Counters<br>Design of Counters. |
| **Week 13** | 4- Shift Registers<br>Basic Shift Register Operations.<br>Serial In/Serial out Shift Registers.<br>Serial In/Parallel out Shift Registers. |
| **Week 14** | 4- Shift Registers<br>Parallel In/Serial Out Shift Registers.<br>Parallel In/parallel Out Shift Registers.<br>Bidirectional Shift Registers. |
| **Week 15** | **Final Exam** |

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

| Week | Material Covered |
|---|---|
| **Week 1** | Lab 1: Half Binary Adder |
| **Week 2** | Lab 2: Full Binary Adder |
| **Week 3** | Lab 3: Half Binary Subtractor |
| **Week 4** | Lab 4: Full Binary Subtractor |
| **Week 5** | Lab 5: 2's Complement Adder-Subtractor |
| **Week 6** | Lab 6: Binary Comparator |
| **Week 7** | Lab 7: Digital Multiplexer |
| **Week 8** | Lab 8: DeMultiplexer. |
| **Week 9** | Lab 9: Decoders |
| **Week 10** | Lab 10: Encoders |
| **Week 11** | Lab 11: D Flip-Flop |
| **Week 12** | Lab 12: JK- Flip-Flop |
| **Week 13** | Lab 13: T- Flip-Flop |
| **Week 14** | Lab 14: Review |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Thomas L. Floyd, Digital Fundamentals, 11th Edition, Pearson Education 2015 | Yes |
| **Recommended Texts** | M. Morris Mano, Michael D. Ciletti, Digital Design, 5th edition, Pearson Education 2013 | No |
| **Websites** | Digital Systems: From Logic Gates to Processors: /learn/digital-systemshttps://www.coursera.org | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Engineering Mathematics** | **Module Delivery** | |
| **Module Type** | **Basic** | ✓ Theory<br>✓ Lecture<br>Lab<br>✓ Tutorial<br>Practical<br>Seminar | |
| **Module Code** | **CTE105** | | |
| **ECTS Credits** | **5** | | |
| **SWL (hr/sem)** | **125** | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 2 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Ayhan A. khaleel | **e-mail** | Ay_ahmed@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | M.Sc. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/05/2024 | **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 Objectives**<br>أهداف المادة الدراسية | Mathematics is an important tool for understanding modern and scientific technologies, and the modern world today relies heavily on mathematics. Mathematics is also characterized by multiple benefits, including that it is an intellectual tool, a strong communication method, and it is in itself a way of thinking, through which the capabilities of individuals develop, and it helps us in advanced logical thinking. It also Introduce students to mathematics through the laws and issues necessary for the purpose of assisting them in their studies in their field of specialization . |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | • Learning about the complex numbers.<br>• learning the Functions of several variables.<br>• Learning the Lines and planes in space, Tangent and normal in the plane<br>• Learning the Triple integrals in rectangular coordinates<br>• Double Integral in rectangular and polar form, Areas and volumes |

| | |
|---|---|
| | • Applications (Surface Area, Green's theorem and Stokes' theorem |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>❖ Complex Numbers– For most students the assumptions I've made above about their exposure to complex numbers is the extent of their exposure. Problems tend to arise however because most instructors seem to assume that either students will see beyond this exposure in some later class or have already seen beyond this in some earlier class. Students are then suddenly expected to know more than basic arithmetic of complex numbers but often haven't actually seen it anywhere and have to quickly pick it up on their own in order to survive in the class. [13 hrs]<br>❖ Vector Fields – In this section we introduce the concept of a vector field and give several examples of graphing them. We also revisit the gradient that we first saw a few chapters ago.<br>Line Integrals – Part I – In this section we will start off with a quick review of parameterizing curves. This is a skill that will be required in a great many of the line integrals we evaluate and so needs to be understood. We will then formally define the first kind of line integral we will be looking at : line integrals with respect to arc length.<br>Line Integrals – Part II – In this section we will continue looking at line integrals and define the second kind of line integral we'll be looking at : line integrals with respect to x, y, and/or z. We also introduce an alternate form of notation for this kind of line integral that will be useful on occasion.<br>Line Integrals of Vector Fields – In this section we will define the third type of line integrals we'll be looking at : line integrals of vector fields. We will also see that this particular kind of line integral is related to special cases of the line integrals with respect to x, y and z. [20 hrs]<br>❖ Part D: Multiple Integrals - In this chapter will be looking at double integrals, i.e. integrating functions of two variables in which the independent variables are from two dimensional regions, and triple integrals, i.e. integrating functions of three variables in which the independent variables are from three dimensional regions. Included will be double integrals in polar coordinates and triple integrals in cylindrical and spherical coordinates and more generally change in variables in double and triple integrals.[20 hrs]<br>❖ Revision problem classes [6 hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in exercises, while improving and expanding their mathematical reasoning skills. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 61 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 64 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.2 |
| **Total SWL (h/sem)**<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 | 4 | 20% (25) | 5, 7, 9, 11 | LO #1, 2, 10 and 11 |
| | Assignments | 8 | 16% (10) | Continuous | All |
| | Projects / Lab. | 0 | 0 | | |
| | Report | 1 | 4%(20) | | |
| Summative assessment | Midterm Exam | 2 hr | 10% (20) | 7 | LO # 1-7 |
| | Final Exam | 3 hr | 50% (60) | 15 | All |
| Total assessment | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| Week 1 | COMPLEX NUMBERS IN CARTESIAN COORDINATES AND POLAR FROM |
| Week 2 | LINEAR ALGEBRA FOR COMPLEX NUMBER IN POLAR AND CARTESIAN<br>EULER'S FORMULA. |
| Week 3 | DEMOIVRE'S THEOREM TO FIND POWERS AND THE NTH ROOTS OF GIVEN COMPLEX NUMBERS |
| Week 4 | Functions of several variables |
| Week 5 | **Partial differentiation and the chain rule** |
| Week 6 | **Functions of a complex variable, Cauchy-Riemann equations** |
| Week 7 | Cartesian coordinates and vectors in space, Dot product and Cross product |
| Week 8 | **Lines and planes in space, Tangent and normal in the plane** |
| Week 9 | **The two-dimensional Coordinate system, The three dimensional Coordinate .** |
| Week 10 | Directional derivatives, Gradient vectors |
| Week 11 | Divergence, curl and the laplacian |
| Week 12 | Double Integral in rectangular and polar form, Areas and volumes |
| Week 13 | Triple integrals in rectangular coordinates |
| Week 14 | **Applications (Surface Area, Green's theorem and Stokes' theorem)** |
| Week 15 | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| Required Texts | **Advance Engineering Mathematics, Alan Jeffrey, 2002** | Yes |
| Recommended Texts | **Calculus II &Calculus III, Paul Dawkins, 2007** | No |
| Websites | https://tutorial.math.lamar.edu/Classes/CalcIII/CalcIII.aspx<br>https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

| Group | Grade | التقدير | Marks (%) | Definition |
|---|---|---|---|---|
| Success Group (50 - 100) | **A** – Excellent | امتياز | 90 - 100 | Outstanding Performance |
| | **B** - Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | **C** – Good | جيد | 70 - 79 | Sound work with notable errors |
| | **D** - Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |

| | | | | |
|---|---|---|---|---|
| | **E** – Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| **Fail Group (0 – 49)** | **FX** – Fail | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| **Module Information**<br>معلومات المادة الدراسية | | | | |
|---|---|---|---|---|
| **Module Title** | **Computer Programming** | | **Module Delivery** | |
| **Module Type** | **Core** | | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **TECCAI101** | | | |
| **ECTS Credits** | **4** | | | |
| **SWL (hr/sem)** | **100** | | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 1 | |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** | |
| **Module Leader** | Najwan Z. Waisi | **e-mail** | Najwan.tuhafi@ntu.edu.iq | |

| | | | | | |
|---|---|---|---|---|---|
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | M.Sc. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 21/09/2024 | | **Version Number** | 1.0 | |

## Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

| | | | |
|---|---|---|---|
| **Prerequisite module** | None | **Semester** | |
| **Co-requisites module** | Object Oriented Programming | **Semester** | S3 |

## Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

| | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | Introduce the students with computer programming techniques using C++ language, and how it can be used to solve problems related to their specialization. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | The learning outcomes for a module on computer programming in C++ can vary depending on the specific objectives of the course or program:<br>1-Understanding the basics of C++: Students should be able to comprehend the fundamental concepts of C++ programming, including syntax, data types, variables, operators, control structures, and functions.<br>2-Proficiency in C++ programming: Students should develop the skills required to write, compile, and execute C++ programs. They should be able to implement various programming constructs and algorithms using C++.<br>3-Problem-solving and algorithm design: Students should gain the ability to analyze problems and design efficient algorithms to solve them using C++. They should be able to break down complex problems into smaller, manageable tasks and implement them in code.<br>4-Debugging and error handling: Students should develop skills in debugging C++ programs and identifying and fixing errors. They should learn techniques for error handling, exception handling, and writing robust code.<br>5-Code optimization and efficiency: Students should be able to optimize their C++ code for efficiency, considering factors such as algorithm complexity, data structures, and code organization. They should learn about performance analysis and profiling tools to identify bottlenecks in code.<br>6-Software development practices: Students should understand and apply good software development practices, including code documentation, version control, and testing. They should learn how to write readable and maintainable code. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – Introduction to C++. [14 hrs]<br>• Part B- Operators & Making Decisions [12 hrs]<br>• Part C- Looping & Arrays [16 hrs]<br>• Part D- Looping & Arrays [10 hrs]<br>• Revision problem classes [6 hrs]<br>• |

## Learning and Teaching Strategies

| استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | When teaching and learning C++ programming, various strategies can be employed to enhance comprehension and mastery of the subject. Here are some effective learning and teaching strategies for C++ programming:<br>Hands-on coding , Step-by-step approach , Visual aids and diagrams , Active learning , Real-world examples and projects , Online resources and coding platforms , Code documentation and commenting , Debugging and problem-solving techniques , Assessment and feedback , Continuous learning and staying updated |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 59 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 41 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3 |
| **Total SWL (h/sem)**<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** | 4 | 10% (10) | 5, 10 | LO #1, 2, 10 and 11 |
| | **Assignments** | 2 | 4% (4) | 2, 12 | LO # 3, 4, 6 and 7 |
| | **Projects / Lab.** | 15 | 10% (10) | Continuous | All |
| | **Report** | 6 | 10% (10) | 13 | LO # 5, 8 and 10 |
| | **Seminar** | 1 | 6% (6) | 5 | |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | Introduction to C++ (Structure of a program) |
| **Week 2** | Variables, Data Types, Declaration of variables, Scope of variables, Initialization of variables, Expressions and Basic Input/Output. |
| **Week 3** | Operators (Assignment, Arithmetic operators, Compound assignment, Increase and decrease, Relational and equality operators, Conditional operator) |
| **Week 4** | Making Decisions (if...else and switch). |
| **Week 5** | Looping (while loop and for loop). |
| **Week 6** | Bitwise Operators and Explicit type casting operator |
| **Week 7** | Arrays (Single Dimensional arrays, Arrays as parameters) |
| **Week 8** | Arrays (two Dimensional arrays, Arrays as parameters) |
| **Week 9** | Character Sequences and String handling. |
| **Week 10** | Structure |
| **Week 11** | Pointers (Reference operator, dereference operator, Declaring variables of pointer types,) |
| **Week 12** | Pointers and arrays, Pointers to pointers, void pointers and Pointers to functions |
| **Week 13** | Functions (Local and global variables, Arguments passed by value and by reference, Default values in parameters) |

| | |
|---|---|
| **Week 14** | Overloaded functions and Recursive functions. |
| **Week 15** | **Final Exam** |

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

| Week | Material Covered |
|---|---|
| **Week 1** | Lab 1: Introduction to C++ program using visual studio . |
| **Week 2** | Lab 2: my first program and how solve a problem. |
| **Week 3** | Lab 3: : if...else and switch programs |
| **Week 4** | Lab 4: while loop and for loop programs |
| **Week 5** | Lab 5: Bitwise Operators programs |
| **Week 6** | Lab 6: Single Dimensional arrays |
| **Week 7** | Lab 7: two Dimensional arrays ..part1 |
| **Week 8** | Lab 8: two Dimensional arrays..part2 |
| **Week 9** | Lab 9: : Character and String programs |
| **Week 10** | Lab 10: how implement a Structure |
| **Week 11** | Lab 11: Pointers and arrays |
| **Week 12** | Lab 12: Functions..part1 |
| **Week 13** | Lab 13: Functions..part2 |
| **Week 14** | Lab 14: Review |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | The Complete Reference, 4th Edition – Herbert schildt | No |
| **Recommended Texts** | complete c++ programming fundamentals with examples projects- emenwa global | No |
| **Websites** | Non | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Technology Engineering

