



## نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة الفرات الأوسط التقنية  
الكلية/المعهد: الكلية التقنية الهندسية النجف  
القسم العلمي: قسم هندسة تقنيات الطيران  
اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة تقنيات الطيران  
اسم الشهادة النهائية: بكالوريوس في هندسة تقنيات الطيران  
النظام الدراسي: سنوي - للعام الدراسي 2025/2024  
تاريخ اعداد الوصف: 2024/2/4  
تاريخ ملء الملف: 2025/2/5

  
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مصادقة السيد العميد

  
التاريخ  
التوقيع



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

# دليل وصف البرنامج الأكاديمي والمقرر

2024-2025

## 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 للسّمات الرئيسة للبرنامج ومقرراته مبيّناً المهارات التي يتم العمل على اكسابها للطلبة مبنية على وفق أهداف البرنامج الأكاديمي وتتجلى أهمية هذا الوصف لكونه يمثل الحجر الأساس في الحصول على الاعتماد البرامجي ويشارك في كتابته الملاكات 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 م 2906/3 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 الأكاديمية والمقررات الدراسية لضمان حسن سير العملية التعليمية.

## مفاهيم ومصطلحات:

**وصف البرنامج الأكاديمي:** يوفر وصف البرنامج الأكاديمي إيجازاً 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 مبرهنأ 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.

**أهداف 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 (فصلي، سنوي، 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 أهداف البرنامج.

**استراتيجيات التعلم 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.



### 1. رؤية البرنامج : تتمثل رؤية قسم هندسة الطيران بان يصبح القسم:

- الرائد في التعليم الهندسي التقني في حقل التخصص
- معترف به دوليا
- كيان تعليمي ابحاثه ذات قوة

### 2. رسالة البرنامج:

- خدمة طلابنا من خلال تعليمهم حل المشاكل، ومهارات القيادة والعمل الجماعي، وقيمة نوعية الالتزام والسلوك الأخلاقي، واحترام الآخرين.
- تقديم خريجين مهندسين تقنيين بجودة عالية في حقل هندسة الطيران.
- تقديم تكنولوجيا ابداعية لمنفعة المجتمع محليا وعالميا.
- تقديم بحوث عصرية في مجال تكنولوجيا الطيران.
- التعاون مع الهيئات المدنية والعسكرية لتسويق مهارات حقل التخصص.
- تقديم المشورة للحصول على رخصة الطيران المدنية ورخصة تدريب الخدمة الجوية من وكالة سلامة الطيران الاوربية والرخص الخاصة بالاسناد الارضي ..... الخ

### 3. اهداف البرنامج

نظرا للتقدم العلمي والتكنولوجي السريع في مجال تكنولوجيا الطائرات يعمل قسم هندسة تقنيات الطيران من أجل تحقيق أهداف استراتيجية واضحة تساعد على تحقيق مكانة بارزة داخل المجتمعات الأكاديمية وهي تتضح في التالي:

1. المحافظة على جودة المناهج الدراسية وتحسينها من خلال:
  - ادخال المواد الدراسية المحدثة علميا ودوليا في دراسة تخصص تكنولوجيا الطائرات ومواكبة للتطور العلمي السريع من خلال الاتصال المباشر مع صناع القرار لهندسة الطائرات في كافة انحاء العالم والاتصال المباشر بالكليات والمعاهد المتخصصة بتكنولوجيا الطائرات.
  - التقييم والتطوير المستمر للمناهج الدراسية.
  - ربط مشاريع الطلاب والأبحاث باحتياجات المجتمع.
  - توسيع مفاهيم الطلاب بالزيارات الميدانية للمطارات الداخلية والحلقات الدراسية والتدريب في مدارج المطارات و ورش الصيانة.
2. تحديث وفتح المختبرات من خلال تزويد ها بأحدث الاجهزة والمعدات التقنية بحقل الاختصاص

وإدارتها بالفنيين المهرة.

3. توفير البيئة الجامعية الافضل للهيئة التدريسية.

4. المحافظة على التطور الفني لأعضاء هيئة التدريس من خلال:

- تشجيع المشاركة الفعالة في المؤتمرات والاجتماعات الفنية و خاصة مع ادارات المطارات العراقية والدولية وشركات التدريب العالمية.
  - المراجعة المستمرة والتقييم لنشاطاتهم.
  - تشجيع مبادرات و انجازات هيئة التدريس.
5. الانتاج المعرفي من خلال:

- القيام بالأبحاث النظرية والتطبيقية المتميزة.
  - تشجيع النشر العلمي وتحفيز العمل الجماعي للمجموعات البحثية من التخصصات المختلفة.
  - السعي لزيادة مصادر التمويل البحثي من خلال النشر في المجلات الهندسية العالمية.
6. المبادرات الخاصة بتقليص الروتين الاداري وتسهيل اجراءات العمل من خلال الارشاد التربوي و تطوير العلاقة بين الطلبة والتدريسين.
7. تفعيل وتقوية الروابط مع الجهات الحكومية العامة والقطاع الخاص من خلال:
- تنظيم المؤتمرات, الندوات والدورات التعليمية.
  - تشجيع العمل الاستشاري وتوفير الخدمات على المستوى المهني في كافة الاختصاصات الهندسية

#### 4. الاعتماد البرامجي

تم تقديم طلب الاعتماد البرامجي لتقرير التقييم الذاتي لقسم هندسة تقنيات الطيران للعام الدراسي 2021/ 2022 الى رئاسة جامعة الفرات الأوسط التقنية

#### 5. المؤثرات الخارجية الأخرى

- الخطوط الجوية العراقية
- وزارة الدفاع العراقية
- هيئة الطيران المدني العراقية
- شركات صيانة الطائرات العراقية والدولية
- المطارات المحلية والدولية



6. هيكلية البرنامج				
هيكل البرنامج	عدد المقررات	وحدة دراسية	النسبة المئوية من الوحدات	ملاحظات *
متطلبات المؤسسة	5	12	6.2%	
متطلبات الكلية	11	48	25.2 %	
متطلبات القسم	24	130	68.4%	
التدريب الصيفي	-	-	-	
أخرى				

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

7. وصف البرنامج				
السنة / المستوى	رمز المقرر أو المساق	اسم المقرر أو المساق	الساعات المعتمدة	
			نظري	عملي
الأولى	CREQ 141	Electrical Engineering	2	1
	CREQ 142	Eng. Drawing & Descriptive	1	3
	UREQ 161	Human Right & Democracy	2	
	MATH 151	Mathematics I	3	
	ARE112	Mechanics I	3	
	ARE111	Properties of Materials	2	
	ARE121	Thermodynamic I	2	2
	CREQ 143	Programming I	1	2
	CREQ 144	Work shop		6
	UREQ 162	English language I	1	
السنة / المستوى	رمز المقرر أو المساق	اسم المقرر أو المساق	الساعات المعتمدة	
			نظري	عملي
الثانية	ARE 223	Fluid Mechanics	2	2
	ARE 215	Manufacturing Processes	2	1
	MATH 252	Mathematics II	3	
	CREQ 246	Mechanical Drawing	1	3
	ARE 213	Mechanics II	3	
	ARE 214	Strength of Material	2	2
	ARE 231	Theory of flight	2	