# MODULE DESCRIPTOR FORM
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Electronic Workshop** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | **Theory**<br>**Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>**Seminar** | |
| **Module Code** | **CTE107** | | | | |
| **ECTS Credits** | **3** | | | | |
| **SWL (hr/sem)** | 75 | | | | |
| **Module Level** | UGx11 1 | | **Semester of Delivery** | 2 | |
| **Administering Department** | **DEPARTMENT OF COMPUTER TECHNIQUES ENGINEERING** | | **College** | Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul | |
| **Module Leader** | Thabat F. Thabet | | **e-mail** | Thabet.tfy@ntu.edu.iq | |
| **Module Leader's Acad. Title** | Lecturer | | **Module Leader's Qualification** | PhD. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 10/09/2024 | | **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 learn the basics of electrical elements (Symbols and Abbreviations, Units).<br>• To learn how to use measurement devices for DC and AC<br>• How to measure electrical elements by using measurement devices<br>• To learn the basics of electronic devices<br>• How to test electronic devices by using measurement devices<br>• How to use Oscilloscope (CRO)<br><br>6. How to use Function Generator |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | • Learning about the electrical elements.<br>• Learning about the electronic devices.<br>• Learning about the measurement devices.<br>• Learning about Oscilloscope and Function Generator<br>• Learning about the integrated circuits.<br>• Learning about the printed circuit board |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – **Basic information and electrical elements [12 hrs]**<br>Basic information<br>Color of resistance<br>Capacitors values<br>Measurement devices<br>How to measure resistors and capacitors values<br>How to measure DC and AC values<br>• Part B – **Electronic devices and AC circuits [10 hrs]**<br>Diodes<br>Transistors.<br>Operating of Oscilloscope<br>Function Generator<br>DC and AC circuit<br>• Part C – **Circuit Implementation [6 hrs]**<br>Electric circuit schematic diagram<br>Integrated circuits<br>Printed circuit board<br>Review [2 hrs] |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 30 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 45 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 75 | | |

| Module Evaluation<br>تقييم المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **As** | | **Time/Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| **Formative assessment** | **Quizzes** | 2/6 | 30% (30) | 2, 4, 5, 7, 8 and 10 | LO # 1, 2, 3 and 4 |
| | **Assignments** | 1/4 | 10% (20) | 3, 11, 12 and 13 | LO # 1, 2, 4, 5 and 6 |
| | **Projects** | 5/1 | 10% (10) | 14 | all |
| | **Report** | 3/4 | 20% (20) | 4, 5, 6 and 9 | LO # 1, 2, 3 and 4 |
| | **LAB.** | 10/4 | 20% (20) | 3-12 | all |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: Basic information |
| **Week 2** | Lab 2: Color of resistance |
| **Week 3** | Lab 3: Capacitors values |
| **Week 4** | Lab 4: Measurement devices |
| **Week 5** | Lab 5: How to measure resistors and capacitors values |
| **Week 6** | Lab 6: How to measure DC and AC values |
| **Week 7** | Lab 7: Diodes |
| **Week 8** | Lab 8: Transistors. |
| **Week 9** | Lab 9: Operating of Oscilloscope |
| **Week 10** | Lab 10: Function Generator |
| **Week 11** | Lab 11: DC and AC circuit |
| **Week 12** | Lab 12: Electric circuit schematic diagram |
| **Week 13** | Lab 13: Integrated circuits |
| **Week 14** | Lab 14: Printed circuit board |
| **Week 15** | Lab 15: Review |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | ELECTRONIC WORKSHOP & PCB LAB MANUAL | Yes |
| **Recommended Texts** | Integrated Circuits | Yes |
| **Websites** | https://www.youtube.com/watch?v=YJr-kHy6STg<br>: https://www.youtube.com/watch?v=VxMV6wGS3NY | |

**APPENDIX:**

| GRADING SCHEME<br>مخطط الدرجات | | | | |
|---|---|---|---|---|
| **Group** | **Grade** | التقدير | **Marks (%)** | **Definition** |
| **Success Group** | **A** – Excellent | امتياز | 90 - 100 | Outstanding Performance |

| | | | | |
|---|---|---|---|---|
| **(50 - 100)** | **B** - Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | **C** – Good | جيد | 70 - 79 | Sound work with notable errors |
| | **D** - Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| | **E** – Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| **Fail Group (0 – 49)** | **FX** – Fail | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# MODULE DESCRIPTOR FORM
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Electrical Circuits** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE106** | | |
| **ECTS Credits** | **7** | | |
| **SWL (hr/sem)** | **175** | | |
| **Module Level** | UGx11 1 | **Semester of Delivery** | 2 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Maysaloon Abed Qasim | **e-mail** | Maysloon.alhashim@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | PHD |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |

| Review Committee Approval | 21/096/2024 | Version Number | 1.0 |
|---|---|---|---|

| Relation With Other Modules<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | **electrical Circuits** | **Semester** | 2 |
| **Co-requisites module** | None | **Semester** | |

| Module Aims, Learning Outcomes and Indicative Contents<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | • Understand the fundamental concepts and principles of alternating current (AC) circuits.<br>• Gain knowledge of the mathematical tools and techniques used to analyze AC circuits, including phasors, complex numbers, and impedance.<br>• Develop the ability to solve AC circuit problems using circuit analysis techniques such as mesh analysis, nodal analysis, and Thevenin's theorem.. ect.<br>• Learn how to calculate and analyze voltage and current phasors in AC circuits, including their amplitudes, phases, and frequency relationships.<br>• Explore the behavior and characteristics of AC circuit elements, such as resistors, capacitors, and inductors, and understand their roles in AC circuit analysis.<br>• Investigate the concept of impedance in AC circuits and its relationship to resistance, reactance, and frequency.<br>• Study the principles of AC power and power factor, including real power, reactive power, apparent power, and power factor correction.<br>• 8- Gain a comprehensive understanding of three-phase AC systems, including the generation, transmission, and distribution of power in three-phase circuits. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Knowledge Acquisition: Students will acquire a comprehensive understanding of the fundamental concepts and principles of alternating current (AC) circuits.<br>• Circuit Design and Analysis: Students will gain the ability to design and analyze AC circuits, applying their knowledge of impedance, power factor, and component characteristics. They will learn to calculate voltage and current magnitudes, phase differences, and power relationships in AC circuits.<br>• Phasor Diagram Interpretation: Students will be able to construct and interpret phasor diagrams to visualize and analyze the behavior of voltages and currents in AC circuits.<br>• Three-Phase Systems: Students will acquire understanding of three-phase AC systems, including balanced and unbalanced configurations. |

| | |
|---|---|
| | • Laboratory Skills: Students will develop practical skills in using circuit simulation software and laboratory equipment to design, analyze, and verify the performance of AC circuits. |
| **Indicative Contents**<br>المحتويات الإرشادية | • Indicative content includes the following:<br>• Part A – Inductance & Capacitance in Electric circuits.<br>• **General concept of capacitance (charge and voltage, capacitors in series and parallel)**<br>• General concept of inductance (inductive and non-inductive circuits, capacitors in series and parallel) [4 hrs]<br>• Part B Alternating Quantities.<br>• Ac systems, waveforms, terms and definitions. Average and R.M.S values of current and voltage. [10 hrs]<br>• Part C Single - phase of AC Circuits.<br>• AC in resistive circuits, current and voltage in inductive circuits, current and voltage in capacitive circuits. Concept of complex impedance and admittance, AC series and parallel circuits. RL, RC and RLC circuit analysis and phasor representation. [12 hrs]<br>• Part D Power in AC circuits.<br>• Power in resistive circuits. power in inductive and capacitive circuits ,power in circuit with resistance and reactance. Power factor, its practical importance, improvement of power factor, measurement of power in a single – phase AC circuits. [16 hrs]<br>• Part E Three – phase circuit analysis.<br>• Basic concept and advantages of three – phase circuit. Phasor representation of star and delta connection. Phase and line quantities. Voltage and current computation in 3-phase balance and unbalance circuits. Real and Reactive power computation, measurement of power and power factor in 3-phase system. [12 hrs]<br>• Revision problem classes [4 hrs] |

| **Learning and Teaching Strategies**<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | 1-Conceptual Understanding: Explain the differences between AC and DC circuits, introduce the concept of impedance, reactance, and phasors, and highlight the significance of frequency and phase in AC circuits.<br>2-Mathematical Foundations: Provide a solid mathematical foundation for AC circuits. Teach students the use of complex numbers and phasor notation to analyze AC circuits.<br>3-Problem-Solving Skills: Dedicate adequate time to problem-solving exercises and examples.<br>4-Laboratory Experiments: Incorporate laboratory experiments to reinforce theoretical concepts. Allow students to build and analyze AC circuits using oscilloscopes, function generators, and AC power sources.<br>5-Simulation Tools: Introduce simulation software tools that allow students to simulate AC circuits and observe their behavior.<br>6-Review and Assessment: Regularly review key concepts and provide formative assessments to gauge students' understanding. Offer constructive feedback on their performance to help them identify areas for improvement. |

| Student Workload (SWL)<br>الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 58 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 117 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 7 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 175 | | |

## Module Evaluation
تقييم المادة الدراسية

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

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | **1- Inductance & Capacitance in Electric circuits.**<br>**1-General concept of capacitance (charge and voltage, capacitors in series and parallel)**<br>**2- General concept of inductance (inductive and non-inductive circuits, capacitors in series and parallel)** |
| **Week 2** | **2- Alternating Quantities.**<br>**Ac systems, waveforms, terms and definitions.** |
| **Week 3** | **2- Alternating Quantities.**<br>**Average and R.M.S values of current and voltage.** |
| **Week 4** | **2- Alternating Quantities.**<br>**Phasor diagram** |
| **Week 5** | **3- Single - phase of AC Circuits.**<br>**AC in resistive circuits , current and voltage in inductive circuits, current and voltage in capacitive circuits.** |
| **Week 6** | **3- Single - phase of AC Circuits.**<br>**Concept of complex impedance and admittance , AC series and parallel circuits .** |
| **Week 7** | **3- Single - phase of AC Circuits.**<br>**RL , RC and RLC circuit analysis and phasor representation.** |

| | |
|---|---|
| **Week 8** | **4- Power in AC circuits.**<br>**Power in resistive circuits ,power in inductive and capacitive circuits ,power in circuit with resistance and reactance.** |
| **Week 9** | **4- Power in AC circuits.**<br>**Power factor ,its practical importance , improvement of power factor , measurement of power in a single – phase AC circuits.** |
| **Week 10** | **5- Three – phase circuit analysis.**<br>**Basic concept and advantages of three – phase circuit.** |
| **Week 11** | **5- Three – phase circuit analysis.**<br>**Phasor representation of star and delta connection.** |
| **Week 12** | **5- Three – phase circuit analysis.**<br>**Phase and line quantities.** |
| **Week 13** | **5- Three – phase circuit analysis.**<br>**Voltage and current computation in 3-phase balance and unbalance circuits.** |
| **Week 14** | **5- Three – phase circuit analysis.**<br>**Real and Reactive power computation , measurement of power and power factor in 3-phase system.** |
| **Week 15** | **Final Exam.** |

| **Delivery Plan (Weekly Lab. Syllabus)**<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | **Lab 1: Measurement amplitude, frequency and time with oscilloscope using hardware and digital simulation.** |
| **Week 2** | **Lab 2: Examine phase relation in RL & RC circuit using hardware and digital simulation.** |
| **Week 3** | **Lab 3: Calculate & verify average and RMS value,** |
| **Week 4** | **Lab 4: Impedance of series RL and RC circuit using digital simulation..** |
| **Week 5** | **Lab 5: Impedance of series RLC circuit using digital simulation..** |
| **Week 6** | **Lab 6: Determination of average value, RMS value, form factor, peak factor of sinusoidal wave using digital simulation.** |
| **Week 7** | **Lab 7: Measure currents and voltages in three-phase balanced AC circuits** |
| **Week 8** | **Lab 8: Prove Y-Δ transformation,** |
| **Week 9** | **Lab 9: Exercise on phasor diagrams for three-phase circuits** |
| **Week 10** | **Lab 10: Measurement of voltage, current& power in a three-phase circuit** |
| **Week 11** | **Lab 11: Ohm's LAW, KVL AND KCL in AC circuits using digital simulation..** |
| **Week 12** | **Lab 12: Determination of mesh currents in AC circuits using digital simulation.** |
| **Week 13** | **Lab 13: Measurement of nodal voltages in AC circuits using digital simulation.** |

| Week 14 | Lab 14: Review |
|---|---|

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Charles K. Alexander, Matthew N.O. Sdiku Fundamentals of Electrical Engineering, 4th Edition, 2009 | Yes |
| **Recommended Texts** | Tony R. Kuphaldt، Lessons In Electric Circuits, Volume II - AC 5th edition, 2002 | No |
| **Websites** | AC circuits<br>https://byjus.com/physics/ac-circuit/ | |

**APPENDIX:**

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

Note:

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

# MODULE DESCRIPTION FORM
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | |
|---|---|---|
| **Module Title** | **Computer Principles** | **Module Delivery** |
| **Module Type** | **Supported** | ☒ **Theory**<br>☐ **Lecture**<br>☒ **Lab**<br>☐ **Tutorial**<br>☒ **Practical** |
| **Module Code** | **NTU 102** | |
| **ECTS Credits** | **3** | |

| | | | | | |
|---|---|---|---|---|---|
| **SWL (hr/sem)** | **30** | | | ☒ **Seminar** | |
| **Module Level** | | **First** | **Semester of Delivery** | | **First** |
| **Administering Department** | | **Med. Ins. Tech. Eng.** | **College** | Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul | |
| **Module Leader** | **Zaid Abdulsattar Abdulrazzaq** | | **e-mail** | zaid.a.abdulrazzaq@ntu.edu.iq | |
| **Module Leader's Acad. Title** | | **Assistant Lecturer** | **Module Leader's Qualification** | | **Master** |
| **Module Tutor** | **Name (if available)** | | **e-mail** | **E-mail** | |
| **Peer Reviewer Name** | | | **e-mail** | | |
| **Scientific Committee Approval Date** | | **01/09/2024** | **Version Number** | **1.0** | |

| **Relation with other Modules**<br>العلاقة مع المواد الدراسية الأخرى | | | |
|---|---|---|---|
| **Prerequisite module** | N/A | **Semester** | 2 |
| **Co-requisites module** | N/A | **Semester** | 2 |

| **Module Aims, Learning Outcomes and Indicative Contents**<br>أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | 1. Studying computer principles.<br>2. Defining keyboards and mice.<br>3. Presenting principles of memories.<br>4. Explaining disc drives.<br>5. Explaining principles of windows.<br>6. Illustrating accessories of windows. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. Abilities to recognize different computer hardware parts.<br>2. Defining various types of keyboards and mice.<br>3. Getting knowledge about computer memories and drives.<br>4. Getting knowledge about windows.<br>5. Presenting different windows accessories. |
| **Indicative Contents**<br>المحتويات الإرشادية | • Indicative content includes the following.<br>• Computer types of: digital, analogues and hybrid.<br>• Different memory types of: RAM, ROM, PROM, EPROM and EEPROM.<br>• Different drives types of: magnetic and optical.<br>• Windows facilities of: Notepad, Wordpad, Paint, Accessories and others. |

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

| | |
|---|---|
| **Strategies** | Strategies that will be adopted for delivering this module are theoretical lectures, practical experiments, home works and exams. This will be achieved through classes, interactive tutorials and by considering practical experiments. |

| **Student Workload (SWL)**<br>الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 43 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 32 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | **75** | | |

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

| **Delivery Plan (Weekly Syllabus)**<br>المنهاج الاسبوعي النظري | |
|---|---|
| **Week** | **Material Covered** |
| **1st** | **Introducing to the Computer System Including: What is Computer? Computer System, Functions of Computer Input Storage Process & Output, Classification of Computers and Computer Units** |
| **2nd, 3rd, 4th** | **Explaining Types of Computer Keyboards and Types of Keyboard Keys** |
| **5th** | **Explaining Types of Computer Mice and Mouse Functions** |
| **6th** | **Explaining Different Plugs and Ports for Some Computer Parts** |
| **7th** | **Illustrating Computer Discs and Drives** |
| **8th** | **Illustrating RAM, Non-Volatile and Cache Memories** |
| **9th, 10th, 11th** | **Demonstrating Computer Hardware Parts and Definitions** |

| | |
|---|---|
| **12th, 13th** | **Presenting Windows, Windows Desktop and Windows Taskbar** |
| **14th, 15th** | **Illustrating Start Menu and Windows Accessories** |

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

| Week | Material Covered |
|---|---|
| **1st** | **Introducing to the Computer System Including: What is Computer?, Computer System, Functions of Computer Input Storage Process & Output, Classification of Computers and Computer Units** |
| **2nd, 3rd, 4th** | **Explaining Types of Computer Keyboards and Types of Keyboard Keys** |
| **5th** | **Explaining Types of Computer Mice and Mouse Functions** |
| **6th, 7th** | **Explaining Different Plugs and Ports for Some Computer Parts, and Illustrating Computer Discs and Drives** |
| **8th** | **Illustrating RAM, Non-Volatile and Cache Memories** |
| **9th, 10th, 11th, 12th** | **Demonstrating Computer Hardware Parts and Definitions, and Presenting Windows, Windows Desktop and Windows Taskbar** |
| **13th, 14th, 15th** | **Illustrating Start Menu and Windows Accessories** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | [1] Umar Farooq, "What is Computer - Definition & Basic Concept of Computer", Study Lecture Notes, 2016.<br>[2] University Information Technology Services, "Microsoft Windows 10, Getting Started Guide", Kennesaw State University – UITS, 2016. | In the internet |
| **Recommended Texts** | Cre8te Opportunities, "Introduction to Computers (Windows 10)", Digital Skills Academy, 2016. | In the internet |
| **Websites** | [1] http://www.studylecturenotes.com/computer-science/what-is-computer-definition-basic-concept-of-computer<br>[2] http://ergonomictrends.com/different-types-of-computer-keyboards/<br>[3] UKEssays, "Wireless Mouse: History and Types", 2018. [Online]. Available: https://www.ukessays.com/essays/computer-science/wireless-mouse-history-types-5302.php?vref=1.<br>[4] https://searchstorage.techtarget.com/definition/RAM-random-access-memory<br>[5] https://tldp.org/HOWTO/Network-boot-HOWTO/a610.html#:~:text=PROM%3A%20Pronounced%20prom%2C%20an%20acronym,the%20computer%20is%20turned%20off. | |

## Grading Scheme
مخطط الدرجات

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

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | |
|---|---|---|---|
| **Module Title** | **Arabic Language** | **Module Delivery** | |
| **Module Type** | **Suplement** | ✓ Theory<br>✓ Lecture<br>Lab<br>Tutorial<br>Practical<br>✓ Seminar | |
| **Module Code** | **NTU103** | | |
| **ECTS Credits** | **2** | | |
| **SWL (hr/sem)** | **50** | | |
| **Module Level** | 2UGx11 | **Semester of Delivery** | 2 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |

| | | | |
|---|---|---|---|
| **Module Leader** | **Dr. Eesha I. Mohammed** | **e-mail** | aysha.ibrahim@ntu.edu.iq |
| **Module Leader's Acad. Title** | Assist. Prof. | **Module Leader's Qualification** | PHD |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **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 Objectives**<br>أهداف المادة الدراسية | ينشأ الطالب على حب اللّغة العربيّة لغة القرآن الكريم. التعرّف على مواطن الجمال في اللّغة العربيّة وآدابها، وأن يكتسب الطالب القدرة على دراسة فروع اللّغة العربيّة. تعريف الطالب بألفاظ اللّغة العربيّة الصحيحة وتراكيبها وأساليبها السليمة بطريقة مشوقة وجذابة. أن يستغل الطالب وقت فراغه بالقراءة والاطلاع والرجوع إلى المكتبة . تمكين الطالب من القراءة الصحيحة، وأن يكتسب القدرة على استعمال اللغة استعمالاً صحيحاً في الاتّصال مع الآخرين؛ كالسرعة وجودة الإلقاء وحسن التعبير، وتعويده حسن الاستماع لما يسمع مما ييسّر له أموره ويعينه على قضاء حوائجه. تنمية الذوق الأدبي لدى الطالب حتى يدرك النواحي الجمالية في أساليب الكلام ومعانيه وصوره. تعويد الطالب التعبيرات السليمة الواضحة عن أفكاره وما يقع تحت حواسه نطقاً وكتابة وحسن استخدام علامات الترقيم. تنمية قدرة ومهارة الطالب الإملائية والخطية بحيث يستطيع الكتابة الصحيحة من جميع النواحي. إيقاظ وعي الطالب لإدراك شرف الكلمة وتوجيهه؛ للمحافظة على طهارتها ونقائها حتى لا تستعمل إلا في الخير. مساعدة الطالب على فهم التراكيب المعقدة والأساليب الغامضة . |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | 1. معرفة القواعد النحوية والصرفية.<br>2- التعريف بأبرز المصنفات اللغوية والأدبية.<br>3- تحديد المشكلات اللغوية والأدبية لدى الدارسين.<br>4- القراءة المعاصرة للنصوص اللغوية والأدبية.<br>5- قراءة النصوص الأدبية وكتابتها وفق المعايير النحوية والصرفية<br>6- تعزيز الثقة بالنفس والجرأة والفصاحة<br>7- المنافسة والتميز في سوق العمل. |
| **Indicative Contents**<br>المحتويات الإرشادية | ❖ مقدمة عن الأخطاء اللغوية التاء المربوطة والتاء المفتوحة (4 ساعات)<br>❖ تطبيقات الأخطاء اللغوية الشائعة واقسام الكلام (6 ساعات)<br>❖ همزة الوصل والقطع والهمزة المتوسطة والمتطرفة قواعد كتابة الالف الممدودة والمقصورة الحروف الشمسية والقمرية والضاد والظاء (12 ساعة)<br>❖ المشاكل والمعوقات ونقاشات (6 ساعات) |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | 1- .تبسيط المعلومات وتنظيمها<br>2- .تسهيل عملية استرجاع المعلومات<br>3- ربط المفاهيم الجديدة بالمكتسبات السابقة<br>4- .إيجاد العلاقة بين المفاهيم<br>5 - تسهيل تذكر المعارف والمعلومات |

## Student Workload (SWL)

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

## Module Evaluation
تقييم المادة الدراسية

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

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| Week 1 | مقدمة عن الأخطاء اللغوية |
| Week 2 | التاء المربوطة والتاء المفتوحة |
| Week 3 | همزة الوصل والقطع |
| Week 4 | الهمزة المتوسطة والمتطرفة |
| Week 5 | قواعد كتابة الالف الممدودة والمقصورة |
| Week 6 | الحروف الشمسية والقمرية |
| Week 7 | الضاد والظاء |
| Week 8 | العـــدد |
| Week 9 | المفاعيل |
| Week 10 | أقسام الكلام |
| Week 11 | معاني حروف الجر |
| Week 12 | تطبيقات الأخطاء اللغوية الشائعة |
| Week 13 | النون والتنوين |
| Week 14 | مقدمة عن الأخطاء اللغوية |
| Week 15 | الامتحان النهائي |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| Required Texts | الكامل في اللغة والادب لابي عباس المبرد | Yes |
| Recommended Texts | أخطاء لغوية شائعة لخالد بن هلال بن ناصر العبري | No |

| | |
|---|---|
| **Websites** | https://www.eshamel.ne<br>https://www.ektebsa7.com |

**APPENDIX:**

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

Note:

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | |
|---|---|---|---|
| **Module Title** | **Microprocessors** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE200** | | |
| **ECTS Credits** | **7** | | |
| **SWL (hr/sem)** | **175** | | |
| **Module Level** | 2 | **Semester of Delivery** | 1 |
| | Computer Technique | | Northern Technical University - Engineering |

| | | | |
|---|---|---|---|
| | Engineering | | Technical College for Computer and Artificial Intelligence /Mosul |
| **Module Leader** | Ahmad F. Al-Allaf | **e-mail** | Ahmed.faleh@atu.edu.iq |
| **Module Leader's Acad. Title** | Assistant Professor | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 13/ 9/2024 | **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 Objectives**<br>أهداف المادة الدراسية | Understanding Microprocessor Architecture: The course provides a comprehensive understanding of microprocessor architecture, including its components, data path, control unit, memory hierarchy, and input/output systems. Students will learn about different microprocessor families and their characteristics.<br>Instruction Set Architecture (ISA): Students gain proficiency in understanding and working with the instruction set architecture of a microprocessor. This involves learning about different instruction formats, addressing modes, data types, and the relationship between instructions and the underlying hardware.<br>Assembly Language Programming: The course cover assembly language programming for a specific microprocessor. Students learn the syntax, conventions, and techniques for writing efficient assembly language programs. They also understand the translation process from assembly language to machine code. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | Understand the fundamental concepts and principles of microprocessor architecture, including the components, data path, control unit, memory hierarchy, and input/output systems.<br>Analyze and interpret the instruction set architecture (ISA) of a microprocessor, including instruction formats, addressing modes, data types, and the relationship between instructions and hardware.<br>Demonstrate proficiency in writing and debugging assembly language programs for a specific microprocessor, considering syntax, conventions, and efficient programming techniques. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part-A: Introduction to Microprocessor:<br>Introduction and History of Microprocessors, Basic Block Diagram of a Microprocessor, Organization of Microprocessor Based System, Bus Organization, Processing Cycle of a Stored Program Computer. 8085 Microprocessor: Internal Architecture and Features of 8085 microprocessor, pin description. [6hrs.]<br>• Part-B: 8086/8088 Microprocessor:<br>Internal Architecture and Features of 8086/8088 Microprocessor, components of BIU and EU. Pin descriptions and bus cycles. Pin descriptions and bus cycles, 8284 clock generator and 8288 bus controller circuits, Minimum and Maximum configurations, Memory and I/O organization, [24hrs]<br>• Part-C: 8086 programming and instruction sets:<br>8086 Addressing Modes, instruction groups, Data Movement instructions, Arithmetic and logical instructions, Jump instructions, String instructions, example. [24hrs]<br>• Part -D : Different Microprocessor Architectures:<br>Register Based and Accumulator Based Architecture, RISC and CISC Architectures, |

| | |
|---|---|
| | Digital Signal Processors. [4hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 61 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 411 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 67. |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 175 | | |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 8 | 10% (10) | 3, 6, 9,12 | LO #1, 2, 10 and 11 |
| | **Assignments** | 8 | 10% (10) | 4, 7,10,13 | LO # 3, 4, 6 and 7 |
| | **Projects / Lab.** | 15 | 10% (10) | Continuous | All |
| | **Report** | 8 | 10% (10) | 3,5,7,9 | LO # 5, 8 and 10 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 3,7,10,13 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 15 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | **1-Introduction to Microprocessor:**<br>Introduction and History of Microprocessors, Basic Block Diagram of a Microprocessor, Organization of Microprocessor Based System, Bus Organization, Processing Cycle of a Stored Program Computer. |
| **Week 2** | **2-8085 Microprocessor:**<br>Internal Architecture and Features of 8085 microprocessor, pin description. |
| **Week 3** | **3-8086/8088 Microprocessor:**<br>Internal Architecture and Features of 8086 Microprocessor, components of BIU and EU. |
| **Week 4** | **4-8086 Microprocessor:**<br>Pin descriptions and bus cycles. |
| **Week 5** | **5-8086 Microprocessor:**<br>Pin descriptions and bus cycles. |
| **Week 6** | **6-8086 Microprocessor:**<br>8284 clock generator and 8288 bus controller circuits |
| **Week 7** | **7-8086 Microprocessor:**<br>Minimum and Maximum configurations, Memory and I/O organization. |
| **Week 8** | **8-8086 programming and instruction sets**<br>8086 Addressing Modes, instruction groups |
| **Week 9** | **9-8086 instruction sets:** |

| | |
|---|---|
| | Data Movement instructions |
| **Week 10** | **10-8086 instruction sets:**<br>Arithmetic and logical instructions |
| **Week 11** | **11-8086 instruction sets:**<br>Jump instructions |
| **Week 12** | **12-8086 instruction sets:**<br>String instructions |
| **Week 13** | **13-8086 instruction sets:**<br>Programming examples |
| **Week 14** | **14-Different Microprocessor Architectures:**<br>Register Based and Accumulator Based Architecture, RISC and CISC Architectures, Digital Signal Processors. |
| **Week 15** | **Final Exam** |