2	2	Thermodynamic II	ARE 222	
2	1	Programming II	CREQ 245	
	1	English language II	UREQ 262	
الساعات المعتمدة		اسم المقرر أو المساق	رمز المقرر أو المساق	السنة / المستوى
عملي	نظري			الثالثة
2	2	Aerodynamics	ARE 324	
2	2	Aircraft Elec. and instrument	ARE 332	
3	2	Mech. Eng. Design I	ARE 316	
	2	Eng. & Num. Analysis	CREQ 347	
2	2	Heat Transfer	ARE 325	
	2	Industrial Engineering	CREQ 348	
2	2	Theory of Machines	ARE 317	
2	2	Aircraft Engines	ARE 333	
1	2	Gas dynamic	ARE 326	
	1	English language III	UREQ 362	
الساعات المعتمدة		اسم المقرر أو المساق	رمز المقرر أو المساق	السنة / المستوى
عملي	نظري			الرابعة
1	3	Aircraft Design	ARE 436	
1	2	Aircraft Engines & Jet Propulsion	ARE 435	
1	2	Aircraft Stability & Control	ARE 438	
1	2	Aircraft Structures	ARE 434	
2	2	Aircraft Sys. & Maintenance	ARE 439	
3		Computer Aided Engineering	ARE 449	
1	2	Automatic Control	ARE 418	
2	2	Aircraft Vibration	ARE 437	
4		Final project	CREQ 4410	
	1	English language IV	UREQ 462	

8. مخرجات التعلم المتوقعة للبرنامج	
أ- المعرفة والفهم	
1 أ	القدرة على تطبيق المعرفة في الرياضيات والعلوم والهندسة.
2 أ	فهم المسؤوليات المهنية والأخلاقية لحقل التخصص.
3 أ	القدرة على تقييم مخرجات المادة الدراسية مع الهيئة التدريسية والممارسين الصناعيين والمهنيين، فضلاً عن أرباب العمل والطلبة الخريجين لتحسينها.
4 أ	تعليم مهارات القيادة وقيمة نوعية الالتزام والسلوك الأخلاقي واحترام الآخرين
ب- المهارات الخاصة بالموضوع	
1 ب	القدرة على العمل والاندماج في فرق متعددة الاختصاصات
2 ب	القدرة على تصميم وإجراء التجارب وكذلك تحليل وتفسير البيانات.



3 ب	القدرة على استخدام التقنيات الحديثة والمهارات والأدوات الهندسية لممارسة الهندسة.
4 ب	القدرة على تحديد وصياغة المشاكل الهندسية في حقل التخصص
<b>ج - مهارات التفكير</b>	
1 ج	القدرة على التواصل بشكل فعال مع المعنيين بحقل التخصص في الجانبين المدني والصكري
2 ج	الاعتراف بالحاجة والقدرة على الانخراط في التعلم مدى الحياة.
3 ج	معرفة القضايا المعاصرة بحقل التخصص
4 ج	التعلم الواسع الضروري لفهم تأثير الحلول الهندسية على الصعيد العالمي والمشاكل الاقتصادية والبيئية والاجتماعية
<b>د - المهارات العامة والمنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي)</b>	
1 د	القدرة على الإدارة والعمل على معدات الاسناد الأرضية والجوية للطائرات
2 د	القدرة على التصميم الميكانيكي باستخدام أحدث برامج التصميم والمحاكاة ثلاثية الأبعاد وهي عملية لتلبية الاحتياجات المطلوبة ضمن حقل التخصص في اطار واقعي تفرض به القيود البيئية والاقتصادية والاجتماعية والسياسية والصحية.....
3 د	القدرة على العمل باحدث اجهزة تشخيص الاعطال الميكانيكية والكهربائية والالكترونية لمنظومات الطائرة.
4 د	القدرة على التكيف مع الاختصاصات المتشابهة (هندسة الاتصالات , هندسة التبريد والتكييف , الهندسة الميكانيكية, الطاقات المتجددة)..... ,

<b>9. استراتيجيات التعليم والتعلم</b>
المحاضرة الحضورية و الالكترونية, الورشة , المختبر , التدريس المنهجي , التدريب الصيفي

<b>10. طرائق التقييم</b>
الاختبارات الشفهية , الاختبارات التحريرية , الامتحانات الفصلية , الامتحانات النهائية , التقييم اليومي, الواجبات البيئية, التقارير, السيمينرات, برامج المحاكاة

<b>11. الهيئة التدريسية</b>					
<b>أعضاء هيئة التدريس</b>					
الرتبة العلمية	التخصص	المتطلبات/المهارات الخاصة (ان وجدت )		اعداد الهيئة التدريسية	
		عام	خاص	ملاك	محاضر
استاذ	نووي	حراريات		2	
أستاذ مساعد	ميكانيك	تطبيقي		2	
أستاذ مساعد	ميكانيك	ايروداينمك		1	

أستاذ مساعد	ميكانيك	احتراق داخلي		1	
مدرس	ميكانيك	تطبيقي		3	
مدرس	ميكانيك	حراريات		2	
مدرس	مواد	مواد		2	
مدرس	تصنيع	تصنيع		1	
مدرس	رياضيات	رياضيات		1	
مدرس	لغة انكليزية	لغة انكليزية		1	

### التطوير المهني

#### توجيه أعضاء هيئة التدريس الجدد

من مهام قسم هندسة تقنيات الطيران إقامة برامج تدريبية للمنتسبين الجدد وبشكل دوري وفترات مناسبة تتناسب مع استراتيجيات التدريس في قسم هندسة تقنيات الطيران مع الأنواع المختلفة من نواتج التعلم التي تهدف لتطوير البرنامج التعليمي ويكون الكادر التدريسي في القسم ملزم باستراتيجيات التدريس والتقييم المنصوص عليها صراحة في توصيفات المقررات والبرامج مع وجود المرونة الكافية لمواجهة احتياجات الفئات المختلفة وحسب الفروقات الفردية بينهم.

#### التطوير المهني لأعضاء هيئة التدريس

من الأمور التي تؤخذ في الاعتبار عند تصنيف منظومة التعليم الفعالة هي وضع جودة التدريس في مكانة مهمة مع اكساب الدارسين للمعرفة إضافة الى القيم والمهارات التي هم بحاجة إليها خلال مراحل تعلمهم المختلفة طوال حياتهم. ويعتبر وضع خارطة أهداف التعليم والتعلم في استراتيجية واضحة من المسلمات في تصنيف منظومة التعليم الفعالة، وقد تتعلق هذه الاهداف بتحسين جودة التدريس، ووضع آليات لإدارة شؤون التدريس ودعمه الكامل وتطوير أدائه والحفاظ على هذا المستوى مدى عمره المهني. تنظم معظم خطط التعليم استراتيجيات تشجع فعليا كلا من الجودة والتعليم، على سبيل المثال تطوير المناهج التعليمية وتطوير وتعليم المدرس، وزيادة نسبة المدرسين لمتماشى مع زيادة اعداد الطلاب وتحسين ظروف الفصول الدراسية وزيادة الاعتمادات المالية المخصصة لذلك.



## 12. معيار القبول

خريجوا الفرع العلمي للدراسة الإعدادية فقط حيث لا يوجد فرع مناظر في الإعداديات المهنية يناظر تخصص الطيران

## 13. أهم مصادر المعلومات عن البرنامج

- الجامعة التكنولوجية في بغداد
- وزارة النقل العراقية
- هيئة الاعتماد الأكاديمي الأمريكية ABET
- الوكالة الأوروبية لسلامة النقل EASA
- الجمعية الأمريكية للمهندسين الميكانيكيين ASME
- المنظمة الدولية للطيران المدني ICAO
- سلطة الطيران المدني العراقي ICAA

## 14. خطة تطوير البرنامج

### 1- الالتزام المؤسسي بالتحسين المستمر لجودة المخرجات:

قسم هندسة تقنيات الطيران يلتزم وبصورة مستمرة في المنظمة التعليمية بقوة مشاركة العاملين بالمنظمة التعليمية في عمليات ضمان الجودة وتزود شعبة ضمان الجودة في المنظمة التعليمية بالموارد اللازمة، كما تقدم المساعدة لها حيثما يحتاج الأمر الى ذلك. كما تشارك كل هيئة التدريس والموظفين في عمليات التحسين المستمر واعداد التقارير عنها- كل في مجال عمله- للوصول الى هدف التحسين المستمر للمخرجات.

### 2- استخدام المؤشرات والنقاط المقارنة المرجعية

قسم هندسة تقنيات الطيران دائما يقارن منجزاته مع السنة السابقة من الخطط التي تم وضعها خلال السنة الدراسية حيث تعمل على اضافة الدورات والورش والندوات والبحوث والمشاريع الطلابية على خطتها العلمية بحيث تواكب سوق العمل والتطور التقني.

### 3- التحقق المستقل من المعايير

قسم هندسة تقنيات الطيران يعمل على التحقق من نتائج عمليات التقييم الذاتي لجودة الاداء، وذلك بفحص الأدلة والبراهين الخاصة بها، بما في ذلك التغذية الراجعة من خلال الاستبانات واءاء اصحاب الشأن والمستفيدين مثل الطلبة ، التدريسيين ، الخريجين، وارباب الاعمال ( سوق العمل) ضمن عمليات التحسين المستمر.

#### 4- نطاق عمليات التحسين المستمر :

تتوحد نطاق عمليات التحسين المستمر لجودة الاداء من خلال مشاركة العميد ورئيس القسم للعملية التعليمية داخل المنظمة. يتم القيام بعمليات تحسين اداء المنظمة التعليمية سنويا وبشكل منتظم, كما يتم اعداد تقارير خاصة (تقييم المنتسبين من التدريسين والفنيين ) بعمليات التقييم تقدم صورة شاملة عن أداء المنظمة التعليمية بصفة عامة, حيث ان القسم مسؤولاً عن اعطاء رايه في تقييم منتسبيها حيث يتناول جزء من المدخلات, والعمليات والنواتج ( المخرجات ). مع التركيز على جودة النواتج ومن ثم يتم استحصاا رأي وموافقة المسؤول المباشر ومن ثم موافقة الأعلى (عميد الكلية)



مخرجات التعلم المطلوبة من البرنامج																			
المهارات العامة والمنقولة				مهارات التفكير				المهارات الخاصة بالموضوع				المعرفة و الفهم				اسم المقرر	رمز المقرر	السنة / المستوى	
د 4	د 3	د 2	د 1	ج 4	ج 3	ج 2	ج 1	ب 4	ب 3	ب 2	ب 1	ا 4	ا 3	ا 2	ا 1	اختياري	اساسي أم		
						0				0	0				0	اساسي	Electrical Engineering	CREQ 141	المرحلة الاولى
	0					0			0						0	اساسي	Eng. Drawing& Descriptive	CREQ 142	
											0			0		اساسي	Human Right & Democracy	UREQ 161	
		0		0							0				0	اساسي	Mathematics I	MATH 151	
			0			0					0				0	اساسي	Mechanics I	ARE112	المرحلة الاولى
	0	0				0					0				0	اساسي	Properties of Materials	ARE111	
0							0				0				0	اساسي	Thermodynamic I	ARE121	
			0				0				0				0	اساسي	Programming I	CREQ 143	
						0					0			0		اساسي	Work shop	CREQ 144	المرحلة الاولى
		0				0					0				0	اساسي	English language I	UREQ 162	
		0				0				0					0	اساسي	Fluid Mechanics	ARE 223	
	0						0				0				0	اساسي	Manufacturing Processes	ARE 215	
		0				0				0					0	اساسي	Mathematics II	MATH 252	المرحلة الثانية
	0					0			0						0	اساسي	Mechanical Drawing	CREQ 246	
		0				0					0				0	اساسي	Mechanics II	ARE 213	
		0			0						0				0	اساسي	Strength of Material	ARE 214	
0											0		0			اساسي	Theory of flight	ARE 231	المرحلة الثانية
							0				0				0	اساسي	Thermodynamic II	ARE 222	
		0				0									0	اساسي	Programming II	CREQ 245	
		0				0					0				0	اساسي	English language II	UREQ 262	







Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: **Assistant prof**  
Academic qualification: DECTORA  
Work location: Aeronautical technology engineering

## Course Description Form 2021/2022

1- Course Name	Human Right and Democracy
2- Course Code	UREQ161
3- Semester / Year	2021/2022
4- Description Preparation Date:	15/5/2022
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	30 hours-15 week / 4 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Muaed Baqer Alaraaje

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies



<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√



## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	2	Knowledge and understanding	√	تعريف الحق وعناصره مفهوم الشخصية القانونية	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	2	Knowledge and understanding	√	مميزات الشخصية الانسانية نشأت مصطلح حقوق الانسان	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	6	Knowledge and understanding	√	الحق بالحياة ، الحق بالكرامة وسلامة الشخصية الحقوق الشخصية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	2	Knowledge and understanding	√	الحق بالاقامة والتنقل ، الحق بالخصوصية الحق بالتكامل الجسدي ، الحق بالجنسية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	2	Knowledge and understanding	√	حماية من التجارب الطبية الحقوق الفكرية	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	2	Knowledge and understanding	√	حرية الرأي ، حرية المعتقد حرية التعليم ، حرية الصحافة	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	2	Knowledge and understanding	√	حرية الاجتماع والتظاهر ، حرية تكوين الاحزاب والجماعات السياسية الحقوق السياسية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	2	Knowledge and understanding	√	حق الانتخاب والترشيح ، حق التوظيف الحق بالمساواة ومظاهره	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	2	Knowledge and understanding	√	الحقوق الاقتصادية الحقوق الاجتماعية	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	2	Knowledge and understanding	√	الضمانات الدستورية لحماية حقوق الانسان الحق بالرعاية الصحية	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	2	Knowledge and understanding	√	الضمانات الدستورية لحماية حقوق الانسان مبدأ الدستور المدون	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	2	Knowledge and understanding	√	مبدأ الفصل بين السلطات مبدأ سيادة القانون	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	2	Knowledge and understanding	√	الضمانات القانونية لحماية حقوق الانسان مبدأ لا جريمة ولا عقوبة الا بنص ، شخصية العقوبة	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	2	Knowledge and understanding	√	مفهوم الديمقراطية صور الديمقراطية	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	6	Knowledge and understanding	√	حقوق الطلاب وواجباتهم في تعليمات انضباط الطلبة العقوبات الانضباطية في تعليمات انضباط الطلبة	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Work of the year/activities and absences	Report	Midterm Exam	/	Final/ exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
	Required textbooks (methodology, if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: lecturer  
Academic qualification: Dectora  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	Computer principals
2- Course Code	ATU13012
3- Semester / Year	2023/2024
4- Description Preparation Date:	2024/4/5
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	75 hours-15 week / 3 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Ali yass alameri