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

| Week | Material Covered |
|---|---|
| **Week 1** | Lab 1: Introduction to debugging program |
| **Week 2** | Lab 2: 8086 instruction formats |
| **Week 3** | Lab 3: 8086 addressing modes |
| **Week 4** | Lab 4: Program examples of Data movement instructions |
| **Week 5** | Lab 5: Program examples of Arithmetic instructions |
| **Week 6** | Lab 6: Program examples of Arithmetic instructions (addition and subtraction) |
| **Week 7** | Lab 7: Program examples of Arithmetic instructions (Multiplication and division) |
| **Week 8** | Lab 8: Program examples of logical instructions |
| **Week 9** | Lab 9: Program examples of shift and rotate instructions |
| **Week 10** | Lab 10: Program examples of timing delay using counters |
| **Week 11** | Lab 11: Program examples of JMPs instructions |
| **Week 12** | Lab 12: Program examples of stack instructions |
| **Week 13** | Lab 13: Program examples of strings instructions |
| **Week 14** | Lab 14: Program examples of call and return instructions |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | The Intel Microprocessors (8th Edition), BARRY B. BREY, 2009 | No |
| **Recommended Texts** | MICROPROCESSOR 8086 Architecture, Programming and Interfacing, **Sunil Mathur, 2011** | No |
| **Websites** | Digital Systems: From Logic Gates to Processors:<br>https://www.coursera.org<br>https://www.edx.org<br>https://ocw.mit.edu | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

| Group | Grade | التقدير | Marks (%) | Definition |
|---|---|---|---|---|
| **Success Group** | **A** - Excellent | امتياز | 90 - 100 | Outstanding Performance |

| | | | | |
|---|---|---|---|---|
| **(50 - 100)** | **B** - Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | **C** - Good | جيد | 70 - 79 | Sound work with notable errors |
| | **D** - Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| | **E** – Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| **Fail Group (0 – 49)** | **FX** – Fail | مقبول بقرار | (45-49) | More work required but credit awarded |
| | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |
| Note: | | | | |

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Technology Engineering

# MODULE DESCRIPTOR FORM
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Analog Electronics Fundamentals** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE201** | | |
| **ECTS Credits** | **5** | | |
| **SWL (hr/sem)** | **125** | | |
| **Module Level** | UGx11 2 | **Semester of Delivery** | 1 |
| **Administering Department** | DEPARTMENT OF COMPUTER TECHNIQUES ENGINEERING | **College** | Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul |
| **Module Leader** | Thabat F. Thabet | **e-mail** | Thabet.tfy@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | PhD. |

| | | | |
|---|---|---|---|
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 10/09/2024 | **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 | • To learn the physics of material and the basics of electronic devices.<br>• Study the structure and the characteristics of electronic devices (diodes and transistors).<br>• To learn the applications of different types of diodes.<br>• Study the principles of binary junction transistors (BJT), biasing, cutoff, saturation, operating point and DC load line. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | • Learning about the physics of material.<br>• Learning about the different electronic devices (structure and characteristics).<br>• Ability to recognize and test different electronic devices (diodes and transistors).<br>• Learning about the applications of diodes (circuits and their functions).<br>• Ability to design, and implement different diode circuits (with a specific required output).<br>• Ability to design, or analyze BJT biasing circuits to know the operating point. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – **Introduction to electronics**<br>Physics of material, atoms, electrons and energy bands, types of material (insulators, conductors, and semiconductors), N-type and P-type semiconductor. Diodes, forward bias, reverse bias, V-I characteristics [8 hrs]<br>• Part B- **Application of diodes.**<br>Half-wave rectifier, average value, r.m.s. value, capacitor filter, ripple voltage. Full-wave rectifier, average value, r.m.s. value, capacitor filter, ripple voltage. Half-wave rectifier, average value, r.m.s. value, capacitor filter, ripple voltage. Diode limiters, output voltage signal. Clampers and Voltage Doubler. [16 hrs]<br>• Part C **Other types of diodes**<br>Zener diodes, V-I characteristics. Voltage regulators using Zener diode (variable input voltage, and variable load). Zener limiters. Special purpose diodes, Varactor, Light Emitting diode LED, Photo diode, Schottky diode, Tunnel diodes. [16 hrs]<br>• Part D **Transistors**<br>Bipolar junction transistor BJT, current, voltages, and parameters, maximum ratings.<br>BJT biasing, cutoff, saturation, operating point.<br>Transistor bias circuits, base-bias, voltage divider<br>Transistor bias circuits, emitter-bias, collector-feedback. [16 hrs]<br>• Revision problem classes [4 hrs] |

## Learning and Teaching Strategies

| استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 60 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 65 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4.3 |
| **Total SWL (h/sem)**<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** | 4 | 10% (10) | 3, 7, 11, 14 | LO #2, 4, 5 and 6 |
| | **Assignments** | 6 | 10% (10) | 3, 5, 7, 9, 11, 14 | LO # 2, 4, 5 and 6 |
| | **Projects / Lab.** | 1 | 10% (10) | Continuous | All |
| | **Report** | 5 | 10% (10) | 5, 6, 8, 10, 13 | LO # 2, 3, 4, 5 and 6 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | Introduction to electronics. |
| **Week 2** | Physic of diode.<br>Diode's equivalent circuits. |
| **Week 3** | Application of diodes. |
| **Week 4** | Half-wave rectifier. |
| **Week 5** | Full-wave rectifier . |
| **Week 6** | Diode Limiters |
| **Week 7** | Clampers. |
| **Week 8** | Zener diode Characteristics. |
| **Week 9** | Voltage regulator using Zener diode. |
| **Week 10** | Another typed of diode. |
| **Week 11** | Physic of transistor: Bipolar junction transistor BJT. |
| **Week 12** | DC operation point. |
| **Week 13** | Transistor bias circuits. |
| **Week 14** | Transistor bias circuits. |
| **Week 15** | **Preparatory Week** |
| **Week 16** | **Final Exam** |

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

| Week | Material Covered |
|---|---|
| **Week 1** | Lab 1: Introduction to the Electronic Laboratory |
| **Week 2** | Lab 2: Diode characteristics |
| **Week 3** | Lab 3: Half-wave rectifiers |
| **Week 4** | Lab 4: Full-wave rectifiers |
| **Week 5** | Lab 5: Filter for Half-wave rectifiers |
| **Week 6** | Lab 6: Filter for Full-wave rectifiers |
| **Week 7** | Lab 7: Clipping Circuits |
| **Week 8** | Lab 8: Clamper and Voltage Doubler |
| **Week 9** | Lab 9: Zener diode characteristics |
| **Week 10** | Lab 10: Voltage regulators using Zener diode |
| **Week 11** | Lab 11: Transistor Characteristics |
| **Week 12** | Lab 12: Transistor Biasing (part 1) |
| **Week 13** | Lab 13: Transistor Biasing (part 2) |
| **Week 14** | Lab 14: Review |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Thomas L. Floyd, Electronic Devices, 9th Edition, Pearson Education 2012 | Yes |
| **Recommended Texts** | R. BOYLESTAD and L. NASHELSKY, "ELECTRONIC DEVICES AND CIRCUIT THEORY", 11th edition, Pearson Education , 2013 | Yes |
| **Websites** | Digital Systems: From Logic Gates to Processors: https://www.coursera.org/learn/electronics | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Object oriented programing** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>x **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE202** | | |
| **ECTS Credits** | **5** | | |
| **SWL (hr/sem)** | **125** | | |
| **Module Level** | UGx11 2 | **Semester of Delivery** | 1 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Anmar Burhan Mohammed | **e-mail** | Anmar.salih@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | PhD. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **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 Objectives**<br>أهداف المادة الدراسية | 7. • Understanding OOP Concepts: Gain a solid understanding of fundamental OOP concepts such as encapsulation, inheritance, and polymorphism. Learn how these concepts promote code reusability, modularity, and maintainability.<br>8. • Programming Language Proficiency: Develop proficiency in a specific |

| | |
|---|---|
| | programming language that supports OOP paradigms, such as Java, C++, Python, or C#. Learn the syntax, data types, control structures, and other language features necessary for implementing OOP concepts.<br>• Class and Object Creation: Learn how to create classes and objects, define attributes and behaviors, and establish relationships between objects using techniques like composition and aggregation.<br>• Encapsulation and Data Hiding: Understand the principles of encapsulation and data hiding to enforce proper access control and protect data integrity. Learn how to define public, private, and protected access levels for class members.<br>• Inheritance and Polymorphism: Explore inheritance, where classes can inherit properties and behaviors from other classes, and polymorphism, where objects can take on different forms depending on their context. Understand the benefits and use cases for these concepts.<br>• Abstraction and Interface Design: Learn how to create abstract classes and interfaces to define common behaviors and establish contracts for implementing classes. Understand the advantages of abstraction in managing complex systems.<br>• OOP Design Patterns: Study common design patterns used in OOP, such as the Singleton, Factory, Observer, and Strategy patterns. Learn how to apply these patterns to solve common software design problems.<br>• Error Handling and Exception Handling: Understand how to handle errors and exceptions in an OOP context. Learn techniques for graceful error recovery, exception propagation, and creating custom exceptions.<br>• OOP Software Development Practices: Gain familiarity with software development practices aligned with OOP, such as modular programming, code organization, and documentation. Learn about version control systems and collaboration tools commonly used in OOP projects.<br>• OOP Analysis and Design: Learn how to analyze and design software systems using OOP principles. Understand the importance of modeling techniques like class diagrams and sequence diagrams in the software development lifecycle. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Understand the principles of Object-Oriented Programming<br>• Design and implement classes and objects<br>• Apply access modifiers to control class member visibility.<br>• Utilize inheritance and polymorphism<br>• Implement function overriding and virtual functions for runtime polymorphism.<br>• Develop object-oriented programs and projects.<br>• Develop larger projects that demonstrate effective use of OOP concepts. |
| **Indicative Contents**<br>المحتويات الإرشادية | Introduction to Object-Oriented Programming (4 hours)<br>C++ Basics and Syntax Review (6 hours)<br>Encapsulation and Access Control (8 hours)<br>Inheritance and Polymorphism (10 hours)<br>Dynamic Memory Management (8 hours)<br>Object Relationships and Composition (6 hours)<br>Operator Overloading (6 hours)<br>Exception Handling (6 hours)<br>Templates and Generic Programming (8 hours)<br>Advanced OOP Concepts (8 hours)<br>Design Patterns (8 hours) |

| | |
|---|---|
| | Project Development (16 hours) |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | Understand the Core Concepts: Begin by grasping the fundamental principles of OOP, including encapsulation, inheritance, and polymorphism. Gain a clear understanding of how these concepts work together to create object-oriented systems.<br><br>Hands-on Coding: Actively practice writing code in C++ to reinforce your understanding of OOP. Implement classes, objects, and inheritance hierarchies. Solve programming exercises and work on small projects to apply OOP concepts in practical scenarios.<br><br>Read and Analyze Code Examples: Study well-written C++ code that utilizes OOP techniques. Analyze how classes and objects are structured, how inheritance is implemented, and how polymorphism is achieved. This will help you understand real-world applications of OOP.<br><br>Work with Real-World Examples: Seek out real-world examples or case studies where OOP has been employed in C++ projects. Examine open-source projects or sample code to understand how OOP is used to solve complex problems and create modular, reusable code. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 61 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 64 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 125 | | |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 8 | 10% (10) | 5, 10 | LO #1, 2, 6,7,8,9,10 and 11 |
| | **Assignments** | 8 | 10% (10) | 2, 12 | LO # 3, 4, 6, 7,9,10,12,14 |
| | **Projects / Lab.** | 16 | 10% (10) | Continuous | All |
| | **Report** | 5 | 10% (10) | 2,4,8 ,10and13 | LO#2,4,8,10 and 13 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | **Introduction to C++ and OOP Basics**<br>• **Introduction to C++ programming language**<br>• **Basic syntax, variables, and data types**<br>• **Functions and control structures**<br>• Introduction to object-oriented programming (OOP) concepts: classes, objects, and methods |

| | |
|---|---|
| **Week 2** | **Classes and Objects**<br>• **Defining and declaring classes**<br>• **Creating objects and using constructors**<br>• **Encapsulation and access modifiers (public, private, protected)**<br>• Member functions and data members |
| **Week 3** | **Inheritance and Polymorphism**<br>• **Inheritance hierarchy and base/derived classes**<br>• **Single inheritance and multiple inheritance**<br>• **Polymorphism and function overriding**<br>• Abstract classes and pure virtual functions asses |
| **Week 4** | **Dynamic Memory Allocation and Pointers**<br>• **Dynamic memory allocation with new and delete**<br>• **Introduction to pointers and references**<br>• **Memory management and deallocation**<br>• Object lifetime and scope |
| **Week 5** | **Operator Overloading**<br>• **Overloading unary and binary operators**<br>**•Overloading comparison and assignment operators**<br>• **Friend functions and operator overloading**<br>• Best practices and guidelines for operator overloading |
| **Week 6** | **Templates and Generic Programming**<br>• **Introduction to templates and generic programming**<br>• **Function templates and class templates**<br>• **Template specialization**<br>• Standard Template Library (STL) containers and algorithms |
| **Week 7** | **Exception Handling**<br>• **Introduction to exception handling**<br>• **try-catch blocks and handling exceptions**<br>• **Throwing and catching exceptions**<br>• Exception specifications and best practices |
| **Week 8** | • Midterm exam |
| **Week 9** | **File Handling and Streams**<br>• **Input/output streams and file handling**<br>• **Reading from and writing to files**<br>• **Error handling and file status flags**<br>• Working with text and binary files |
| **Week 10** | **Advanced OOP Concepts**<br>• **Polymorphism and virtual functions**<br>• **Virtual base classes and diamond problem**<br>• **Type casting and runtime type identification (RTTI)**<br>• Object slicing and dynamic casting |
| **Week 11** | **Standard Library Algorithms**<br>• **Overview of the standard library algorithms**<br>• **Sorting and searching algorithms**<br>• **Numeric algorithms and iterators**<br>• Practical applications and usage examples |
| **Week 12** | **Memory Management**<br>• **Smart pointers: unique_ptr, shared_ptr, weak_ptr**<br>• **Memory management strategies and pitfalls**<br>• **Resource Acquisition Is Initialization (RAII)**<br>• Memory leaks and debugging techniques |
| **Week 13** | **Namespaces and Organizing Code**<br>• **Using namespaces for code organization**<br>• **Creating and managing namespaces**<br>• **Namespace conflicts and resolutions** |

| | |
|---|---|
| | • Best practices for code modularization |
| **Week 14** | **Namespaces and Organizing Code**<br>• **Using namespaces for code organization**<br>• **Creating and managing namespaces**<br>• **Namespace conflicts and resolutions**<br>• Best practices for code modularization |
| **Week 15** | Review |
| **Week 16** | Final Exam |

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

| Week | Material Covered |
|---|---|
| **Week 1** | • **Introduction to C++**<br>• **Basic syntax, variables, and data types**<br>• Functions and control structures |
| **Week 2** | • **Classes and Objects**<br>• classes, objects, and methods document analysis |
| **Week 3** | • **Encapsulation and access modifiers (public, private, protected)**<br>• Member functions and data member |
| **Week 4** | • **Introduction to templates and generic programming**<br>• Function templates and class templates |
| **Week 5** | • **Template specialization**<br>• Standard Template Library (STL) containers and algorithms |
| **Week 6** | • **Introduction to exception handling**<br>• try-catch blocks and handling exceptions |
| **Week 7** | • **Introduction to exception handling**<br>• try-catch blocks and handling exceptions |
| **Week 8** | Midterm |
| **Week 9** | •OLID principles: Single Responsibility, Open-Closed, Liskov Substitution, Interface Segregation, Dependency Inversion |
| **Week 10** | Design patterns: overview and examples |
| **Week 11** | •Multithreading and concurrency in C++ |
| **Week 12** | Assignment |
| **Week 13** | • **Applying design principles to real-world scenarios**<br>Code refactoring and improvement |
| **Week 14** | Review |
| **Week 15** | Review |
| **Week 16** | Final Exam |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | "Effective Modern C++: 42 Specific Ways to Improve Your Use of C++11 and C++14" by Scott Meyers.<br>"C++ Primer" by Stanley B. Lippman, Josée Lajoie, and Barbara E. Moo.<br>"Design Patterns: Elements of Reusable Object-Oriented Software" by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides. | No |
| **Recommended Texts** | Online tutorials and documentation specific to advanced C++ programming and libraries. | No |
| **Websites** | https://www.w3schools.com/cpp/cpp_oop.asp | |

**APPENDIX:**

**GRADING SCHEME**

مخطط الدرجات

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

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

Note:

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

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Applied Mathematics** | **Module Delivery** | |
| **Module Type** | **Basic** | ✓ **Theory** | |
| **Module Code** | **CTE203** | ✓ **Lecture** | **Lab** |
| **ECTS Credits** | **4** | ✓ **Tutorial** | **Practical** |
| **SWL (hr/sem)** | **100** | ✓ **Seminar** | |
| **Module Level** | UGx11 2 | **Semester of Delivery** | 1 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Ayhan A. khaleel | **e-mail** | Ay_ahmed@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | M.Sc. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **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 Objectives**<br>أهداف المادة الدراسية | Mathematics is an important tool for understanding modern and scientific technologies, and the modern world today relies heavily on mathematics. Mathematics is also characterized by multiple benefits, including that it is an intellectual tool, a strong communication method, and it is in itself a way of thinking, through which the capabilities of individuals develop, and it helps us in advanced logical thinking. It also Introduce students to mathematics through the laws and issues necessary for the purpose of assisting them in their studies in their field of specialization . |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Learning about the basic Matrix and Determinants<br>• Learning the Gaussian and Gauss-Jordan elimination, rank of a matrix.<br>• Learning the Eigen values and Eigenvectors<br>• Learning the First order differential equations, variable separable, homogeneous, linear first order and exact differential equations<br>• Convergence and the Divergence tests, Alternating series ,Absolute and conditional convergence |

| | |
|---|---|
| | • Power series and Taylor and Maclaurin series |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>**Part A –** Review of matrices and their properties, Complex matrices, Hermitian, skew-Hermitian and unitary matrices, Inverse matrices and elementary row operation, Gaussian and Gauss-Jordan elimination, rank of a matrix.<br>Eigen values and Eigenvectors. [20 hrs]<br>**Part B –** First order differential equations, variable separable, homogeneous, linear first order and exact differential equations. [10 hrs]<br>**Part C –** Convergence and the Divergence tests, Alternating series ,Absolute and conditional convergence, Power series and Taylor and Maclaurin series. [10 hrs]<br>Revision problem classes [7 hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in exercises, while improving and expanding their mathematical reasoning skills. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 58 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 42 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 3 |
| **Total SWL (h/sem)**<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** | 8 | 10% (10) | 5, 10 | LO #1, 2, 10 and 11 |
| | **Assignments** | 13 | 10% (10) | Continuous | All |
| | **Projects / Lab.** | 0 | 0 | | |
| | **Report** | 0 | 0 | | |
| **Summative assessment** | **Midterm Exam** | 2 hr | 20% (20) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 60% (60) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | Review of matrices and their properties |
| **Week 2** | Complex matrices, Hermitian, skew-Hermitian and unitary matrices |
| **Week 3** | Inverse matrices and elementary row operation |
| **Week 4** | Gaussian and Gauss-Jordan elimination. |
| **Week 5** | rank of a matrix |
| **Week 6** | Eigen values and Eigenvectors. |
| **Week 7** | First order differential equations, variable separable, homogeneous |
| **Week 8** | linear first order and exact differential equations |
| **Week 9** | Non-homogeneous second order with constant coefficients |
| **Week 10** | Convergence and the Divergence tests-part1 |
| **Week 11** | Convergence and the Divergence tests-part2 |
| **Week 12** | Alternating series ,Absolute and conditional convergence |
| **Week 13** | Power series |
| **Week 14** | Taylor and Maclaurin series |
| **Week 15** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | **Advance Engineering Mathematics, Alan Jeffrey, 2002** | Yes |
| **Recommended Texts** | **Calculus II &Calculus III, Paul Dawkins, 2007** | No |
| **Websites** | https://tutorial.math.lamar.edu/Classes/CalcIII/CalcIII.aspx<br>https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx | |

**APPENDIX:**

## GRADING SCHEME
مخطط الدرجات

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

Note:

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Data Structure** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>**x Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE204** | | | | |
| **ECTS Credits** | **5** | | | | |
| **SWL (hr/sem)** | **125** | | | | |
| **Module Level** | UGx11 2 | | **Semester of Delivery** | 1 | |
| **Administering Department** | **Department of Computer Techniques Engineering** | | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** | |
| **Module Leader** | Mohand lokman Ahmed | | **e-mail** | mohandaldabag@ntu.edu.iq | |
| **Module Leader's Acad. Title** | Asst.Prof. | | **Module Leader's Qualification** | PhD. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 21/09/2024 | | **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
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

| | |
|---|---|
| **Module Objectives**<br>أهداف المادة الدراسية | • Understanding the basic concepts of Data structures such as arrays, stacks, queues, trees, graphs, and so on. for building blocks of algorithms and programs..<br>• Analyzing the algorithms that are used to manipulate data. By analyzing algorithms, we can determine their efficiency and optimize them to make them faster and more efficient.<br>• Choosing the right data structure is essential for developing efficient programs. The study of data structures helps in choosing the right data structure for a particular problem.<br>• The study of data structures helps in implementing data structures such as linked lists, trees, and graphs. By implementing data structures, we can create efficient programs that can handle large amounts of data. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Understanding the fundamental concepts of data structures.<br>• Analyzing the performance of algorithms<br>• Choosing appropriate data structures.<br>• Implementing data structures.<br>• Designing algorithms.<br>• Applying data structures to real-world problems |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – Introduction to data structures:<br>Overview of data structures, their types, and applications. .[8 hrs]<br>• Part B- Arrays and Linked lists::<br>One-dimensional and multi-dimensional arrays, array operations, and applications. Linked lists: Singly linked lists, doubly linked lists, circular linked lists, and their operations.[12hrs]<br>• Part C -: Stacks and Queues<br>Array-based and linked-list based implementation of stacks and queues, their operations, and applications.. [12 hrs]<br>• Part D - Trees:<br>Binary trees, binary search trees, AVL trees, red-black trees, and their operations. [14 hrs]<br>• Part E – Graphs:<br>Graph representation, graph traversal algorithms, shortest path algorithms, and minimum spanning tree algorithms..[10 hrs]<br>• Revision problem classes [4 hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be used in Data structure courses to introduce the concepts of data structures and explain the theoretical aspects of algorithms that operate on data structures,provide hands-on exercises to help students implement data structures and algorithms using programming languages such as C++, Java, or Python, provide practice problems to help students improve their problem-solving skills and prepare for exams and assess students' understanding of data structures and algorithms through quizzes, exams, programming assignments, and group projects.. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 61 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)** | 64 | **Unstructured SWL (h/w)** | 4 |

| | | | |
|---|---|---|---|
| الحمل الدراسي غير المنتظم للطالب خلال الفصل | | الحمل الدراسي غير المنتظم للطالب أسبوعيا | |
| **Total SWL (h/sem)**<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** | 8 | 10% (10) | 5, 10 | LO #1, 2, 6,7,8,9,10 and 11 |
| | **Assignments** | 8 | 10% (10) | 2, 12 | LO # 3, 4, 6, 7,9,10,12,14 |
| | **Projects / Lab.** | 16 | 10% (10) | Continuous | All |
| | **Report** | 5 | 10% (10) | 2,4,8 ,10and13 | LO#2,4,8,10 and 13 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | General introduction to data structures:<br>Introduce to the Basic types of Data Structures and the common algorithm |
| **Week 2** | Linear data structures:<br>What is linear data structure, characteristics of linear data structure and types of linear data structure |
| **Week 3** | Algorithm Analysis:<br>Algorithm Analysis types and methods,experimental of analysis algorithm |
| **Week 4** | Recursion:<br>Introduction to recursion, some problems that solved by recursion and the difference between recursion and iteration |
| **Week 5** | Back tracking technique:<br>Introduction to back tracking technique ,general method of back tracking technique ,when to use a Backtracking algorithm and How does Backtracking work. |
| **Week 6** | Linked Lists:<br>Introduction linked lists data structures ,comparison between linked lists and array . |
| **Week 7** | Linked Lists:<br>basic operations on linked lists(Insertion, Deletion and traversing). |
| **Week 8** | Types of linked lists:<br>Doubly linked lists,circular linked lists,memory -efficient doubly linked list,unrolled linked lists |
| **Week 9** | Stacks:<br>What is a Stack,how stacks are used and stack applications and implementations. |
| **Week 10** | Queue:<br>What is queue ,how are queues used and queue exceptions and implementations |
| **Week 11** | Tree :<br>What is tree,binary trees and types of binary trees and properties of binary trees. |
| **Week 12** | Tree:<br>Binary tree traverals,generic trees(N-ary trees) and threaded binary tree traversals |
| **Week 13** | Sorting algorith:<br>What is sorting ,why is sorting necessary and classification of sorting algorithms. |
| **Week 14** | Sorting algorith:<br>Classification of sorting algorithm types:bubble sort, selection sort, insertion sort,shell sort,merge sort ,quick sort and tree sort. |
| **Week 15** | Review |
| **Week 16** | Final Exam |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: function declaration and function expression |
| **Week 2** | Lab 2: pointer declaration and initialization. |
| **Week 3** | Lab 3:user defined data structures |
| **Week 4** | Lab 4: Implementation problems using iteration/recursion problems |
| **Week 5** | Lab 5: implementation of back tracking method |
| **Week 6** | Lab 6:how to define a linked list node and programming traversal operation. |
| **Week 7** | Lab 7:programming a linked list insertion operation. |
| **Week 8** | Lab 8: programming a linked list deletion operation. |
| **Week 9** | Lab 9: Implementation of push and pop operation on stack |
| **Week 10** | Lab 10: Programming some application using stack. |
| **Week 11** | Lab11: Programming the queue to store some of data |
| **Week 12** | Lab 12: Programming a storing data as tree structure and implementation of various traversal techniques |
| **Week 13** | Lab 13: Programming a storing data as graph structure and implementation of various traversal technique |
| **Week 14** | Lab 14: Programming a bubble sort, selection sort and insertion sort algorithms |
| **Week 15** | Lab 15: Programming a shell sort,merge sort ,quick sort and tree sort algorithms |
| **Week 16** | Final Exam |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | 1- Data Structures And Algorithms<br>Made Easy<br>by Narasimha Karumanch (Author) | YES |
| **Recommended Texts** | data structure, algorithm and application in c++<br>by Sartaj sahni | No |
| **Websites** | https://opendatastructures.org/ | |