<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√





## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	3	Knowledge and understanding	√	Introduction to programming using (Matlab) - Introduction to (Matlab) - Menu bar , tool bar, and program windows	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	3	Knowledge and understanding	√	<b>Format &amp; numbers</b> - Real, Integer , Inf ,NaN, Complex numbers	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	3	Knowledge and understanding	√	<b>Variables</b> - Variable Names	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	3	Knowledge and understanding	√	<b>Variables</b> - Examples on variable names - Show the results	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	3	Knowledge and understanding	√	- Examples on (+ , - , * , /) - Outputs Intermediate results during calculations	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	3	Knowledge and understanding	√	<b>Built-in-functions</b> - Trigonometri c Functions (sin , cos , tan , sec) Elementary Functions (abs, log10 , log, exp, sqrt)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	3	Knowledge and understanding	√	<b>Functions</b> - polyarea (X,Y) - polygon - Standard Deviation	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	3	Knowledge and understanding	√	<b>Functions</b> - abs function - (max) - (min) (mean)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	3	Knowledge and understanding	√	<b>Logical commands</b> - Logical Operations > greater than >= greater than or equal < less than <= less than or equal = = equal = ~ not equal - Logical commands or (!), and (&)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	3	Knowledge and understanding	√	<b>Strings manipulation</b> - Creating Strings save	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	3	Knowledge and understanding	√	<b>Conditional commands</b> - if end If else - Examples Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	3	Knowledge and understanding	√	<b>Conditional commands</b> - if end if else - Examples Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	3	Knowledge and understanding	√	<b>loops</b> - for - while - Program control - Example Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	3	Knowledge and understanding	√	<b>loops</b> - for - while - Program control - Example Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	3	Knowledge and understanding	√	<b>Matrices</b> - Matrices manipulation	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
	20		20	10	10	40

14. Learning and teaching resources	
Computer principle	Required textbooks (methodology, if any)
Computer principle	Main references (sources)
Computer principle	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Assistance lecturer  
Academic qualification: Master  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	CAD DRAWING
2- Course Code	ATU13016
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/7
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	93 hours-15 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	RAND KAREEM

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies



<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√



## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	6	Knowledge and understanding	√	CAD theories.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	6	Knowledge and understanding	√	CAD theories, Introduction to modeling system in SOLIDWORKS.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	6	Knowledge and understanding	√	Introduction to modeling system in SOLIDWORKS	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	6	Knowledge and understanding	√	Introduction to modeling system in SOLIDWORKS, 2D Modifies commands in SOLIDWORKS.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	6	Knowledge and understanding	√	2D Modifies commands in SOLIDWORKS, Main-Features commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	6	Knowledge and understanding	√	Main-Features commands	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	6	Knowledge and understanding	√	Main-Features commands, Mid-Term Exam.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	6	Knowledge and understanding	√	Modify-Features commands, Surfaces commands	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	3	Knowledge and understanding	√	Surfaces commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	6	Knowledge and understanding	√	Surfaces commands, Modify-Surfaces commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	6	Knowledge and understanding	√	Assembly commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	6	Knowledge and understanding	√	Assembly commands, Drawing sheet commands.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	6	Knowledge and understanding	√	Feet and clearance commands	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	6	Knowledge and understanding	√	Modeling of Bearing, Cams, and Gears.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	6	Knowledge and understanding	√	Modeling of Belts, Bolts, and Welding.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Work of the year/activities and absences	Report	Midterm Exam	/	Final/ exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
Purdue Univ, Prof Sham Tickoo. Solidworks 2016: A Tutorial Approach. United States: CADCIM Technologies, 2016.	Required textbooks (methodology, if any)
Radhakrishnan, P., Subramanyan, S. and Raju, V., 2008. CAD/CAM/CIM. New Age International. Bethune, James D. Engineering Design and Graphics with SolidWorks 2016. United States: Pearson, 2016.	Main references (sources)
Radhakrishnan, P., Subramanyan, S. and Raju, V., 2008. CAD/CAM/CIM. New Age International. Bethune, James D. Engineering Design and Graphics with SolidWorks 2016. United States: Pearson, 2016	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: assistance lecturer  
Academic qualification: master  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	Eng. Drawing & Descriptive
2- Course Code	CREQ 142
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/10
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	120hours-30 week / 4 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Ass. Lect. Rand Kareem

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

<h2>9. Teaching and Learning Strategies</h2>
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<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√





## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	4	Knowledge and understanding	√	<b>Introduction to engineering drawing and eng. drawing equipment</b> - Introduction to engineering drawing and its importance to the engineer - History of eng. drawing - The standard drawing equipment	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	4	Knowledge and understanding	√	<b>Lettering</b> - The lettering and circles kind - The paper type and design with title table - Draw eng. Lines type and circles	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	4	Knowledge and understanding	√	<b>Applied geometry</b> - Applied geometry in eng. Drawing - Draw important eng. geometry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	4	Knowledge and understanding	√	Exercise in engineering geometry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	4	Knowledge and understanding	√	Exercise in engineering geometry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	4	Knowledge and understanding	√	<b>Pictorial drawing (Real model in true dimension)</b> - Draw cube shape with ovals by used four center method. - Non standard letters	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	4	Knowledge and understanding	√	Exercise in pictorial drawing	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	4	Knowledge and understanding	√	Exercise in pictorial drawing	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	4	Knowledge and understanding	√	<b>Orthographic projection</b> - Projection theory with definition standard planes (Horizontal and Vertical) - Exercise in projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	4	Knowledge and understanding	√	<b>First angle projection</b> - Three projection definition (front, top and side view) - Draw in first angle - Exercise in projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	4	Knowledge and understanding	√	<b>Dimensions</b> - Main rules in dimensions position and details in drawing - Exercise in applied dimension on projection view	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	4	Knowledge and understanding	√	Rules in dimension position for arcs and circles - Exercise in applied dimension on projection view	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	4	Knowledge and understanding	√	<b>Orthographic</b> - Exercise in projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	4	Knowledge and understanding	√	- Exercise in projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	4	Knowledge and understanding	√	<b>Sections</b> - Sections definition - Find sections and section planes and half section projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√
16	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
20	4	Knowledge and understanding	√	Exercise in sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21	4	Knowledge and understanding	√	<b>Third view estimate</b> - Important steps to estimate third unknown projection depending on the known two projection - Estimate real model	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
22	4	Knowledge and understanding	√	<b>Third view estimate</b> - Important steps to estimate third unknown projection depending on the known two projection - Estimate real model	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
25	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
30	4	Knowledge and understanding	√	Exercise in estimate third unknown projection	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√

[illegible]