**APPENDIX:**

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

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Measurements & Sensors** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>**Tutorial**<br>**Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE205** | | |
| **ECTS Credits** | **2** | | |
| **SWL (hr/sem)** | **50** | | |
| **Module Level** | UGx11 **2** | **Semester of Delivery** | 1 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Ahmed Waled Kasim | **e-mail** | ahmadwaled1973@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | Ph.D. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 12/09/2024 | **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 Objectives** | • Explain the basic working principle of various electronic measurement instruments used to measure electrical parameters like current, voltage, power etc. |

| | |
|---|---|
| أهداف المادة الدراسية | • Understand and describe the specifications, features, characteristics, error and the performance of an instrument.<br>• Learn about various types AC bridges and their applications in measurements of capacitance, frequency, inductance etc.<br>• Gain knowledge about the functional blocks of a CRO and do analysis, measurements of waveform display.<br>• Explain working of various types of sensors, transducers and their applications. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | • After the completion of course, the students will have ability to:<br>• Learning about the principle of various electronic measurement instruments.<br>• Ability to design the AVO-meter instrument from PMMC.<br>• Learning about the both types of electrical bridges ( DC and AC) bridges.<br>• Learning the main principles of Oscilloscopes instruments.<br>• Learning the main principles of the electrical sensors, transducers and taking some examples about them. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – Measurement & Errors:<br>Definitions, significant figures, some examples, Types of Errors, Statistical Analysis with applications examples [2 hrs].<br>• Part B- Electromechanical Indicting Instruments:<br>The DC Ammeters and DC Voltmeters, Properties of DC Voltmeters and Series type Ohmmeter, Alternating - Current Indicating Instruments, Thermo-instruments(Thermocouple Instrument), Electrodynamometer and their application [6 hrs]<br>• Part C Bridges and their Applications:<br>DC and AC Bridges with some examples [4 hrs]<br>• Part D Oscilloscopes; [2 hrs]<br>• Part E Hall Effect Sensors: Types of Hall Effect Sensors, Some Examples about Hall Effect Sensors [4 hrs]<br>• Part F Signal Generation: [2 hrs]<br>• Part G Analogue and Digital Data Acquisition System: [2 hrs]<br>• Part H Computer – Controlled Test Syste: [2 hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 29 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 2 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 21 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 1 |

| | |
|---|---|
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 50 |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| Formative assessment | Quizzes | 4 | 10% (10) | 5, 8,11,14 | LO #1, 2, 10 and 11 |
| | Assignments | 6 | 10% (10) | 2, 3,4,5,7,10 | LO # 3, 4, 6 and 7 |
| | Projects / Lab. | 15 | 10% (10) | Continuous | All |
| | Report | | | | |
| Summative assessment | Midterm Exam | 2 hr | 20% (20) | 9 | LO # 1-9 |
| | Final Exam | 3 hr | 50% (50) | 16 | All |
| Total assessment | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| Week 1 | Measurement and Errors. |
| Week 2 | Electromechanical Indicting Instruments. |
| Week 3 | Electromechanical Indicting Instruments. |
| Week 4 | Electromechanical Indicting Instruments. |
| Week 5 | Bridges and their Applications. |
| Week 6 | Bridges and their Applications. |
| Week 7 | Oscilloscopes. |
| Week 8 | 1-Theory of Hall Effect, Hall Effect Sensors, Basic Hall Effect Sensors.<br>2-Analogue output Sensors. |
| Week 9 | Mid-Term Exam. |
| Week 10 | 1- Digital output Sensors.<br>2- Some Examples about Hall Effect Sensors. |
| Week 11 | Signal Generation. |
| Week 12 | Analogue and Digital Data Acquisition System. |
| Week 13 | Computer – Controlled Test System. |
| Week 14 | Preparatory Week. |
| Week 15 | Final Exam |

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

| Week | Material Covered |
|---|---|
| Week 1 | Lab1: Measurements of DC current. |
| Week 2 | Lab2: Measurements of DC voltage. |
| Week 3 | Lab 3: Loading effect on Voltmeter. |
| Week 4 | Lab 4: Series type Ohmmeter. |
| Week 5 | Lab 5: AC Voltmeter using half wave rectifier. |
| Week 6 | Lab 6: AC Voltmeter using full wave rectifier. |
| Week 7 | Lab 7: DC Bridges (Wheatstone bridge). |
| Week 8 | Lab 8: Comparison bridges. |
| Week 9 | Lab 9: Maxwell and Hay bridges. |

| | |
|---|---|
| **Week 10** | **Lab 10: Measurements of frequency.** |
| **Week 11** | **Lab 11: Measurements of phase angle using Lissajous method.** |
| **Week 12** | **Lab 12: Calibration of Thermocouple.** |
| **Week 13** | **Lab 13: Photosensitive.** |
| **Week 14** | **Lab 14: Review.** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Electronic Instrumentation and Measurement Techniques by: W. D. Cooper and A. D. Helfrick. 3rd edition. | Yes |
| **Recommended Texts** | Principles of Measurement Systems" by John P. Bentley | No |
| **Websites** | Measurement systems: Application and design 4th Revised edition by Ernest O. Doebelin https://www.amazon.com/Measurement-Systems-Application-Design-Doebelin/dp/0070173389 | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Computer architecture** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE206** | | | | |
| **ECTS Credits** | **6** | | | | |
| **SWL (hr/sem)** | **150** | | | | |
| **Module Level** | 2 | | **Semester of Delivery** | 2 | |
| **Administering Department** | **Department of Computer Techniques Engineering** | | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** | |
| **Module Leader** | Ahmad F. Al-Allaf | | **e-mail** | Ahmed.faleh@atu.edu.iq | |
| **Module Leader's Acad. Title** | Assistant Professor | | **Module Leader's Qualification** | Ph.D. | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 13/ 9/ 2024 | | **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 Objectives**<br>أهداف المادة الدراسية | 9. Microprocessor Interfacing: Students learn about interfacing microprocessors with external devices such as memory, input/output ports, and peripherals..<br>10. Memory Systems: The course cover different memory types used in microprocessor systems, such as main memory, and secondary storage, types of semiconductor memories (ROMs and RAMs).<br>11. Interrupts: Students learn about interrupt handling mechanisms in 8086 microprocessors. This includes understanding interrupt prioritization, interrupt service routines, and designing hardware interrupt circuits. |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | • Explain the principles and characteristics of different memory types used in microprocessor systems, including, main memory, secondary storage.<br>• Design and implement interfaces between a microprocessor (16 and 32 bit) and external devices, such as memory, input/output ports, and peripherals, applying relevant protocols and techniques.<br>• Interfacing different I/O deceives to the 8088 and 8086 microprocessors, such as Keyboard, &-segment displays, and ADC/DAC circuits.<br>• Understand the concepts and mechanisms of interrupts in microprocessors, including interrupt prioritization, and interrupt service routines.<br>• Designing hardware interrupt circuits. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• **Part-A: Basic computer architecture and memory:**<br>Computer organization, Primary and secondary memories, Memory hierarchy, types of ROMs and RAMs, primary memory architecture, Internal structure and operation of ROMs, and RAMs [8hrs.]<br>• **Part-B: Memory Interfacing:**<br>Memory address decoder, Simple address decode, 2-4 and 3-8 address decoders. Use programmable logic devices (PLDs) to decode memory addresses, Interfacing ROM and SRAM to the 8088 microprocessor, Expanding memory in size and words. Interfacing ROM and SRAM to the 8086 microprocessor, Interfacing ROM and SRAM to the 32-bit microprocessor, memory interfacing Design examples [20hrs]<br>• **Part-C: I/O interfacing:**<br>The I/O Instructions, Isolated and Memory-Mapped I/O, Basic Input and Output Interfaces, Interfacing simple devices (LEDs and switches ) to the 8088/8086 microprocessor, Interfacing ADC and DAC to the 8088/8086 microprocessor, Interfacing Keyboard and 7-segment displays to the 8088/8086 microprocessor [20hrs]<br>• **Part -D : Interrupts:**<br>Basic Interrupt Processing, Interrupt Instructions, Interrupt Vector, Hardware Interrupts, Expanding the Interrupt Structure, Using the 74ALS244 to Expand Interrupts, Daisy-Chained Interrupt, Interrupt Examples, Real-Time Clock, Interrupt-Processed Keyboard. [12hrs] |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple |

| | |
|---|---|
| | experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 61 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 89 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 6 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
تقييم المادة الدراسية

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

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | • **Basic computer architecture:**<br>Computer organization, Primary and secondary memories, Memory hierarchy, types of ROMs and RAMs |
| **Week 2** | • **Primary memory architecture:**<br>Internal structure and operation of ROMs, and RAMs |
| **Week 3** | • **Memory address decoder:**<br>Simple address decode, 2-4 and 3-8 address decoders. Use programmable logic devices (PLDs) to decode memory addresses. |
| **Week 4** | • **Memory interfacing:**<br>Interfacing ROM and SRAM to the 8088 microprocessor, Expanding memory in size and words. |
| **Week 5** | **Memory interfacing:**<br>Interfacing ROM and SRAM to the 8086 microprocessor. |
| **Week 6** | • **Memory interfacing:**<br>Interfacing ROM and SRAM to the 32-bit microprocessor. |
| **Week 7** | • **Memory Interfacing:**<br>Memory interfacing Design examples |
| **Week 8** | • **I/O system:**<br>The I/O Instructions, Isolated and Memory-Mapped I/O, Basic Input and Output Interfaces |
| **Week 9** | • **I/O system interfacing:**<br>Interfacing simple devices (LEDs and switches ) to the 8088/8086 microprocessor |
| **Week 10** | • **I/O system interfacing:**<br>Interfacing ADC and DAC to the 8088/8086 microprocessor, |
| **Week 11** | • **I/O system interfacing**<br>Interfacing Keyboard and 7-segment displays to the 8088/8086 microprocessor |
| **Week 12** | • **Interrupts:** |

| | |
|---|---|
| | Basic Interrupt Processing, Interrupt Instructions, Interrupt Vector, Hardware Interrupts. |
| **Week 13** | • **Interrupts:**<br>Expanding the Interrupt Structure, Using the 74ALS244 to Expand Interrupts, Daisy-Chained Interrupt. |
| **Week 14** | • **Interrupts:**<br>Interrupt Examples, Real-Time Clock, Interrupt-Processed Keyboard |
| **Week 15** | • **Final Exam.** |

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

| Week | Material Covered |
|---|---|
| **Week 1** | Lab 1: Introduction to Proteus simulator for digital systems |
| **Week 2** | Lab 2: Introduction to Memory type and organization |
| **Week 3** | Lab 3: Address decoders |
| **Week 4** | Lab 4: SRAM interfacing |
| **Week 5** | Lab 5: ROM interfacing |
| **Week 6** | Lab 6: Expanding ROM and RAM |
| **Week 7** | Lab 7: Interfacing LEDs and switches to the microprocessor |
| **Week 8** | Lab 8: Interfacing Keyboard to the microprocessor |
| **Week 9** | Lab 9: Interfacing 7-segment display to the microprocessor |
| **Week 10** | Lab 10: Interfacing ADC to the microprocessor |
| **Week 11** | Lab 11: Interfacing DAC to the microprocessor |
| **Week 12** | Lab 12: Expanding the Interrupt Structure using the 74ALS244 |
| **Week 13** | Lab 13: Interrupt design example |
| **Week 14** | Lab 14: Review |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | The Intel Microprocessors (8th Edition), BARRY B. BREY, 2009 | No |
| **Recommended Texts** | MICROPROCESSOR 8086 Architecture, Programming and Interfacing, **Sunil Mathur, 2011** | No |
| **Websites** | https://www.coursera.org<br>https://www.edx.org<br>https://ocw.mit.edu | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

| Group | Grade | التقدير | Marks (%) | Definition |
|---|---|---|---|---|
| **Success Group (50 - 100)** | **A** - Excellent | امتياز | 90 - 100 | Outstanding Performance |
| | **B** - Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| | **C** - Good | جيد | 70 - 79 | Sound work with notable errors |
| | **D** - Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |
| | **E** - Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| **Fail Group** | **FX** – Fail | مقبول بقرار | (45-49) | More work required but credit awarded |

| | | | | |
|---|---|---|---|---|
| **(0 – 49)** | **F** – Fail | راسب | (0-44) | Considerable amount of work required |
| | | | | |

Note:

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

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Technology Engineering

# MODULE DESCRIPTOR FORM
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Electronic Circuits** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE207** | | |
| **ECTS Credits** | **6** | | |
| **SWL (hr/sem)** | 125 | | |
| **Module Level** | UGx11 | **Semester of Delivery** | 1 |
| **Administering Department** | **DEPARTMENT OF COMPUTER TECHNIQUES ENGINEERING** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Thabat F. Thabet | **e-mail** | Thabet.tfy@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | PhD. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 10/09/2024 | **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 | • To learn the applications of BJT .<br>• Study the types of BJT amplifiers (Common Emitter, Common Collector, and Common Base).<br>• Study the Frequency response of amplifiers.<br>• Differential and Operational Amplifiers<br>• Negative Feed-back (Inverting and Non-inverting Amplifiers) and other Applications of Operational Amplifiers.<br>• Study the family of Field Effect Transistors (FET). |
| **Module Learning Outcomes**<br><br>مخرجات التعلم للمادة الدراسية | • Learning about the BJT applications.<br>• Learning about the types of BJT amplifiers.<br>• Frequency Response<br>• Learning about Differential and Operational Amplifiers<br>• Study the family of Field Effect Transistors (FET).. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – **BJT Applications**<br>BJT as a Switch (cutoff and saturation). Linear operation and DC load line [8 hrs]<br>• Part B- **BJT Amplifiers.**<br>Common Emitter CE. Common Collector CC. Common Base CB. [12 hrs]<br>• Part C **Frequency Response**<br>The Decibel. Low Frequency Amplifier Response (Effect of the external capacitors). High Frequency Amplifier Response (Effect of the internal capacitors). Total Frequency Response (Bode Plot). [16 hrs]<br>• Part D **Differential and Operational Amplifiers**<br>Differential and Operational Amplifiers. Negative Feed-back (Inverting and Non-inverting Amplifiers). Applications of Operational Amplifiers. [12 hrs]<br>• Part E **Field Effect Transistors (FET).**<br>Junction Field Effect Transistors (JFET). Metal Oxide Semiconductor Field Effect Transistors (MOSFET). [8 hrs]<br>• Revision problem classes [4 hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

## Student Workload (SWL)

| الحمل الدراسي للطالب | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 61 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 4 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 89 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 6 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 150 | | |

## Module Evaluation
## تقييم المادة الدراسية

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

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

| Week | Material Covered |
|---|---|
| **Week 1** | BJT as a Switch (cutoff and saturation). |
| **Week 2** | Linear operation and DC load line. |
| **Week 3** | Common Emitter CE. |
| **Week 4** | Common Collector CC. |
| **Week 5** | Common Base CB. |
| **Week 6** | The Decibel. |
| **Week 7** | Low Frequency Amplifier Response (Effect of the external capacitors) |
| **Week 8** | High Frequency Amplifier Response (Effect of the internal capacitors) |
| **Week 9** | Total Frequency Response (Bode Plot) |
| **Week 10** | Differential and Operational Amplifiers. |
| **Week 11** | Negative Feed-back (Inverting and Non-inverting Amplifiers). |
| **Week 12** | Applications of Operational Amplifiers. |
| **Week 13** | Junction Field Effect Transistors (JFET). |
| **Week 14** | Metal Oxide Semiconductor Field Effect Transistors (MOSFET). |
| **Week 15** | Preparatory Week |
| **Week 16** | Final Exam |

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

| Week | Material Covered |
|---|---|
| **Week 1** | Lab 1: Review of Transistor Biasing (operating point) |
| **Week 2** | Lab 2: BJT as a Switch (cutoff and saturation). |
| **Week 3** | Lab 3: Linear operation and DC load line. |
| **Week 4** | Lab 4: Common Emitter Amplifiers |

| | |
|---|---|
| **Week 5** | Lab 5: Common Collector Amplifiers |
| **Week 6** | Lab 6: Common Base Amplifiers |
| **Week 7** | Lab 7: Frequency response of OPAMP |
| **Week 8** | Lab 8: Inverting and Non-inverting OPAMPs |
| **Week 9** | Lab 9: Analogue Comparator |
| **Week 10** | Lab 10: The Integrator Circuit |
| **Week 11** | Lab 11: The Differentiator Circuit |
| **Week 12** | Lab 12: FET |
| **Week 13** | Lab 13: FET Amplifier |
| **Week 14** | Lab 14: Review |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Thomas L. Floyd, Electronic Devices, 9th Edition, Pearson Education 2012 | Yes |
| **Recommended Texts** | R. BOYLESTAD and L. NASHELSKY, "ELECTRONIC DEVICES AND CIRCUIT THEORY", 11th edition, Pearson Education , 2013 | Yes |
| **Websites** | Digital Systems: From Logic Gates to Processors: https://www.coursera.org/learn/electronics | |

**APPENDIX**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Computer applications** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE209** | | |
| **ECTS Credits** | **4** | | |
| **SWL (hr/sem)** | **100** | | |
| **Module Level** | UGx11 2 | **Semester of Delivery** | 1 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Shaima Miqdad Mohamed Najeeb | **e-mail** | shaimamiqdad76@ntu.edu.iq |
| **Module Leader's Acad. Title** | Lecturer | **Module Leader's Qualification** | M.Sc. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **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 Objectives**<br>أهداف المادة الدراسية | • provide a foundation in programming for engineering problem solving using the MATLAB software package.<br>• develop the skills analyze and break down a program and solve it .<br>• study the creation and use of functions and scripts in MATLAB.<br>• study the use of MATLAB for data analysis and visualization, including plotting functions. |

| | |
|---|---|
| | • Learn the capabilities and applications supported by the MATLAB program, implement them, and use them to solve various problems. |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • Ability to use MATLAB: Students should be able to use the MATLAB software effectively, including navigating the MATLAB desktop, using the command window, and accessing the help system.<br>• Ability to create scripts and functions: Students should be able to create and use MATLAB scripts and functions to solve problems and automate tasks.<br>• Ability to perform data analysis and visualization: Students should be able to use MATLAB's built-in functions and tools for data analysis and visualization<br>• Ability to perform simulations and modeling: Students should be able to use MATLAB for simulations and modeling of systems.<br>• Ability to perform Graphical User Interfaces(GUI) and apply to construct the front end for different application |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – Introduction to MATLAB and Data Structures<br>Overview of MATLAB environment, history, and applications. Basic commands, arrays, matrices, vectors, and cell arrays. scripts, functions and File I/O and Data Manipulation: Importing and exporting data from files, data cleaning, and manipulation.[10 hrs]<br>• Part B- Numeric Data Types and Basic Operations:<br>Numeric data types, arithmetic operations, and mathematical functions.[4 hrs]<br>• Part C - Control Structures:<br>Conditional statements, loops, and logical operators. [10 hrs]<br>• Part D -Plotting and Visualization:<br>Creating plots, customizing plots, and 2D/3D visualization. [6 hrs]<br>• Part E – Simulink and GUI<br>Simulink consept, creating models, and simulation. Graphical User Interfaces(GUI) construct the front end for different applicatio.[10 hrs]<br>• Revision problem classes [3 hrs] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | The main strategy that will be used in MATLAB courses to introduce concepts, explain syntax and functions, and provide examples. Hands-on exercises are an effective learning strategy in MATLAB courses to help students apply what they have learned. Exercises may involve solving problems, writing functions, and working with data. Case studies are a useful teaching strategy in MATLAB courses to help students understand how MATLAB can be used in real-world applications. Overall, the learning and teaching strategies of a MATLAB course should be designed to maximize students' understanding and proficiency in using MATLAB for various applications in engineering, science, and other fields. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 45 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 55 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 4 |
| **Total SWL (h/sem)**<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** | 4 | 10% (10) | 5, 10 | LO #1, 2, 10 and 11 |
| | **Assignments** | 5 | 10% (10) | 2, 12 | LO # 3, 4, 6 and 7 |
| | **Projects / Lab.** | 15 | 10% (10) | Continuous | All |
| | **Report** | 2 | 10% (10) | 13 | LO # 5, 8 and 10 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | General introduction to matlab programming:<br>Introduce to the basics of programming in general and programming MATLAB® in particular.Environment and Settings,Preferences and settings, platform differences, adding hardware and optional features |
| **Week 2** | Programming in MATLAB:<br>Introduction to matrices and vectors , creating a Matlab Matrix, referencing the Elements of a Matrix, deleting a Row or a Column in a Matrix. |
| **Week 3** | **Programming in MATLAB:**<br>Arithmetic ,logical and bitwise operations. |
| **Week 4** | Programming IN MATLAB:<br>Writing MATLAB scripts and functions, a custom-made Matlab functions. |
| **Week 5** | **Programming in MATLAB :**<br>Loops and control flow (for-loops, if-statements) |
| **Week 6** | **Function in MATLAB :**<br>Declare function name, inputs, and outputs(syntax) with examples. |
| **Week 7** | Plotting in matlab:<br>Overview of MATLAB Plotting, Plotting Process graph components,figure tools,selecting plot types |
| **Week 8** | Plotting in matlab:<br>Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits). |
| **Week 9** | Plotting in matlab:<br>Mesh and surface plots, visualizing functions of two variables . |
| **Week 10** | Plotting in matlab:<br>Handle graphics: Work with graphics objects and set object properties. Animations: Create moving graphics |
| **Week 11** | Matlab simulink:<br>Simulink Concepts, simulink environment,basic elements,simulink librarys |
| **Week 12** | Matlab simulink:<br>Block Libraries,modifying the blocks ,interactive model editing,programmatic model editing and running simulation . |
| **Week 13** | MATLAB GUI:<br>Creating Graphical User Interfaces, introduces GUIDE, the MATLAB graphical user interface design environment, Laying out a GUI, |
| **Week 14** | 3D Computer Graphics Operations:<br>Programming a GUI, introduces callbacks to define behavior of the GUI components, Menu-driven programs, Controls: uimenu and uicontrol. |
| **Week 15** | Final Exam. |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: Introduction to MATLAB . |
| **Week 2** | Lab 2: Basic commands |
| **Week 3** | Lab 3: Working with matrices part(I) |
| **Week 4** | Lab 4: Working with matrices part(II) |
| **Week 5** | Lab 5: Relational ,logical bitwise operations |
| **Week 6** | Lab 6: Input and output commands in a script file. |
| **Week 7** | Lab 7: Flow control(if and switch-case) statements |
| **Week 8** | Lab 8: Loop(for,while,break,continue)statements |
| **Week 9** | Lab 9: M-file functions |
| **Week 10** | Lab 10: 2D Plotting functions |
| **Week 11** | Lab 11: 3D Plotting functions |
| **Week 12** | Lab 12: Basics of Matlab simulink |
| **Week 13** | Lab 13:Graphical user interface part(I) |
| **Week 14** | Lab 14: Graphical user interface part(II) |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | 1-MATLAB for Engineering Applications 4th Edition<br>by William Palm Iii (Author) | Yes |
| **Recommended Texts** | Getting Started with MATLAB® Version 7 by Mathwoks | No |
| **Websites** | Digital Systems: From Logic Gates to Processors:<br>https://www.coursera.org/learn/matlab | |

**APPENDIX:**

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

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

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | | | |
|---|---|---|---|---|---|
| **Module Title** | **Communication Fundamentals** | | | **Module Delivery** | |
| **Module Type** | **Core** | | | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>✓ **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE208** | | | | |
| **ECTS Credits** | **7** | | | | |
| **SWL (hr/sem)** | **175** | | | | |
| **Module Level** | UGx11 2 | | **Semester of Delivery** | 2 | |
| **Administering Department** | **Department of Computer Techniques Engineering** | | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** | |
| **Module Leader** | Dr. Emad A. Mohammed | | **e-mail** | e.a.mohammed@ntu.edu.iq | |
| **Module Leader's Acad. Title** | Asst. prof. | | **Module Leader's Qualification** | PhD | |
| **Module Tutor** | None | | **e-mail** | None | |
| **Peer Reviewer Name** | None | | **e-mail** | None | |
| **Review Committee Approval** | 21/09/2024 | | **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 Objectives**<br>أهداف المادة الدراسية | • To learn the fundamentals of communications system architecture.<br>• To learn the basic components used in communication system and each component basic functions.<br>• To learn the types of channels that are used in communication system.<br>• To learn the basic techniques used in signal representation, modulation and demodulation.<br>• To learn the basics of transmission lines, their use and their equivalent circuits |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | • To learn how to deal with different types of signals.<br>• To learn how to utilize linear and nonlinear systems.<br>• To learn how to design different types of filters.<br>• To learn the basics of finding the spectrum of different types of signals.<br>• To be familiar with various types of modulation.<br>• To be familiar with how to use smith chart for transmission lines. |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• Part A – Signals and Systems<br>Signals and system definition, periodic signals, non-periodic signal, deterministic and non-deterministic signals Linear systems and nonlinear systems, filters, [8 hrs]<br>• Part B- Fourier Series and Transform<br>Fourier series, signal harmonics, Fourier transform, Frequency domain, exponential and trigonometric Fourier transform, Properties of Fourier Transform, application of Fourier transform [12 hrs]<br>• Part C -Signals Transmission<br>Baseband signal transmission, line coding, polar code, bipolar code, Manchester code, Analogue modulation Techniques, AM, FM, PM, Pulse modulation techniques, PAM, PPM, PWM [12 hrs]<br>• PartD- Digital Modulation and Digital Channels.<br>Digital modulation Techniques ASK, PSK, FSK, Multilevel modulation, QAM, Wireless channels, Shannon equation, channel capacity [12 hrs]<br>• PartE-Transmission lines.<br>Transmission lines and their equivalent circuits, TL characteristics, Incident wave, reflected wave, Smith Chart, matching techniques [10 hrs}<br>• Revision problem classes [6 hrs] |

| Learning and Teaching Strategies<br>استراتيجيات التعلم والتعليم | |
|---|---|
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. |

| | |
|---|---|

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 74 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 101 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 7 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 175 | | |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | 8 | 10% (10) | 4,6,10,12 | LO #1, 2, 10 and 11 |
| | **Assignments** | 8 | 10% (10) | 2, 5,8,11 | LO # 3, 4, 6 and 7 |
| | **Projects / Lab.** | 15 | 10% (10) | Continuous | All |
| | **Report** | 8 | 10% (10) | 1,3,9,13 | LO # 5, 8 and 10 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| | **Final Exam** | 3 hr | 50% (50) | 15 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | Signals and system definition, periodic signals, non-periodic signal, deterministic and non-deterministic signals |
| **Week 2** | Linear systems and nonlinear systems, filters |
| **Week 3** | Fourier series, signal harmonics |
| **Week 4** | Fourier transform, Frequency domain, exponential and trigonometric Fourier transform |
| **Week 5** | Properties of Fourier Transform, application of Fourier transform |
| **Week 6** | Baseband signal transmission, line coding, polar code, bipolar code, Manchester code |
| **Week 7** | Analogue modulation Techniques, AM, FM, PM |
| **Week 8** | Pulse modulation techniques, PAM, PPM, PWM |
| **Week 9** | Digital modulation Techniques ASK, PSK, FSK |
| **Week 10** | Multilevel modulation, QAM |
| **Week 11** | Wireless channels, Shannon equation, channel capacity |
| **Week 12** | Transmission lines and their equivalent circuits, TL characteristics |
| **Week 13** | Incident wave, reflected wave |
| **Week 14** | Smith Chart, matching techniques |
| **Week 15** | Final Exam. |

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

| Week | Material Covered |
|---|---|
| **Week 1** | Lab 1: Signals properties |
| **Week 2** | Lab 2: Linear systems and nonlinear systems, filters |
| **Week 3** | Lab 3: Harmonics determination |
| **Week 4** | Lab 4: Fourier transform, Spectrum analysis |

| | |
|---|---|
| **Week 5** | Lab 5: Fourier transform properties |
| **Week 6** | Lab 6: Types of Baseband signals |
| **Week 7** | Lab 7: Amplitude and phase modulation |
| **Week 8** | Lab 8: Frequency modulation |
| **Week 9** | Lab 9: PPM, PAM, PWM |
| **Week 10** | Lab 10: ASK |
| **Week 11** | Lab 11: FSK |
| **Week 12** | Lab 12: PSK |
| **Week 13** | Lab 13: QAM |
| **Week 14** | Lab 14: Review |

## Learning and Teaching Resources
مصادر التعلم والتدريس

| | Text | Available in the Library? |
|---|---|---|
| **Required Texts** | Ferrel Stremler " Introduction to Communication Systems" Addison Wesley Longman, 3rd Edition 1992 | Yes |
| **Recommended Texts** | B.P. Lathi "Modern Digital and Analog Communication Systems" Oxford University Press, 4th Edition, 2010 | No |
| **Websites** | Communication Skills Courses & Tutorials Online https://www.udemy.com | |

**APPENDIX:**

**GRADING SCHEME**
مخطط الدرجات

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

Note:

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering

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

# Module Descriptor Form
# نموذج وصف المادة الدراسية

## Module Information
معلومات المادة الدراسية

| | | | |
|---|---|---|---|
| **Module Title** | **Website Design** | **Module Delivery** | |
| **Module Type** | **Core** | ✓ **Theory**<br>✓ **Lecture**<br>✓ **Lab**<br>**x** **Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE210** | | |
| **ECTS Credits** | **3** | | |
| **SWL (hr/sem)** | 75 | | |
| **Module Level** | UGx11 2 | **Semester of Delivery** | 2 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence /Mosul** |
| **Module Leader** | Nawar Ali Ibrahim Al_Obaidy | **e-mail** | Nawar.ali@ntu.edu.iq |
| **Module Leader's Acad. Title** | Assist Lecturer | **Module Leader's Qualification** | PhD. |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **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 Objectives**<br>أهداف المادة الدراسية | The objectives of a course on Website Design:<br>Upon successful completion of the Diploma, students should be able to:<br>1. Developing front-end website architecture<br>2. Designing user interactions on web pages<br>3. Developing back-end website applications<br>4. Creating servers and databases for functionality<br>5. Developing adaptive content for multiple devices (cell phones, tablets, etc.) ensure cross-platform optimization for mobile phones<br>6. Ensure responsiveness of applications<br>7. Working alongside graphic designers for web design features<br>8. Managing a project from conception to finished product<br>9. Designing and developing Application Programming Interfaces (APIs)<br>10. Meeting both technical and consumer needs for a web development project<br>11. Learning to research new methods of development in web applications and programming languages<br>12. Preparing mock-ups and storyboards for a web development project.<br>13. Consult with clients to develop and document website requirements.<br>14. Demonstrating communication skills, service management skills, and presentation skills.<br>15. Completing job preparation tasks including writing resumes and cover letters, conducting job interviews, and developing an ePortfolio |
| **Module Learning Outcomes**<br>مخرجات التعلم للمادة الدراسية | Upon successful completion of the **Certificate**, graduates should be able to:<br>• Use their learned skills, knowledge, and abilities to develop websites for the internet<br>• Apply basic design principles to present ideas, information, products, and services on websites<br>• Apply fundamental programming principles to the construction of websites<br>• Effectively manage website projects using available resources<br>• Demonstrate communication skills, service management skills, and presentation skills<br>• Complete job preparation tasks including writing resumes and cover letters, conducting job interviews, and developing an ePortfolio<br>• Apply employability skills including fundamental skills, personal management skills, and teamwork skills |
| **Indicative Contents**<br>المحتويات الإرشادية | Indicative content includes the following:<br>• **Part A** – Introduction to Website Building: Provide a historical review of web design and the stages it went through in the process of development. Learning the basics of web design and development [4 hrs.]<br>• **Part B-** The Website and Its Future: Explaining how website design can provide students with great opportunities in many jobs. In addition to increasing the demand for web designers in the future because companies are in constant need of competencies in the field of web work to provide them with all means of technical support for websites because the website is the first interface for companies and institutions. [2 hrs.]<br>• **Part C** -: The Language of the Web: HTML5: present the design of a web page by referring to the HTML5 semantic tags and using some CSS3 style properties. learning a simple structure of a web page with its associated style sheet. [8 hrs.]<br>• **Part D** - Structuring the content of a web page: It covers the following concepts:<br>○ Structuring an HTML page (head/body/header/nav/main/article/aside/footer); |

| | |
|---|---|
| | ○ Importing elements (font/icons/style sheet/conditional import);<br>○ Organizing the elements of an HTML page (container/header/menu/sidebar/footer);<br>○ Adding style properties to these elements. [6 hrs.]<br>• **Part E** – Style Sheets: CSS3: CSS – Cascading Style Sheets – is commonly used to format HTML-type web pages using display properties (colors, fonts, borders, etc.) and positioning properties (height, width, top-down, side-by-side, etc.). The display result of a web page can be completely changed without adding additional code to the web page. [6 hrs.]<br>• **Part F** – Design and Creation a Website: The purpose is:<br>○ Avoid repeating the same formatting code in each web page;<br>○ Employ common styles, using clear names (e.g. employing the same shaded style for images or text);<br>○ Modify the appearance of an entire website by changing only one single file (the style sheet). [4 hrs.]<br>• – understand the code of the web page. [4 hrs.] |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | Following planned steps to teach students the basic skills that they must learn (in the correct order) as follow:<br>**Getting Started**: Fundamentals of Web Design and Development<br>**Learn Essential Skills**: Design and programming concepts that all new web designers should learn.<br>**Using the Best Resources**: A complete list of the best resources for learning web design.<br>**Gain Experience**: How to gain hands-on web design experience and build your portfolio.<br>**Choosing a Career Path**: Decide if freelancing or working at home is right for them.<br>**Finding a job**: How to find their first web design job and start their career. |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 43 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 3 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 32 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 2 |
| **Total SWL (h/sem)**<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** | 3 | 10% (10) | 4, 6, 8, 10, 12, 14 | LO # 2, 3, 8, 9, 10 and 11 |
| | **Assignments** | 4 | 10% (10) | 2, 5, 8, 12 | LO # 1-2, 4-5, 7, 11 |
| | **Projects / Lab.** | 16 | 10% (10) | Continuous | All |
| | **Report** | 6 | 10% (10) | 3, 6-8,10-12 | LO#2,4and10 |
| **Summative assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-6 |
| | **Final Exam** | 3 hr | 50% (50) | 15 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

| Delivery Plan (Weekly Syllabus)<br>المنهاج الاسبوعي النظري | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | Background and Phases of Evolution of the Web. |
| **Week 2** | Web application architecture. |
| **Week 3** | Choosing a Domain Name and Hosting |
| **Week 4** | Installing WordPress and Account Setup |
| **Week 5** | WordPress Admin Dashboard and the Features |
| **Week 6** | Structure of an HTML5 document. |
| **Week 7** | CSS3 Overview. |
| **Week 8** | Process of creating a website. |
| **Week 9** | Different website types and ergonomics the website |
| **Week 10** | New Theme Installation |
| **Week 11** | Header and Landing Page Top Design |
| **Week 12** | How to Insert Logo, Site Title, and Setup Search Box on a Website |
| **Week 13** | Explanation of Post Screen Option and its Use |
| **Week 14** | Footer Design of a Website and Adding Social Media Link |
| **Week 15** | Final Exam |

| Delivery Plan (Weekly Lab. Syllabus)<br>المنهاج الاسبوعي للمختبر | |
|---|---|
| **Week** | **Material Covered** |
| **Week 1** | Lab 1: Step-by-Step Guide to Registering Domain Name. |
| **Week 2** | Lab 2: Structure of an HTML5 web page. |
| **Week 3** | Lab 3: How to Design the Menu Items. |
| **Week 4** | Lab 4: Simple Forms and Table Formatting. |
| **Week 5** | Lab 5: How to Add Search on the Website. |
| **Week 6** | Lab 6: How to Change Website Title and Description |
| **Week 7** | Lab 7: Steps in Adding Gallery to a Website using Gallery Widget Option. |
| **Week 8** | Lab 8: How to Place Slider on the Website. |
| **Week 9** | Lab 9: How to Publish with Post Tool. |
| **Week 10** | Lab 10: How to insert Page Break (Block) in a Post. |
| **Week 11** | Lab 11: How to Hyperlink in a Post. |
| **Week 12** | Lab 12: Inserting Image/Photo in the Post or Pages. |
| **Week 13** | Lab 13: Creating a template model. |
| **Week 14** | Lab 14: Creating a website from A to Z. |
| **Week 15** | Final Exam |

| Learning and Teaching Resources<br>مصادر التعلم والتدريس | | |
|---|---|---|
| | **Text** | **Available in the Library?** |
| **Required Texts** | Website Design and Development with HTML5 and CSS3. Authers: Hassen Ben Rebah, Hafedh Boukthir, and Antoine Chédebois | No |
| **Recommended Texts** | How to Build and Design a Website using wordpress, William S. Page, 2020 | No |

| Websites | |
|---|---|

**APPENDIX:**

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

Ministry of Higher Education and Scientific Research - Iraq
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Department of Computer Techniques Engineering

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

# Module Descriptor Form
# نموذج وصف المادة الدراسية

| Module Information<br>معلومات المادة الدراسية | | | |
|---|---|---|---|
| **Module Title** | **Summer Training 1** | **Module Delivery** | |
| **Module Type** | **Suplement** | **Theory**<br>**Lecture**<br>✓ **Lab**<br>**Tutorial**<br>✓ **Practical**<br>✓ **Seminar** | |
| **Module Code** | **CTE211** | | |
| **ECTS Credits** | **2** | | |
| **SWL (hr./sem)** | **50** | | |
| **Module Level** | UGx11 2 | **Semester of Delivery** | 2 |
| **Administering Department** | **Department of Computer Techniques Engineering** | **College** | **Northern Technical University - Engineering Technical College for Computer and Artificial Intelligence** |

| | | | |
|---|---|---|---|
| | | | /Mosul |
| **Module Leader** | All Academic staff | **e-mail** | |
| **Module Leader's Acad. Title** | | **Module Leader's Qualification** | |
| **Module Tutor** | None | **e-mail** | None |
| **Peer Reviewer Name** | None | **e-mail** | None |
| **Review Committee Approval** | 21/09/2024 | **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 Objectives** أهداف المادة الدراسية | **1- القدرة على ربط المعرفة المكتسبة من الطالب خلال دراسته الأكاديمية بالمشاكل الحقيقة على ارض الواقع**<br>**2- اكتشاف بيئة العمل واحتياجاتها وقيودها**<br>**3- القدرة على تحديد المتطلبات المطلوبة لإيجاد حلول مناسبة وفعالة للمشاكل الحقيقية على ارض الواقع مع وجود قيود فنية مختلفة**<br>**4- القدرة على تكوين رؤية واضحة حول الاهداف والمعوقات والعمل بشكل فعال**<br>**5- ايجاد الطالب استقلاليته باكتسابه لمهارات جديدة مع اشراف بسيط من قبل جهة التدريب .**<br>**6- القدرة على ايجاد حلول مناسبة في حال حدوث اي تغيير في متطلبات العمل وقيوده**<br>**7- القدرة على التواصل مع الكثير من الاشخاص المتواجدين في المجال العملي .**<br>**8- تعلم المسؤوليات الاخلاقية والاحترافية.** |
| **Module Learning Outcomes** مخرجات التعلم للمادة الدراسية | • Understanding of Computer Architecture: Gain knowledge of the components and operation of computer systems, including processors, memory, input/output devices, and the organization of data.<br>• Programming Skills: Develop proficiency in programming languages commonly used in computer engineering, such as C, C++, Java, or Python. Learn to write efficient and well-structured code.<br>• Problem-Solving and Algorithm Design: Learn techniques for problem-solving and algorithm development. Understand various algorithmic approaches and their efficiency. Develop skills to analyze and optimize algorithms. |
| **Indicative Contents** المحتويات الإرشادية | Indicative content includes the following:<br>• Part 1– [ 7 hrs] : تعريف الطالب على اقسام وشعب الموقع التدريبي<br>• Part 2- [ 7 hrs] : التعرف على اجزاء القرص الصلب<br>• Part 3- [7 hrs]: التعرف الاعطال الشائعة في الاقراص الصلبة<br>• Part 4- [8 hrs] : انواع الطابعات الالكترونية والاعطال التي تواجه هذه الطابعات |

## Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| | |
|---|---|
| **Strategies** | ان الإستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة:<br>• تشجيع طلبة هندسة الحاسوب على المشاركة بشكل مهني مع الأوساط العملية من خلال الممارسة الميدانية في دوائر الدولة .<br>• إيجاد حلول مبتكرة ريادية لسد الاحتياجات المحلية.<br>• بناء قيادة مهنية وأخلاقية وتعاونية في مكان العمل وفي المجتمع. |

| | |
|---|---|
| | • تطوير معرفتهم وخبراتهم |

## Student Workload (SWL)
الحمل الدراسي للطالب

| | | | |
|---|---|---|---|
| **Structured SWL (h/sem)**<br>الحمل الدراسي المنتظم للطالب خلال الفصل | 20 | **Structured SWL (h/w)**<br>الحمل الدراسي المنتظم للطالب أسبوعيا | 5 |
| **Unstructured SWL (h/sem)**<br>الحمل الدراسي غير المنتظم للطالب خلال الفصل | 30 | **Unstructured SWL (h/w)**<br>الحمل الدراسي غير المنتظم للطالب أسبوعيا | 7.5 |
| **Total SWL (h/sem)**<br>الحمل الدراسي الكلي للطالب خلال الفصل | 50 | | |

## Module Evaluation
تقييم المادة الدراسية

| As | | Time/Number | Weight (Marks) | Week Due | Relevant Learning Outcome |
|---|---|---|---|---|---|
| **Formative assessment** | **Quizzes** | | | | |
| | **Assignments** | 8 | 15% (10) | 1, 2,3,4 | LO # 1, 2, 3 and 4 |
| | **Projects / Lab.** | 4 | 20% (10) | Continuous | All |
| | **Report** | 2 | 15% (10) | 2,4 | LO # 2 and 4 |
| **Summative assessment** | **Midterm Exam** | | | | |
| | **Final Exam** | 1 hr | 50% (50) | 5 | All |
| **Total assessment** | | | 100% (100 Marks) | | |

## Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

| Week | Material Covered |
|---|---|
| **Week 1** | - **تعريف الطالب على اقسام وشعب الموقع التدريبي مع اعطاء نبذة مختصرة عن اجزاء الحاسبة وكيفية عملها وامكانية صيانة بعض اجزائها.** |
| **Week 2** | - **التعرف على اجزاء القرص الصلب وكيفية تقسيمه وطريقة خزن البيانات ومقارنته مع قرص SSDو2M والطرق المستخدمة لتصفير القرص (FAT32، FAT16،NTFS )** |
| **Week 3** | - **التعرف الاعطال الشائعة في الاقراص الصلبة وكيفية معالجتها والبرامج المستخدمة في عملية اصلاح الاقراص الصلبة واسترجاع المعلومات المحذوفة او المفقودة بعد عملية الإصلاح** |
| **Week 4** | - **اعطاء نبذة مختصرة عن انواع الطابعات الالكترونية والاعطال التي تواجه هذه الطابعات وكيفية معالجتها.**<br>- **التعرف على طبيعة الاجهزة المسيطر عليها حاسوبياً وكيفية عملها في حال توفرها في الموقع التدريبي** |
| **Week 5** | **Final Exam** |

## Learning and Teaching Resources
مصادر التعلم والتدريس

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

**APPENDIX:**

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

Note:

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