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
10	10	10	10	10	10	40

14. Learning and teaching resources	
Purdue Univ, Prof Sham Tickoo. Solidworks 2016: A Tutorial Approach. United States: CADCIM Technologies, 2016.	Required textbooks (methodology, if any)
Radhakrishnan, P., Subramanyan, S. and Raju, V., 2008. CAD/CAM/CIM. New Age International. Bethune, James D. Engineering Design and Graphics with SolidWorks 2016. United States: Pearson, 2016.	Main references (sources)
Radhakrishnan, P., Subramanyan, S. and Raju, V., 2008. CAD/CAM/CIM. New Age International. Bethune, James D. Engineering Design and Graphics with SolidWorks 2016. United States: Pearson, 2016	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites





Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Assist lecturer  
Academic qualification: master  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	General Arabic language
2- Course Code	ATU13017
3- Semester / Year	2024/2023
4- Description Preparation Date:	14/5/2024
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	78 hours-15week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Aseel Abbas Wadi

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√



## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	5	Knowledge and understanding	√	Parsing marks	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	5	Knowledge and understanding	√	Nominal sentence (subject and pred	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	5	Knowledge and understanding	√	Actual sentenc	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	5	Knowledge and understanding	√	The hamza and the rules for writing it	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	5	Knowledge and understanding	√	Dhaad and Dhaa	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	5	Knowledge and understanding	√	punctuation marks	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	5	Knowledge and understanding	√	Number and numerical adjective First Lesson	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	5	Knowledge and understanding	√	Number and adjective lesson two	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	5	Knowledge and understanding	√	A text from the Holy Qur'an, a collective text from ancient poetry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	5	Knowledge and understanding	√	Text of modern poetry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	5	Knowledge and understanding	√	A prose text from Nahj al-Balagha's sermons	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	5	Knowledge and understanding	√	Method of detection in the collection of Arabic dictionaries	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	5	Knowledge and understanding	√	Literary article	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	5	Knowledge and understanding	√	How to read a book (Lesson 1)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

[illegible]

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Projects	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
Comprehensive general grammar	Required textbooks (methodology, if any)
Savior of Arabic grammar	Main references (sources)
Explanation of Ibn Aqeel on Al-Fiyah Ibn Malik	Recommended supporting books and references (scientific journals, reports....)
<a href="https://www.noor-book.com/tag/%D9%83%D8%AA%D8%A7%D8%A8-%D9%85">https://www.noor-book.com/tag/%D9%83%D8%AA%D8%A7%D8%A8-%D9%85</a>	Electronic references, Internet sites





Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Asst. Lect.  
Academic qualification: Master degree  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	English
2- Course Code	ATU13011
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/7
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	15 hours-15 week / 2 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Asst. Lect.Hussam aldeen Nidhal Hadi

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√



## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	1	Knowledge and understanding	√	Able to identify linking Ideas: Present and Past Irregular Plurals, Consonants, There was/were	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	1	Knowledge and understanding	√	Identify countable and Uncountable Nouns, Imperatives Healthy Living and	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	1	Knowledge and understanding	√	Able to identify can for ability Could and Couldn't Skills at work	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	1	Knowledge and understanding	√	Able to identify can for requests Adjectives and Adverbs	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	1	Knowledge and understanding	√	Reading comprehensive-Beginners level	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	1	Knowledge and understanding	√	Sentences and their parts (simple, compound and complex) for beginner's level.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	1	Knowledge and understanding	√	Mid-term Exam	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	1	Knowledge and understanding	√	Paraphrasing-1, writing in your own words. Beginners level	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	1	Knowledge and understanding	√	Paraphrasing-2, writing in your own words. Beginners level (Practice)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	1	Knowledge and understanding	√	Effective writing, how to write in an effective way. Beginners level.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	1	Knowledge and understanding	√	Demonstrates knowledge about Offering and Inviting Why.? Would you like to...? Let's...? Free time activities	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	1	Knowledge and understanding	√	Able to identify (Be going to weak forms (Hedging in writing): Maybe/perhaps....etc)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	1	Knowledge and understanding	√	Demonstrates knowledge about Transport, Prepositions of movement Address Demonstrates knowledge about (Writing Activities)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	1	Knowledge and understanding	√	Demonstrates knowledge about Transport, Prepositions of movement Address Demonstrates knowledge about (Writing Activities)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	1	Knowledge and understanding	√	Writing short essay	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
10	10	10	10	10	10	40

14. Learning and teaching resources	
Headway plus	Required textbooks (methodology, if any)
	Main references (sources)
Skills in writing and Learning English	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Professor  
Academic qualification: Doctorate  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name:	Principles of Electrical Circuits
2- Course Code:	ATU13025
3- Semester / Year	2024/2023
4- Description Preparation Date:	4/4/2024
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	6 per week- 90 totally hours / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. Husam Noman MohammedAli e-mail: <a href="mailto:coj.husm@atu.edu.iq">coj.husm@atu.edu.iq</a>



## 8. Expected learning outcomes of the program

### Knowledge and understanding

1. Train the student on the ideal methods of dismantling and assembling electrical circuits and networks.
2. Teach the student the basic principles and basic components in electrical circuits.
3. Introduce the student to important terms used in simple and complex electrical circuits and networks.
4. Training students on the various mechanisms and mechanisms used in the methods of measuring the values of the electrical elements that make up different circuits and measuring the quantities of current and voltages entering and leaving simple and complex circuits.

## 9. Teaching and Learning Strategies

### Strategies

- Classical education method.
- E-learning and distance education.
- Brainstorming and student engagement.
- Sudden rapid tests.
- Scheduled tests.
- Monthly and bi-monthly reports.
- Lectures given by students in class

### 10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).

Week	No: of hour peer week	Required Learning Outcomes	Unit or subject name	Learning Method	Evaluation method
One	6	Training the student to know the different types of electrical elements	Definition of the curriculum and definition of electrical elements	Classical teaching method	Brainstorming
Two	6	Training students and teaching them to decipher their colors and symbols	Definition of the values of the measured electrical quantities and the mechanisms for this.	Classic and explanatory captions using the YouTube platform	Q/A
Three	6	Teaching students the simple mathematical foundations of the mechanisms of connecting and dismantling simple electrical circuits	Simple electrical circuits.	Classic and explanatory captions using the YouTube platform	Q/A and homework

Four	6	Teaching students to dismantle rather complex circles	Electrical Networks	Classic and method of direct instruction on the board with the student.	Q/A and homework
Five	6	Teaching students to measure currents passing through electrical elements, applied voltages and main voltages	Electrical Networks	Classic and method of direct instruction on the board with the student.	Q/A and homework
Six	6	Teaching students to measure the electrical potential and the potential difference on the edges of the different electrical elements	Electrical Networks	Explanation on the classic whiteboard and the use of the YouTube platform	Homework and the student prepared a report for the previous.
Seven	6	Teaching students on methods of measuring work, energy, dissipated energy and the resulting gain.	Dissipated electrical energy and the occurred gain.	Explanation on the classic whiteboard and the use of the YouTube platform	Daily preparation
Eight	6	Mid course exam	-	-	-
Nine	6	Training students on methods of measuring electrical power	Electrical power	Explanation on the board with solving examples in front of the student and choosing a group of students to solve examples in front of their classmates	Daily preparation and brainstorming
Ten	6	Teaching students the main laws and mechanisms used in the distribution of current and voltages on the arms and points of networks.	Main laws	Explanation on the board with solving examples in front of the student and choosing a group of students to solve examples in front of their classmates	Daily preparation and brainstorming
Eleven	6	Teaching students the basic concepts in the methods of extracting voltages and total currents entering and leaving the circuit.	Main laws	Explanation on the board with solving examples in front of the student and choosing a	Daily preparation and brainstorming

				group of students to solve examples in front of their classmates	
Twelve	6	Solve a set of sparse exercises	Theoretical application for the previous materials.	Explanation on the board with solving examples in front of the student and choosing a group of students to solve examples in front of their classmates	Homework and reports
Thirteen	6	Method of derivation of main laws in the electrical circuits and networks.	Theoretical application for the previous materials.	Explanation on the board or using the smart board or display screens	Examples prepared by students.
Fourteen	6	Sudden and rapid oral test.	-	-	-
Fifteen	6	Comprehensive review of the material.	-	-	-

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports, and the work of a research paper.	
12. References of teaching and learning processes:	
Required textbooks (methodology, if any)	<ul style="list-style-type: none"> <li>Engineering Circuits Analysis; by: William H. Hyte</li> <li>Text book: Electrical Technology; A.K. Theraja</li> </ul>
Main references (sources)	<ul style="list-style-type: none"> <li>Engineering Circuits Analysis; by: William H. Hyte</li> <li>Text book: Electrical Technology; A.K. Theraja</li> </ul>
Supporting books and references recommended by (scientific journals, reports ...)	Fundamentals of Electric Circuits; 6 <sup>th</sup> edition, Matthew Sadiku
Electronic References, Websites	



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Professor  
Academic qualification: Doctorate  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	Fundamentals of Thermodynamics
2- Course Code	ATU13015
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/20
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	78hours-15 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Lect. Basil nouri abd mirzah

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√





## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	5	Knowledge and understanding	√	<b>Introduction</b> -Introduction to Thermodynamics -Thermodynamics System Dimensions, Units & symbols , units system	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	5	Knowledge and understanding	√	<b>Properties of System</b> Thermodynamic - Process Intensive & - extensive Variables Specific Value, - Mole Independent & dependent properties	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	5	Knowledge and understanding	√	<b>Thermal Equilibrium, Temperature</b> Thermal & - thermodynamic equilibrium Zero Law - Thermometers - Temperature Scale	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	5	Knowledge and understanding	√	<b>Energy</b> Types and source of - energy Kinetic & potential - energy The conservation of energy, use	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	5	Knowledge and understanding	√	<b>Kinetic Theory of Gases</b> Molecular - Motion of Gases Internal Energy, - joule's law Molecular Energy	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	5	Knowledge and understanding	√	<b>Heat</b> Specific Heat - □ Relation between - ( $q, Q, Q$ ) Sensible & Latent - Heat Joule's Equivalent	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	5	Knowledge and understanding	√	<b>Work Displacement Work -</b> Work & (p-v) - Diagram State & Path - Function Electrical Work - Relation Between (Q, W)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	5	Knowledge and understanding	√	<b>Ideal (Perfect) Gas</b> Actual & Ideal Gas - Boyle's & Charles Law Equation of Ideal - Gas Absolute Scale	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	5	Knowledge and understanding	√	<b>Enthalpy</b> Enthalpy - Joule's Experiment	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	5	Knowledge and understanding	√	<b>The First Law of Thermodynamic</b> Joule's Law - of Internal Energy The First Law - Statements Energy Equation	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	5	Knowledge and understanding	√	<b>Application of the First Law on the Closed Systems</b> Constant - Volume Process Constant - Pressure Process Constant Temperature Process Adiabatic - Process Polytrophic Process	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	5	Knowledge and understanding	√	<b>Open systems</b> Motion of Fluid - Steady & none - Steady Flow Flow, Shaft Work - Energy Equation+	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	5	Knowledge and understanding	√	<b>Application of steady flow Energy Eq.</b> Boiler & Condenser - Compressor & Turbine Nozzle & throttling - Heat Exchanger	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	5	Knowledge and understanding	√	<b>The Second Law of Thermodynamics</b> Friction - Reversible & Irreversible Process	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	5	Knowledge and understanding	√	Heat Engine - Reversed - Heat Engine - Thermal Efficiency Coefficient of Performance	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√



13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
10	10	10	10	10	20	30

14. Learning and teaching resources	
"Thermodynamics: An Engineering Approach" by Yunus A.	Required textbooks (methodology, if any)
"Fundamentals of Engineering Thermodynamics" by Michael J. Moran,	Main references (sources)
Thermodynamics: An Engineering Approach" by Yunus A.	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



**Ministry of Higher Education and Scientific Research**  
**Scientific Supervision and Scientific Evaluation**  
**Apparatus**  
**Directorate of Quality Assurance and Academic**  
**Accreditation**  
**Accreditation Department**



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: lecturer  
Academic qualification: Doctorate  
Work location: Aeronautical technology engineering

**Course Description Form 2023/2024**

1- Course Name	Engineering Materials
2- Course Code	ATU13022
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/2
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	30 hours-15 weeks / 4 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. Adwaa Mohammed Abdulmajeed

8- Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	
thinking skills		

C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

### 9- Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).

a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√

k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
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11- Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
	G1	Organizing conferences, seminars and educational courses	√

G- Activating and strengthening ties with public government agencies and the private sector	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√
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## 13- Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	2	Knowledge and understanding	√	<b>Introduction</b> <b>-Introduction to ores, elements and materials</b> <b>-Iron ores</b> <b>-Periodic table of elements</b> <b>-Engineering materials.</b> <b>-Classification of engineering materials</b>	The direct method is through lectures.	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant		Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
2	2	Knowledge and understanding	√	<b>Crystal structure</b> <b>- Atomic arrangement</b> <b>- BCC</b> <b>- FCC and HCP structures</b> <b>- Atomic packing factor.</b>	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	

		employability and personal development)								
3	2	Knowledge and understanding	√	Imperfections in crystals - Point defects - Dislocations and grain boundaries - Solidification of metals and alloys	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
4	2	Knowledge and understanding	√	- Structure of ingots chilled - Columnar and central equi-axed grains - Dendritic segregation.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	



		employability and personal development)								
5	2	Knowledge and understanding	√	<b>Thermal equilibrium diagrams</b> - Solubility in the solid state - Phases - Solid solutions, compounds and mechanical mixtures.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
6	2	Knowledge and understanding	√	Lever rule - Eutectic, Eutectoid and Peritectic reactions. Applications on binary phase diagrams -Components completely soluble, completely insoluble or partially soluble in the solid state.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	

		employability and personal development)								
7	2	Knowledge and understanding	√	<b>Mechanical properties of metals</b> - Specifications and standards - Normal stress and shear stress - Strain - Tensile and compression tests - Stress-strain diagram.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
8	2	Knowledge and understanding	√	<b>Application on mechanical testing and properties</b> - Determination of Young's modulus - Yield stress - Proof stress - Ultimate tensile strength - Fracture stress, ductility - Hardness and impact toughness	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	

		employability and personal development)								
9	2	Knowledge and understanding	√	<ul style="list-style-type: none"> <li>- Iron and Steel</li> <li>- Fe-Fe<sub>3</sub>C phase diagram</li> <li>- Allotropy</li> <li>- Microstructure of carbon steels</li> <li>- Effect of carbon content on microstructure &amp; mechanical properties of carbon steel.</li> <li>- Heat treatment of steel</li> <li>- Non-equilibrium cooling</li> <li>- TTT diagrams</li> <li>- Annealing, normalizing, hardening and tempering of steel.</li> </ul>	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
10	2	Knowledge and understanding	√	<ul style="list-style-type: none"> <li>Carbon steel</li> <li>- Types, Properties and uses of carbon steel</li> <li>- Low, medium, and high carbon steel</li> <li>- Tool carbon steel.</li> <li>Cast Iron</li> <li>- Types, properties and uses of cast iron</li> <li>- White, grey, nodular and malleable cast iron</li> </ul>	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
11	2	Knowledge and understanding	√	Non- destructive inspection - Liquid penetrant - Magnetic particle -X-rays - Ultrasonic.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
12	2	Knowledge and understanding	√	Nano materials - Characterization of nano particles and nano structures - Classification -Applications of nano materials in technology and medicine.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
13	2	Knowledge and understanding	√	Plastics - Introduction to plastics technology - Microstructure and polymerization - Structure of plastics materials. - Classification, properties and uses of plastics	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
14	2	Knowledge and understanding	√	Ceramics and glass - Structure, defects, properties and uses of ceramics. - Structure, properties and uses of glasses.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	
15	2	Knowledge and understanding	√	Composite Materials - Classification: metal matrix, ceramic matrix and polymer matrix composites - Reinforcing phase: fibers, flakes, and particles. - Composites structure and volume fraction - Properties and uses of composites.	The direct method is through lectures.	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization.	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups		Projects and observation		external assessmeters	√

13- Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Projects	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14- Learning and teaching resources	
E I G H T H E D I T I O N Materials Science and Engineering An Introduction [William D. Callister, Jr. and David G. Rethwisch]	Required textbooks (methodology, if any)
E I G H T H E D I T I O N Materials Science and Engineering An Introduction [William D. Callister, Jr. and David G. Rethwisch]	Main references (sources)
Essentials of Materials Science and Engineering Second Edition, SI	Recommended supporting books and references (scientific journals, reports....)
<a href="https://youtube.com/@WkhalifaMr">https://youtube.com/@WkhalifaMr</a>	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Assist lecturer  
Academic qualification: master  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	Math
2- Course Code	ATU13013
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/2
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	78 hours-15week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Mariam ameen aliwi



<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√



## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	5	Knowledge and understanding	√	Determinants and solution of linear equation by Gramer's rule	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	5	Knowledge and understanding	√	Trigonometric functions and some applications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	5	Knowledge and understanding	√	Vectors, scalar and vector product and projections, mechanical applications to vectors	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	5	Knowledge and understanding	√	Limit and continuity, and some applications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	5	Knowledge and understanding	√	Derivative theory, derivatives of algebraic and implicit functions	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	5	Knowledge and understanding	√	Chain rule, mechanical applications on the derivative	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	5	Knowledge and understanding	√	The inverse function and its derivative	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	5	Knowledge and understanding	√	Derivative of logarithmic and hyperbolic functions	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	5	Knowledge and understanding	√	Integration, definite and indefinite integral, integration of trigonometric and logarithmic functions	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	5	Knowledge and understanding	√	Retail integration	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	5	Knowledge and understanding	√	Integration by division of fractions	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	5	Knowledge and understanding	√	Integration by trigonometric function method	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	5	Knowledge and understanding	√	Integration by completing the square	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	5	Knowledge and understanding	√	Simplified differential equations	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

[illegible]

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Projects	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
	Required textbooks (methodology, if any)
Calculus, R. Mohammed and A. Abdulaali, 2002	Main references (sources)
Calculus, Frank Iris Advanced calculus, Murray R. Spiegel, 1962	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Assist lecturer  
Academic qualification: master  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	Math
2- Course Code	ATU13021
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/2
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	78 hours-15week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Mariam ameen aliwi

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√



A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√



## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	5	Knowledge and understanding	√	<b>Ordinary Linear Differential Equations</b> - 1 <sup>st</sup> order differential equations - Separable - Homogeneous.	The direct method is through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	5	Knowledge and understanding	√	- Exact - Linear - Bernoulli	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	5	Knowledge and understanding	√	2 <sup>nd</sup> Order Differential Equations - Reducible to 1 <sup>st</sup> order - Homogeneous	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	5	Knowledge and understanding	√	- Non-Homogeneous	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	5	Knowledge and understanding	√	- Higher Order Differential Equations - Homogeneous - Non-Homogeneous - Applications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	5	Knowledge and understanding	√	<b>Partial Differentiation</b> - Definition - Mechanism of Differentiation - Functions of Two Variables - Functions of Higher Variables	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	5	Knowledge and understanding	√	- Transformation - Chain Rule - Total Differential	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	5	Knowledge and understanding	√	-Gradient, Divergence, and Curl of Vector - Equation of Normal Line and Tangent Plane	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	5	Knowledge and understanding	√	- Directional Derivative - Maxima, Minima and Saddle Points - Lagrange Theorem	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	5	Knowledge and understanding	√	Sketching of Geometric Shapes - Double Integrals - Triple Integrals - Application	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	5	Knowledge and understanding	√	<b>special Function</b> - Gama Function - Beta Function	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	5	Knowledge and understanding	√	<b>Polar Coordinates</b> - Polar Curve Representation - Sketching of Polar Curve - General Curve	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	5	Knowledge and understanding	√	- Special Curve (Line, Circle, Conic Section) - Rotation of Axis	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	5	Knowledge and understanding	√	- The Arc Length of Polar Curve - Surface Area of Rotation - The Angle Between The Tangent Line and Radius Vector For a Polar Curve.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

[illegible]

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
Quizzes	Assignments	Projects	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14. Learning and teaching resources	
	Required textbooks (methodology, if any)
Calculus, R. Mohammed and A. Abdulaali, 2002	Main references (sources)
Calculus, Frank Iris Advanced calculus, Murray R. Spiegel, 1962	Recommended supporting books and references (scientific journals, reports....)
	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Assistance lecturer  
Academic qualification: Master  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	Engineering Mechanics-Static
2- Course Code	ATU13024
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/3
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	78 hours-15 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Ass.lect. Rand Kareem

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	✓
	A2	Continuous evaluation and development of curricula.	✓
	A3	Linking student projects and research to community needs.	✓
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	✓
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	✓
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	✓
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	✓
	D2	Continuous review and evaluation of student and faculty activities	✓
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	✓
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	✓
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	✓
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	✓
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	✓
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	✓
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	✓





## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	5	Knowledge and understanding	√	<b>Engineering Mechanics-Static</b>  <b>Introduction to static , vectors</b>	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	5	Knowledge and understanding	√	<b>Forces</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	5	Knowledge and understanding	√	3D Forces	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	5	Knowledge and understanding	√	Moments	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	5	Knowledge and understanding	√	couples	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	5	Knowledge and understanding	√	Resultant	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	5	Knowledge and understanding	√	Resultant	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	5	Knowledge and understanding	√	Equilibrium	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	5	Knowledge and understanding	√	Trusses, planes, joint method	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	5	Knowledge and understanding	√	Frame and Machines	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	5	Knowledge and understanding	√	Friction	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	5	Knowledge and understanding	√	Application of friction on bearings	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	5	Knowledge and understanding	√	Centered of line, area and volume	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	5	Knowledge and understanding	√	Moment of inertia	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	5	Knowledge and understanding	√	Theory of parallel axes	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	



13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Assignments	Activities and absences	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	/	50

14. Learning and teaching resources

ENGINEERING MECHANICS, statics by R. C. HIBBELER	Required textbooks (methodology, if any)
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Main references (sources)
ENGINEERING MECHANICS, statics by J. L. MERIAM	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: lecturer  
Academic qualification: doctorate  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	Physics
2- Course Code	ATU13023
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/3
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	78 hours-15 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	lect. Moaad Mohammad Abd

<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

## 9. Teaching and Learning Strategies

<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	✓
	A2	Continuous evaluation and development of curricula.	✓
	A3	Linking student projects and research to community needs.	✓
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	✓
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	✓
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	✓
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	✓
	D2	Continuous review and evaluation of student and faculty activities	✓
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	✓
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	✓
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	✓
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	✓
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	✓
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	✓
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	✓



## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	5	Knowledge and understanding	√	Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	5	Knowledge and understanding	√	Statics Forces, moments and couples, representation as vectors; Centre of gravity.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	5	Knowledge and understanding	√	Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion; Nature and properties of solid.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	5	Knowledge and understanding	√	fluid and gas; Pressure and buoyancy in liquids (barometers). Fluid dynamics (a) Specific gravity and density; (b) Viscosity, fluid resistance, effects of streamlining.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	5	Knowledge and understanding	√	Effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, venturi.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	5	Knowledge and understanding	√	Kinetics Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/centripetal forces); Periodic motion: pendular movement; Simple	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√	theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency.	An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	5	Knowledge and understanding	√	Dynamics (a) Mass Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency; (b) Momentum, conservation of momentum; Impulse	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	5	Knowledge and understanding	√	Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	5	Knowledge and understanding	√	Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition. (b) Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion; First and second law of thermodynamics;	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	5	Knowledge and understanding	√	Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	5	Knowledge and understanding	√	Isothermal, adiabatic expansion and compression, engine cycles, constant volume & constant pressure, refrigerators & heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	5	Knowledge and understanding	√	Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	5	Knowledge and understanding	√	reflection by spherical mirrors, refraction, lenses; Fibre optics.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	5	Knowledge and understanding	√	Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research	√	Completion files and performance assistant	√	Interviews or questionnaires to	

					carried out in the field of .specialization				survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	5	Knowledge and understanding	√	Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

Quizzes	Assignments	Activities and absences	Report	Midterm Exam	Final/practical exam	Final/theoretical exam
10	10	10	10	10	20	30

14. Learning and teaching resources

ENGINEERING MECHANICS, statics by R. C. HIBBELER	Physics for Scientists & Engineers & Modern Physics, 9th Ed by <a href="#">Serway, Jewett</a>
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Fundamentals of Physics Textbook David Halliday
ENGINEERING MECHANICS, statics by J. L. MERIAM	
You Tube, Electronic websites	



Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic  
Accreditation  
Accreditation Department



University: Al-Furat Al-Awsat Technical University  
College: Engineering Technical College/ NAJAF  
Department: Aeronautical technology engineering  
Scientific title: Assistance lecturer  
Academic qualification: Master  
Work location: Aeronautical technology engineering

## Course Description Form 2023/2024

1- Course Name	Mechanics I
2- Course Code	ARE112
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/25
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
6- Number of study hours (total)/number of units (total)	90 hours-30 week / 6 unit
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Ass.Lect. Rand Kareem



<b>8. Expected learning outcomes of the program</b>		
<b>Knowledge and understanding</b>		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
<b>Subject-specific skills</b>		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
<b>thinking skills</b>		
C1	The ability to communicate effectively with those concerned with the field of specialization on both the civil and military sides	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
<b>Generic and transferable skills (other skills related to employability and personal development)</b>		
D1	Ability to manage and work on ground and air support equipment for aircraft	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems.	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies, .....)	√

<h2>9. Teaching and Learning Strategies</h2>
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<b>Strategies</b>	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.		
e- Works effectively as a member or leader in a specialized engineering team.		√
f- Identifies, analyzes and solves large-scale engineering problems.		√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.		√
h- Participates in self-directed continuing professional development.		√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

11. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.			
	A1	Introducing scientifically and internationally updated study materials in the study of aircraft technology and keeping pace with rapid scientific	√

A- Maintaining and improving the quality of the curriculum		development through direct contact with aircraft engineering decision-makers all over the world and direct contact with colleges and institutes specialized in aircraft technology.	
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to domestic airports, seminars, and training on airport runways and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√



## 12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	3	Knowledge and understanding	√	<b>Introduction to Statics</b>	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	3	Knowledge and understanding	√	<b>Vectors</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	3	Knowledge and understanding	√	<b>Vectors</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	3	Knowledge and understanding	√	<b>Forces</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
5	3	Knowledge and understanding	√	Force in 3D	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	3	Knowledge and understanding	√	Moments	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7	3	Knowledge and understanding	√	Couples	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8	3	Knowledge and understanding	√	Resultant	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	3	Knowledge and understanding	√	<b>Resultant</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10	3	Knowledge and understanding	√	<b>Equilibrium</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	3	Knowledge and understanding	√	Planes Trusses	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12	3	Knowledge and understanding	√	Joint Method	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13	3	Knowledge and understanding	√	Section Method	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14	3	Knowledge and understanding	√	Trusses in 3D	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	3	Knowledge and understanding	√	<b>Frames and Machines</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	√
16	3	Knowledge and understanding	√	<b>Frames and Machines</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17	3	Knowledge and understanding	√	<b>Frames and Machines</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18	3	Knowledge and understanding	√	<b>Friction</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19	3	Knowledge and understanding	√	<b>Wedges and Screws</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
20	3	Knowledge and understanding	√	<b>Belts</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21	3	Knowledge and understanding	√	<b>Application of friction on bearings</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
22	3	Knowledge and understanding	√	<b>Application of friction on bearings</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23	3	Knowledge and understanding	√	<b>Centered of line , area and volume</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24	3	Knowledge and understanding	√	<b>Centered of line , area and volume</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	



		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
25	3	Knowledge and understanding	√	<b>Moment of inertia</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26	3	Knowledge and understanding	√	<b>Moment of inertia</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27	3	Knowledge and understanding	√	<b>Theory of parallel axes</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28	3	Knowledge and understanding	√	<b>Theory of parallel axes</b>	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	

		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29	3	Knowledge and understanding	√	Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
30	3	Knowledge and understanding	√	Problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	√
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	√
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	√

[illegible]

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
20	/	20	/	10	/	50

14. Learning and teaching resources	
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Required textbooks (methodology, if any)
ENGINEERING MECHANICS, statics by R. C. HIBBELER	Main references (sources)
ENGINEERING MECHANICS, statics by J. L. MERIAM	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites