



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

قسم علوم الجو / كلية العلوم / الجامعة المستنصرية
2025-2024

دليل وصف البرنامج الأكاديمي والمقرر الدراسي (مسار بولونيا)

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 للسمات الرئيسة للبرنامج ومقرراته مبيناً المهارات التي يتم العمل على اكسابها للطلبة مبنية على وفق اهداف البرنامج الأكاديمي وتتجلى أهمية هذا الوصف لكونه يمثل الحجر الأساس في الحصول على الاعتماد البرامجي ويشترك في كتابته 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 مقتضباً 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.

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

هيكلية المنهج: كافة المقررات الدراسية / المواد الدراسية التي يتضمنها البرنامج الأكاديمي على وفق نظام التعلم المعتمد (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 اهداف البرنامج.

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

نموذج وصف البرنامج الأكاديمي

اسم الجامعة: الجامعة المستنصرية

الكلية/المعهد: كلية العلوم

القسم العلمي: قسم علوم الجو

اسم البرنامج الأكاديمي او المهني: بكالوريوس علوم الجو

اسم الشهادة النهائية: بكالوريوس في علوم الجو

النظام الدراسي: مسار بولونيا

تاريخ اعداد الوصف: 2025/3/6

تاريخ ملء الملف: 2025/4/22

التوقيع:

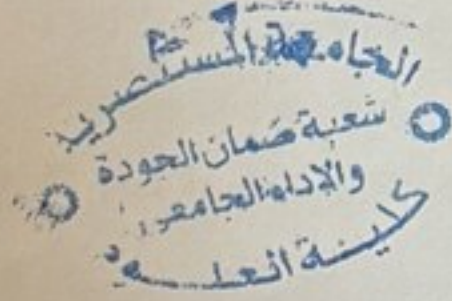
اسم معاون العلمي: ا.م.د. احمد مهدي رحيمة

التاريخ:

التوقيع:

اسم رئيس القسم: ا.م.د. اسراء قحطان عبد الكريم

التاريخ:



دقق الملف من قبل شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: ا.م.د. علي جاسم محمد

التوقيع:

التاريخ:

التوقيع:

مصادقة السيد العميد: ا.د. ميثاق طالب كاطع

التاريخ:

1. رؤية البرنامج

رؤيتنا هي الريادة في علوم الغلاف الجوي وتطوير المعرفة اللازمة لحل المشاكل المتعلقة بالطقس والمناخ وشحة المياه وجودة الهواء، والتنبيه بالأحداث الجوية المتطرفة، ودعم الطاقة المتجددة وإيجاد حلول صديقة للبيئة لتقليل اثر التغير المناخي.

2. رسالة البرنامج

مهمتنا هي بناء برنامج متكامل لتعزيز فهم الأرض والغلاف الجوي من خلال التعليم والمشاركة المجتمعية. وسيتحقق ذلك من خلال:

- اعداد كفاءات مختصة في علوم الغلاف الجوي لتكون مؤهلة لإيجاد أساليب جديدة في تشخيص وطرح الحلول لتحديات العصر الحالية التي تخص البيئة والاستدامة البيئية واثر التغيرات المناخية.
- بناء منهج دراسي متعدد التخصصات وبرنامج بحث تعاوني يشمل الطلاب الجامعيين وأعضاء هيئة التدريس.
- التعاون مع المؤسسات التعليمية والبحثية والجهات ذات العلاقة سواء كانت محلية أو عالمية لتعزيز القاعدة العلمية ومواكبة أحدث التطورات في التخصص، وتقديم الاستشارات العلمية، والانخراط في المشاريع الاستراتيجية التي تسهم في تحسين الظروف البيئية والمناخ.
- تحفيز الجامعة والمجتمع على معالجة العوامل الحاسمة التي ستشكل مستقبل وطننا والمنطقة، من خلال الاستخدام الأمثل لموارد الأرض، وتخفيف المخاطر الطبيعية، والحفاظ على البيئة، ومواجهة تغير المناخ.

3. اهداف البرنامج

يهدف قسم علوم الجو إلى:

- تعزيز سمعتنا الوطنية والدولية في التعليم والبحث العلمي.
- تدريب الخريجين وأصحاب المصلحة لاستخدام التقنيات والبرامج الحديثة.
- مواكبة التطور العلمي وتحديث المناهج الدراسية وفقاً للتطور العلمي واحتياجات سوق العمل.
- ربط الخطط البحثية والدراسية بالاحتياجات الفعلية لسوق العمل الحالية والمستقبلية.

- المساهمة في إعداد الأبحاث والدراسات العلمية والتطبيقية في مجالات علوم الغلاف الجوي والعلوم المرتبطة بها، والتي تساهم في إيجاد الحلول للمشاكل البيئية التي يعاني منها العراق والمنطقة منها الاستمطار الصناعي و زيادة الغطاء النباتي وفق طرق علمية معتمدة عالمياً.
- إقامة شراكات فاعلة محلياً وعالمياً مع الجامعات وشرائح المجتمع ذات الصلة.
- تحقيق التميز في التعليم العالي والبحث العلمي وخدمة المجتمع.
- إعداد وتأهيل وتطوير الملاكات العلمية المتخصصة في علوم الغلاف الجوي.
- تحقيق ضمان الجودة والاعتماد في العملية التعليمية.
- تعزيز الثقافة العلمية والمجتمعية في الحفاظ على البيئة والتكيف والحد من اثر التغيرات المناخية.
- الإسهام في تقدم العلوم وانتشار التعليم المتخصص من خلال إنشاء أو المساهمة في وحدات ومراكز بحثية متميزة ذات اعتمادية عالمية.

4. الاعتماد البرامجي
لا يوجد

5. المؤثرات الخارجية الأخرى
لا يوجد

6. هيكلية البرنامج				
هيكل البرنامج	عدد المقررات	وحدة دراسية	النسبة المئوية	ملاحظات *
متطلبات المؤسسة	8	18	15%	
متطلبات الكلية	5	29	24%	
متطلبات القسم	12	73	61%	
التدريب الصيفي	اجباري			
أخرى				زيارات علمية (4)

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

7. وصف البرنامج				
الساعات المعتمدة	اسم المقرر أو المساق	رمز المقرر أو المساق	السنة / المستوى	
مجدولة	غير مجدولة			
91	109	اساسيات علوم الغلاف الجوي	MU010501101	المستوى الاول (الفصل الاول) 2025-2024
91	109	الفيزياء الميكانيكية	MU010501102	
67	108	اشعاع وبصريات جوية	MU010501103	
11	64	الحاسوب	MU04	
17	33	الديمقراطية وحقوق الانسان	MU02	
17	33	اللغة العربية	MU06	
71	79	اجهزة ورصد جوي	MU010501204	المستوى الاول (الفصل الثاني) 2025-2024
91	109	الفيزياء الكهربائية	MU010501205	
37	63	التفاضل والتكامل	MU010501206	
46	79	لغة برمجية لعلوم الغلاف لجوي	MU010501207	
46	79	الكيمياء العامة	MU010501208	
17	33	اللغة الانكليزية	MU01	
91	109	اساسيات الترموداينمكس	MU010502101	المستوى الثاني (الفصل الاول) 2025-2024
67	108	انواء تحليلية	MU010502102	
46	79	انواء مائية	MU010502103	
46	79	كيمياء الغلاف الجوي	MU010502104	
11	64	الحاسوب II	MU14	
17	33	اللغة الانكليزية II	MU11	
91	109	ثرموداينمكس الغلاف الجوي	MU010502205	المستوى الثاني (الفصل الثاني) 2025-2024
46	79	علم المناخ	MU010502206	
46	79	انواء زراعية	MU010502207	
37	63	بيئة مستدامة	MU010502208	
37	63	معادلات تفاضلية	MU010502209	
17	33	اللغة العربية II	MU16	
17	33	جرائم نظام البعث في العراق	MU03	

8. مخرجات التعلم المتوقعة للبرنامج
المعرفة
1. مواكبة التطور الحاصل في علوم الغلاف الجوي. 2. رفع امكانية الطلبة في فهم والتعرف على جميع المجالات الخاصة بعلوم الغلاف الجوي.

3. تعزيز فهم الطلبة للغلاف الجوي واستكشاف حدود علوم الغلاف الجوي من خلال استخدام سبل التعليم والمبتكرة و الحديثة.
المهارات
1- اكتساب الطالب مهارات التفكير الكمي والعلمي التي يمكن تطبيقها على مشاكل الغلاف الجوي. 2- اكتساب الطالب للمهارات الأساسية في حل المشاكل في علوم الغلاف الجوي والتخصصات ذات الصلة، من خلال اتباع الأسلوب العلمي القائم على الاستقصاء والتحليل والاستنتاج للتوصل الى الحلول الموضوعية للمشاكل المطروحة. 3- تمكين الطالب من إثبات المعرفة بالأساليب العلمية المتعلقة بالتحليل النوعي والكمي لمتغيرات الغلاف الجوي ويمكنهم تطوير بعض تقنيات التحليل الأساسية للمساعدة في فهم الطقس والمناخ 4- تمكين الطالب من إثبات معرفته بمجموعة واسعة من الظواهر الجوية وأدوارها في التأثير على الطقس والمناخ على المستويات المحلية والإقليمية والقارية والعالمية
القيم
1- تنمية قدرات الطلبة في فهم المبادئ الأساسية في علوم الغلاف الجوي 2- تنمية قدرات الطلبة في المشاركة بالحوار وطرح الأفكار وتقبل آراء الآخرين 3- تنمية قدرات الطلبة في التفكير العلمي

9. استراتيجيات التعليم والتعلم
1- شرح المادة العلمية للطلاب بشكل تفصيلي. 2- مشاركة الطلاب في حل المسائل الرياضية. 3- المناقشة والحوار حول المفردات المتعلقة بالمادة العلمية.

10. طرائق التقييم
1- الواجبات البيتية والامتحانات الأسبوعية والشهرية. 2- التقارير العلمية. 3- امتحانات نهاية الفصل الدراسي ونهاية السنة الدراسية. 4- مناقشة مشاريع التخرج للطلبة

11. الهيئة التدريسية

أعضاء هيئة التدريس

الرتبة العلمية		التخصص		المتطلبات المهارات الخاصة (ان وجدت)	اعداد الهيئة التدريسية	
عام		خاص			ملاك	محاضر
أ.م.د. اسراء قحطان عبد الكريم فارس		علوم الجو		انظمة مناخية	ملاك	رئيس القسم
أ.د. منعم حكيم خلف شناوة		علوم الجو		فيزياء الغلاف الجوي	ملاك	
أ.د. علي محمد عبد الرحمن طه		علوم الجو		فيزياء الغلاف الجوي	ملاك	
أ.د. احمد سامي حسن احمد		علوم الجو		انظمة مناخية	ملاك	
أ.د. جاسم محمد رجب حسين		علوم الفيزياء		أنواء جوية وتحسس نائي	ملاك	
أ.د. ياسين كاظم عباس سعيد		علوم الجو		انظمة مناخية	ملاك	
أ.د. أسامة طارق احمد يونس		علوم الجو		ديناميكية الغلاف الجوي	ملاك	
أ.د. علاء مطر شايع شمخي		علوم الجو		انظمة مناخية	ملاك	
أ.د. احمد فتاح حسون عباس		علوم الجو		ديناميكية الغلاف الجوي	ملاك	
أ.د. باسم ابراهيم وهاب عنبر		علوم الفيزياء		فيزياء الغلاف الجوي	ملاك	
أ.د. جاسم حميد كاظم عبد السادة		علوم الجو		ديناميكية الغلاف الجوي	ملاك	
أ.م.د. حسام طارق مجيد عبد اللطيف		علوم الجو		انظمة مناخية	ملاك	
أ.م.د. ثائر عبيد رومي عبد النبي		علوم الجو		ديناميكية الغلاف الجوي	ملاك	
أ.م.د. اقبال خلف خميس سلمان		علوم الجو		انظمة مناخية	ملاك	
أ.م.د. باسم عبد السادة محمد ابيش		علوم الجو		طاقة متجددة	ملاك	
أ.م.د. علي جاسم محمد فرحان		علوم الجو		ديناميكية الغلاف الجوي	ملاك	
أ.م.د. حسين عبودي نعمة هاشم		علوم الجو		ديناميكية الغلاف الجوي	ملاك	
أ.م.د. عقيل غازي مطر كرم		علوم الجو		فيزياء الغلاف الجوي	ملاك	
أ.م.د. مثنى عبد الكريم عزيز خاجي		علوم الجو		انظمة مناخية	ملاك	
أ.م.د. منيه فاضل جاسم محمد		علوم الجو		فيزياء الغلاف الجوي	ملاك	
أ.م.د. علي عبد عطية خلف		علوم الجو		التحسس النائي للغلاف الجوي	ملاك	

م.د. ببداء جعفر حسن حسين	علوم الجو	انظمة مناخية		ملاك	
م.د. سما خالد محمد عبد الله	علوم الجو	ديناميكية الغلاف الجوي		ملاك	
م.د. حنين حاكم عبد الرضا عباس	علوم الجو	انظمة مناخية		ملاك	
م.د. نادية محمد عبد عباس	علوم الجو	فيزياء الغلاف الجوي		ملاك	
م.د. علي رحيم طعيمه علي	علوم الجو	ديناميكية الغلاف الجوي		ملاك	
م.د. سامر قاسم محمد عبد	علوم الجو	التغيرات المناخية		ملاك	
م.د. ضحى صباح زعتر سلمان	علوم الجو	أنظمة مناخية		ملاك	
م.د. علاء نجم عبد خضير	علوم الجو	طاقة متجددة		ملاك	
م.د. تغريد علي عباس جاسم	علوم الجو	طاقة متجددة		ملاك	
م.د. خولة نهاد زكي حسين	علوم الجو	فيزياء الغلاف الجوي		ملاك	
م.د. فرح حسيب جاسم قاسم	علوم الجو	انظمة مناخية		ملاك	
م.د. عماد خريبط راشد هبر	علوم الجو	فيزياء الغلاف الجوي		ملاك	
ا.م. حسنين خليل عبد الله رسول	علوم الجو	أنظمة مناخية		ملاك	
ا.م. زهراء صلاح مهدي رشيد	علوم الجو	فيزياء الغلاف الجوي		ملاك	
ا.م. هند سليم ابراهيم عباس	علوم الحاسوب	الذكاء الاصطناعي		ملاك	
ا.م. محمد مجيد احمد علي	علوم الجو	فيزياء الغلاف الجوي		ملاك	
م. رؤى مازن ابراهيم رؤوف	علوم الجو	علوم الجو		ملاك	
م. نغم عباس محمد حسين	علوم الجو	علوم الجو		ملاك	
م. اسامة باسل منجي مصطفى	علوم الجو	الارصدة الجوية المائية		ملاك	
م. عمر ليث خالد حسين	علوم الجو	ديناميكية الغلاف الجوي		ملاك	
م. هديل جليل عاصي كاظم	علوم الجو	علوم الجو		ملاك	
م. حسن محمود عزيز خضر	علوم الجو	فيزياء الغلاف الجوي		ملاك	
م. وديان غالب نصيف جاسم	علوم الجو	الارصدة الجوية المائية		ملاك	
م. نغم ذاري ابراهيم حسن	علوم الجو	فيزياء الغلاف الجوي		ملاك	
م. سارة علي مطر شغاتي	علوم الجو	انظمة مناخية		ملاك	
م. فراس صبيح بشير عذاب	علوم الجو	ديناميكية الغلاف الجوي		ملاك	
م. لمى مهدي مطرود رضا	علوم الجو	انظمة مناخية		ملاك	
م. سلوى سلمان نايف غضيب	علوم الجو	ديناميكية الغلاف الجوي		ملاك	

م. سندس حسن جابر ال حسن	علوم الجو	ديناميكية الغلاف الجوي		ملاك	
م. شيماء عودة هاشم احمد	علوم الجو	علوم الجو		ملاك	
م. زينب مجيد عبود كاظم	علوم الجو	فيزياء الغلاف الجوي		ملاك	
م. ياسمين قصي توفيق درويش	علوم الجو	انظمة مناخية		ملاك	
م. داليا اكرم محمود سعيد	علوم الجو	فيزياء الغلاف الجوي		ملاك	
م.م. سلام غلام محمد حيدر	علوم الجو	الارصدة الجوية المائية		ملاك	
م.م. فدوى سمير عبد الفتاح ابراهيم	علوم الجو	الارصدة الجوية المائية		ملاك	
م.م. زهراء عبد الرزاق محمد علي	علوم الرياضيات	رياضيات		ملاك	
م.م. عبد الرحمن محمد محمود كاظم	علوم الجو	الانواء الجوية / علوم جو		ملاك	
م.م. زهراء عارف حسين عبد السيد	علوم الجو	علوم الجو		ملاك	
م.م. زهراء ناصر محسن راضي	علوم الجو	علوم الجو		ملاك	
م.م. هالة علي عبد محمد	علوم الفيزياء	التحسس النائي والمعالجة الصورية		ملاك	
م.م. هند كامل كريم سالم	علوم حياة	علم النبات / فسلجة نبات		ملاك	

التطوير المهني
توجيه أعضاء هيئة التدريس الجدد
1- المتابعة المستمرة للبرنامج وبدقة 2- طرح الافكار العلمية الجديدة والمشاركة في تطوير البرنامج الدراسي.
التطوير المهني لأعضاء هيئة التدريس
1- المشاركة في الدورات والندوات والحلقات النقاشية العلمية 2- متابعة احدث الابحاث العلمية ضمن الاختصاص 3- عمل زيارات علمية الى المؤسسات الحكومية والقطاع الخاص ذي العلاقة

12. معيار القبول
يقبل القسم خريجوا السادس الأعدادي/ الفرع العلمي طبقاً للقبول المركزي وباعتماد المجموع والمعدل الذي يحصل عليه الطالب.

13. أهم مصادر المعلومات عن البرنامج

- 1- الكتب المنهجية المعتمدة من قبل اللجنة العلمية في القسم
- 2- الكتب المساعدة.
- 3- الكتب والمصادر العالمية (مصادر باللغة الانكليزية)
- 4- مصادر اضافية من الانترنت.

14. خطة تطوير البرنامج

- 1- تحديث المناهج الدراسية من خلال البحث على احدث المصادر العالمية المعتمدة
- 2- تطوير المختبرات من خلال تحديث التجارب العلمية واستخدام احدث الاجهزة المختبرية.
- 3- التنوع في اساليب القاء المحاضرات من خلال استخدام الوسائل الحديثة المتبعة في التدريس.

مخطط مهارات البرنامج													
مخرجات التعلم المطلوبة من البرنامج													
القيم				المهارات				المعرفة				اساسي أم اختياري	اسم المقرر
4ج	3ج	2ج	1ج	4ب	3ب	2ب	1ب	4أ	3أ	2أ	1أ		رمز المقرر
	√		√	√	√	√			√	√	√		MU010501101
	√	√	√	√			√		√		√		MU010501102
	√	√	√	√					√		√		MU010501103
		√			√	√			√		√		MU04
		√											MU02
		√											MU06
	√	√	√	√	√	√			√	√	√		MU010501204
	√	√	√	√	√	√	√				√		MU010501205
	√	√			√	√	√						MU010501206
		√			√	√			√		√		MU010501207
	√	√											MU010501208
		√											MU01

المستوى الاول
(الفصل الاول)
2025-2024

المستوى الاول
(الفصل الثاني)
2025-2024

	√		√	√	√	√			√	√	√		اساسيات الثرموداينمكس	MU010502101	المستوى الثاني (الفصل الاول) 2025-2024
	√		√	√	√	√			√	√	√		انواء تحليلية	MU010502102	
	√	√	√	√					√		√		انواء مائية	MU010502103	
	√	√	√	√					√		√		كيمياء الغلاف الجوي	MU010502104	
		√			√	√			√		√		الحاسوب II	MU14	
		√											اللغة الانكليزية II	MU11	المستوى الثاني (الفصل الثاني) 2025-2024
	√	√	√	√	√	√			√	√	√		ثرموداينمكس الغلاف الجوي	MU010502205	
	√	√	√	√					√		√		علم المناخ	MU010502206	
	√	√	√	√					√		√		انواء زراعية	MU010502207	
	√	√	√	√					√		√		بيئة مستدامة	MU010502208	
	√	√			√	√	√						معادلات تفاضلية	MU010502209	
		√											اللغة العربية II	MU16	
		√											جرائم نظام البعث في العراق	MU03	

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

Course Description of First Level (First Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Fundamental of Atmospheric Sciences		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010501101			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Dr. Ali Mohammed Abdurrahman		e-mail	alialsalihi.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Monim H. Al-Jiboori		e-mail	monim.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn the basics fundamental of Atmospheric Science. 2. Learn and understand the Composition and Structure of the Atmosphere 3. Learn the theoretical basics of season Variation. 4. Learn how to deal with atmospheric parameters. 5. Understand the theoretical basics of Cloud Development and formation Processes. 6. Understand the impact of the Air pollution on earth atmosphere.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Improve the abilities of the students to learn key concepts in atmosphere. 2. Understand the characteristic and composition of atmospheric layers 3. Learn and understand the atmospheric parameters and its relationship with atmospheric layers. 4. Learn and understand the basic theory of seasons variations that occurred in the atmosphere. 5. Understand the impact of the moisture variables in the atmosphere. 6. Understand what is the cloud how it formation and development and what types of cloud. 7. Learn and understand the behavior of the Air pollution and its impact on earth atmosphere. 8. Understand the impact of Human Classifications on the atmosphere
Indicative Contents المحتويات الإرشادية	<u>Part A. The layers of the Atmosphere (8 hr.)</u> Terms and Definitions Thickness of the Atmosphere The Evolution of the Atmosphere Composition of the Modern Atmosphere The Permanent Gases The Variable Gases The water vapor The greenhouse gases Carbon dioxide Ozone Methane The suspended particles matter Aerosols Troposphere Stratosphere Mesosphere Thermosphere Atmospheric characteristic layers according to electrical properties <u>Part B. Atmospheric parameters (2 hr.)</u> Atmospheric pressure Atmospheric layers according pressure Temperature Atmospheric layers according temperature Characteristic of the atmospheric layers <u>Part C. Variation of the Seasons (4 hr.)</u> Energy Convection in the Atmosphere Radiation Laws Solar Radiation and the Earth

	Definition of energy (kinetic and potential energy) Energy transfer Conduction, Convection, Radiation Radiation types in the atmosphere <u>Part D. Atmospheric moisture (6 hr)</u> Water vapor Saturation Super saturation Vapor pressure Evaporation and condensation Moisture terms definitions (saturation vapor pressure, specific humidity, saturation specific humidity, mixing ratio, saturation mixing ratio, relative humidity, dew point, wet bulb temperature, wet bulb depression. <u>Part E. Cloud formation (2 hr)</u> Frontal lifting Atmospheric stability Cloud types <u>Part F. Air pollution (4 hr)</u> A Brief Historical Perspective Sources and Types of Air Pollution Primary Pollutants Secondary Pollutants Air Quality Indoor Air Pollution Meteorological Factors Affecting Air Pollution The Role of Atmospheric Stability Acid Precipitation <u>Part G. Human Classifications (2 hr)</u>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, The leaning and Teaching Strategies includes; 1. Identify the primary elements that compose the atmosphere. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 2. Describe the vertical structure of the atmosphere. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 3. Describe the factors governing the variation of the seasons. Method for Assessment: Graded exams, worksheets, pre- and post- course survey. 4. Describe the processes related to cloud formation and precipitation including the role of atmospheric stability. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 5. Describe atmospheric pollution. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 6. Applying the human classification subject on classroom.

	Finally Demonstrate knowledge of the tools and methods used by scientists to study the natural world in the lab.
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The layers of the Atmosphere Terms and Definitions Thickness of the Atmosphere The Evolution of the Atmosphere Composition of the Modern Atmosphere
Week 2	The Permanent Gases The Variable Gases The water vapor The greenhouse gases Carbon dioxide

	Ozone Methane
Week 3	The suspended particles matter Aerosols Troposphere Stratosphere Mesosphere Thermosphere Atmospheric characteristic layers according to electrical properties.
Week 4	<u>Atmospheric parameters</u> Atmospheric pressure Atmospheric layers according pressure Temperature Atmospheric layers according temperature Characteristic of the atmospheric layers
Week 5	<u>Variation of the Seasons</u> Energy Convection in the Atmosphere General Radiation Laws Solar Radiation and the Earth
Week 6	Definition of energy (kinetic and potential energy) Energy transfer Conduction Convection Radiation Radiation types in the atmosphere
Week 7	<u>Atmospheric moisture</u> Water vapor Saturation Super saturation
Week 8	Midterm Exam
Week 9	Vapor pressure Evaporation and condensation Moisture terms definitions
Week 10	saturation vapor pressure, specific humidity, saturation specific humidity, mixing ratio, saturation mixing ratio.
Week 11	relative humidity, dew point, wet bulb temperature, wet bulb depression.
Week 12	<u>Cloud formation</u> Frontal lifting 13 Atmospheric stability 13 Cloud types 13
Week 13	<u>Air pollution</u> A Brief Historical Perspective Sources and Types of Air Pollution Primary Pollutants Secondary Pollutants
Week 14	Air Quality Indoor Air Pollution Meteorological Factors Affecting Air Pollution The Role of Atmospheric Stability Acid Precipitation

Week 15	Human classifications
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1. Psychrometer
Week 2	Lab 2. Solar Map
Week 3	Lab 3. Wind Rose
Week 4	Lab 4. Calculation of atmospheric pressure through column weight measurement of compressed air
Week 5	Lab 5. Human classifications
Week 6	Lab 6. Study the relationship between solar radiation and hours of brightness
Week 7	Lab 7. Estimation of the amounts of solar radiation on horizontal surfaces
Week 8	Midterm Exam
Week 9	Lab 8. Calculate evaporation mathematically
Week 10	Lab 9. Determine the Heat in the atmosphere
Week 11	Lab 10. Determine the Temperature and evaporation of water
Week 12	Lab 11. Determine the Dew point temperature

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	The atmosphere: An introduction to meteorology by Frederick K. Lutgens Edward J. Tarbuck Pearson Education Ltd., London 2018.	available as PDF
Recommended Texts	Springer Atmospheric Sciences by Nicole Mölders • Gerhard Kramm, University of Alaska Fairbanks Fairbanks, AK, USA, 2014.	available as PDF
Websites	https://www.youtube.com/watch?v=G4Zla3qkFkl https://www.youtube.com/watch?v=fRbM8p8DT1g https://www.google.com/search?q=cloud+formation+in+troposphere&tbm=vid&sxsrf=APwXEdeP5tdMej0NrWTO8acsxluAw-	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mechanical Physics		Module Delivery	
Module Type	Support		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010501102			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Dr. Baydaa Jaafar		e-mail	baidaa71.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Ali Mohammed		e-mail	alialsalihi.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1-Learn the basic fundamentals of General Mechanic Physics. 2- Learn and understand the Units and Vectors, Motion in one dimension, two and three. 3- Understand the theoretical basics of Newton's Laws of Motion Force and Interactions, Newton's First and Second Laws, Mass and Weight, Newton's Third Law Free, and Body Diagrams. 4- Understand the theoretical basics of Work and Kinetic Energy, Work with Varying Forces, and Power. 5- Learn the Gravitational and Elastic Potential Energy, Conservative and Nonconservative Forces, Force, and Potential Energy, and Energy diagrams. Understand the theoretical basics of Momentum, Impulse, and Collisions 6-Momentum and Impulse, Conservation of Momentum, Elastic and Inelastic Collisions, Center of Mass. 7-Describing Oscillations, Simple Harmonic Motion, Energy in SHM, Applications of SHM, The Simple Pendulum, The Physical Pendulum, Forced Oscillations, and Resonance.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Fundamental concepts in general dynamics physics, many variables are involved for either scales or vectors' physical quantities. 2- Understood Units and Vectors 3- All kinds of motion. 4- Kinetic and Potential Energy. 5- Momentum, Impulse, and Collisions. 6- Gravitation. will be a good understanding for undergraduate students.
Indicative Contents	<u>Part A. Units and Vectors (2 hr.)</u> Orders of Magnitude, Estimating Vectors - Addition, Components, Unit Vectors, Products. <u>Part B. Motion in One, two, and three Dimension (8 hr.)</u> Displacement, Average Velocity, Instantaneous Velocity, Acceleration, Motion with Constant Acceleration, Freely Falling Bodies, Position, Velocity and Acceleration Vector, Projectile Motion, Circular Motion, and Relative Velocity. <u>Part C. Newton's Laws of Motion and its applications (6 hr)</u> Force and Interactions, Newton's First and Second Law, Mass and Weight, Newton's Third Law Free, Body Diagrams. Particles in Equilibrium, Dynamics of Particles, Frictional Forces, Dynamics of Circular Motion. <u>Part D. Kinetic and Potential Energy (6 hr)</u> Work and Kinetic Energy, Work with Varying Forces, Power Gravitational and Elastic Potential Energy, Conservative and Nonconservative Forces, Force and Potential Energy, Energy Diagrams. <u>Part E. Momentum, Gravitation, and Periodic Motion (6 hr)</u> Momentum and Impulse, Newton's Law of Gravitation, Weight, Gravitational Potential Energy, The Motion of Satellites, Kepler's Laws, Black Holes, Describing Oscillations, Simple Harmonic Motion, Energy in SHM, Applications of SHM, The Simple Pendulum, The Physical Pendulum, Forced Oscillations and Resonance.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	During the 10-13 weeks of the course, the learning and Teaching Strategies include; 1. Identify the primary elements of Units and Vectors quantities. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 2. Describe the motion in one, two, and three dimension Displacement, Average Velocity, Instantaneous Velocity, Acceleration, Motion with Constant Acceleration, and Freely Falling Bodies. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 3. Describe Newton's Laws of Motion. Method for Assessment: Graded exams, worksheets, and pre-and post-course surveys. 4. Describe the Momentum, Impulse, and Collisions. Gravitation. Periodic Motion Method for Assessment: Graded exams, worksheets, pre-and post-course survey 5. Applying the subject in the classroom. Finally, Demonstrate knowledge of the tools and methods used by scientists to study the practical part in the lab.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered
Week 1	<u>Units and Vectors</u> Standards, Units and Conversions, Uncertainty and Significant Figures Orders of Magnitude, Estimating Vectors - Addition, Components, Unit Vectors, Products
Week 2	<u>Motion in One Dimension</u> Displacement, Average Velocity, Instantaneous Velocity, Acceleration, Motion with Constant Acceleration, Freely Falling Bodies
Week 3	<u>Motion in One Dimension</u> Displacement, Average Velocity, Instantaneous Velocity, Acceleration, Motion with Constant Acceleration, Freely Falling Bodies
Week 4	<u>Motion in Two or Three Dimensions</u> Position, Velocity and Acceleration Vector, Projectile Motion, Circular Motion, Relative Velocity
Week 5	<u>Newton's Laws of Motion</u> Force and Interactions, Newton's First and Second Law,
Week 6	<u>Mass and Weight</u> Newton's Third Law Free, Body Diagrams
Week 7	<u>Applying Newton's Laws</u> Particles in Equilibrium, Dynamics of Particles, Frictional Forces, Dynamics of Circular Motion, Dynamics of Circular Motion.
Week 8	<u>Midterm Exam</u>
Week 9	<u>Work and Energy</u> Work and Kinetic Energy, Work and Power Work with Varying Forces, Power
Week 10	<u>Potential Energy</u> Gravitational and Elastic Potential Energy, Conservative
Week 11	<u>Energy Conservation</u> Nonconservative Forces, Force, and Potential Energy, Energy Diagrams
Week 12	<u>Momentum, Impulse, and Collisions</u> Momentum and Impulse, Conservation of Momentum, Elastic and Inelastic Collisions, Center of Mass, Elastic and Inelastic Collisions, Center of Mass
Week 13	<u>Gravitation</u> Newton's Law of Gravitation, Weight, Gravitational Potential Energy,
Week 14	<u>The Motion of Satellites</u> The Motion of Satellites, Kepler's Laws, Black Holes
Week 15	<u>Periodic Motion</u> Describing Oscillations, Simple Harmonic Motion, Energy in SHM, Applications of SHM, The Simple Pendulum, The Physical Pendulum, Forced Oscillations, and Resonance
Week 16	The preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Types of graphs with units
Week 2	Determination of the resultant of many forces at one point
Week 3	Free fall
Week 4	Verify Hooke's law and determine the force constant of the spring.
Week 5	Distance, velocity, and time.
Week 6	Determination of the moment of inertia for a material disk
Week 7	Boyle's law
Week 8	Midterm Exam
Week 9	Motions in inclined surfaces
Week 10	Fluid mechanics (Archimedes' principle)
Week 11	simple Pendulum

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1- Hoge D. Young and Roger A. Freedman, 2012: University Physics, 13 th Edition, Addison Wesley, 1598 p.	available as PDF
Recommended Texts	1- Giambattista A., Richardson B., Richardson R., 2007: College Physics, Second Edition, Mc Graw Hill, USA.	available as PDF
Websites	https://www.liberty.edu/online/courses/phys201/ https://www.coursera.org/courses?query=physics https://physics.oregonstate.edu/undergraduate/ecampus https://www.straighterline.com/online-college-courses/sciences/general-physics-i/ https://edukan.edu/course/general-physics-i/	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Atmospheric Radiation and Optics		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	MU010501103			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	1	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Prof. Dr. Ahmed Fattah.Hassoon		e-mail	ahmed.fattah79.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Prof. Dr. Ali M. Al-Salihi		e-mail	alialsalihi.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023		Version Number	0.1

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn the basics fundamental of solar radiation and some atmospheric phenomena 2. Learn and understand the effect of solar radiation on atmospheric parameters. 3. Learn the theoretical basics of solar radiation laws. 4. Learn how to deal theoretical and calculate solar radiation intercepted on horizontal surfaces. 5. Understand the theoretical basics of thermal terrestrial solar radiation 6. Understand how can you applied solar radiation law and wave of theory on atmospheric phenomena such as mirage and hello and rain bow and other one.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learn and understand the composition and structure of the sun. 2. Learn the spectrum of the electromagnetic radiation and basics theory of the solar radiation laws. 3. Learn and understand how solar radiation interacts with the atmospheric components. 4. Learn the solar terms definitions. 5. Learn the basics theory of thermal band and terrestrial solar radiation. 6. Learn and understand the theoretical basics of light wave. 7. Learn and understand the atmospheric phenomena
Indicative Contents المحتويات الإرشادية	<u>Part A. Sun Structure and Solar Cycle (2 hr.)</u> Sun composition sun layers The earth's orbit about the sun <u>Part B. Electromagnetic radiation (2 hr.)</u> Electromagnetic spectrum Solid angle flux intensity <u>Part C. Radiation Laws (4 hr.)</u> Blackbody Radiation Laws Planck's Law Stefan-Boltzmann Law Wien's Displacement Law Kirchhoff's Law <u>Part D. The interaction of solar radiation with atmospheric components (4 hr)</u> Scattering Rayleigh scattering Mie Scattering Non-Selective Scattering Absorption Vibrational and rotational transitions Vertical Profile of Absorption of trace gases Beer's Law <u>Part E. Estimation Solar Insolation (4 hr)</u> Definitions some solar terms, Solar angles, Solar constant, Insolation, Average Daily Insolation,

	<u>Part F. Thermal band and terrestrial radiation (4 hr)</u> Types of Spectra Absorption and Emission of Infrared Radiation, Schwarzschild's equation, <u>Part G. Light wave theory (4 hr)</u> Dual Nature of Light, Properties of light waves , superposition, interference, Reflection, Diffraction, Interferences, Huygens' Principle Polarization <u>Part H. Atmospheric phenomena (4 hr)</u> Blue Skies and Hazy Days Twinkling Twilight, and the Green Flash The Mirage Halos Rainbows
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, The leaning and Teaching Strategies includes; 1. Identify the primary elements that compose of sun layers. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 2. Describe the solar radiation laws according to blackbody radiation emission. Method for Assessment: Graded exams, reports, pre- and post- course survey 3. Describe the some models to estimated solar insolation. Method for Assessment: Graded exams, examples and problems, pre- and post- course survey. 4. Describe the processes of interactions between solar radiation and atmospheric elements (aerosols and gasses). Method for Assessment: Graded exams, projects , problems and examples, pre- and post- course survey 5. Describe wave theory for light responsible for light properties. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 6. Interpreted some atmospheric phenomena, such as rainbow, milky sky , twinkling .

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	108	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 13	LO #1, #2 and #5, #6
	Assignments	2	10% (10)	6 and 15	LO #3 and #7
	Projects	2	10% (10)	7 and 12	LO #3 and #5
	Report	1	10% (10)	15	LO #3 - #5 - #7
Summative assessment	Midterm Exam	2hr	20% (10)	8	LO #1 - #4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	<u>Sun structure and solar cycle</u> Sun composition sun layers The earth's orbit about the sun
Week 2	<u>Electromagnetic radiation</u> Electromagnetic spectrum Solid angle flux intensity
Week 3	<u>Radiation Laws</u> Blackbody Radiation Laws Planck's Law
Week 4	Stefan-Boltzmann Law Wien's Displacement Law Kirchhoff's Law

Week 5	<u>The interaction of solar radiation with atmospheric components</u> Scattering Rayleigh scattering Mie Scattering
Week 6	Non-Selective Scattering Absorption Vibrational and rotational transitions Vertical Profile of Absorption of trace gases Beer's Law
Week 7	<u>Estimation Solar Insolation</u> Definitions some solar terms, solar angles, Solar constant,
Week 8	Midterm Exam
Week 9	Insolation, Average Daily Insolation,
Week 10	<u>Thermal band and terrestrial radiation</u> Types of Spectra Absorption and Emission of Infrared Radiation, Schwarzschild's equation,
Week 11	<u>Light wave theory</u> Dual Nature of Light, Properties of light waves , superposition, interference,
Week 12	Reflection, Diffraction, Interferences, Huygens' Principle Polarization
Week 13	<u>Atmospheric phenomena</u> Blue Skies and Hazy Days Twinkling
Week 14	Twilight, and the Green Flash The Mirage
Week 15	Halos Rainbows
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	- Atmospheric Science, Second Edition: An Introductory Survey (International Geophysics) 2nd Edition - Stull, R., 2017: "Practical Meteorology: An Algebra-based Survey of Atmospheric Science" -version 1.02b. Univ. of British Columbia. 940 pages. isbn 978-0-88865-283-6. - Iqbal, Muhammad. An introduction to solar radiation. Elsevier, 2012.	available as PDF
Recommended Texts	Liou, Kuo-Nan. An introduction to atmospheric radiation. Vol. 84. Elsevier, 2002.	available as PDF
Websites	https://www.youtube.com/watch?v=-GfdbavEk8 https://www.youtube.com/watch?v=r1OiMI9fQBs https://www.uomustansiriyah.edu.iq/e-learn/UOMTeach/video_lectures/show_lectures.php https://uomustansiriyah.edu.iq/e-learn/profile.php?id=674	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer Science		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU04			
ECTS Credits	3			
SWL (hr/sem)	75			
Module Level	1	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Dr. Muthanna A. Aziz		e-mail	muthannaabd.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Ahmed S. Hassan		e-mail	ahmed.s.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Understand the meaning and basic components of a computer system. 2. To learn generation, classification and application of computers. 3. Knowledge of computer equipment, including both hardware and software, input and output devices. 4. Knowledge the types of operating systems (windows, Linux and Mac OS) and know the difference between them 5. To learn dealing with operating system windows 10 as a user. 6. Knowledge of Computer network is an interconnection between two or more hosts/computers and communication through the internet by using Email, Internet Chat, Video Conference. Resources of internet "World Wide Web" WWW, access web "Web Browser". 7. Knowledge of Software, its types and application package. 8. Use word-processing software (MS-Word), spreadsheet software (MS-Excel) and presentation software (MS-PowerPoint) to solve basic information systems problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand model, components of computer and how it works. 2. Understand the concept of input and output devices of Computers in detail. 3. Understand the concepts, structure, types and design of operating Systems ((Windows, Linux, OS) 4. Students will have a working knowledge to use the operating system windows 10. 5. Understand the Computer network and Resources of internet and Web Browser. 6. Recognize when to use each of the Microsoft Office programs to create professional and academic documents. 7. Students will have a working knowledge of Typing the texts and formatting in MS-Word. 8. Students will have a working knowledge of basic functions and formulas in MS Excel. 9. Create presentation by adding slides, applying animations, set times to slides, linking to another file.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – computer system [12hrs].</u> History of Computers, Generations of Computers, Computers Hardware and Software, Understanding Computer System Components and Communicate, Input, Output, and Storage, operating system, Types of Operating Systems (Windows, Linux, OS) and their features. Comparing (Windows, Linux, OS), Windows 10. [10 hrs] Networking – Internet – Communications: Computer network is an interconnection between two or more hosts/computers. Different types of networks include LAN, WAN, MAN. communication through the internet by using Email, Internet Chat, Video Conference. Resources of internet "World Wide Web" WWW, access web "Web Browser". [2 hrs] Revision problem classes [2 hrs] <u>Part B - Microsoft Office (2016) [16 hrs]</u> Microsoft Office word (2016)

	Text Basic - Typing the text, Alignment of text, Editing Text, Find and Replace, Text Formatting and saving file, File bar, Working with Objects, Header & Footers- Inserting, Multilevel numbering and Bulleting, Creating and Customizing List style, Page bordering and background, Tables (Table Formatting and Table Styles), Changing Word Options, Proofing the document, Page Setup, Print options. [4 hrs] Microsoft Office Excel (2016) Components Excel interface- rows and columns, working with excel workbook and sheets, Formatting excel work book, Currency, Modifying Columns, Rows and Cells, Formulas, Date and Time Functions, Financial Functions, Sort and filtering data, using number filter, Text filter, Custom filtering, analyzing atmospheric data Using PivotTables and Pivot Charts. [6 hrs] Microsoft Office Power Point (2016) Components PowerPoint interface- creating slides, new slide, layout of slides, duplicating slides, Copying and pasting slide, Slide background, slide views, Hyperlinks and Action Buttons, Word Art and Shapes, Working with Movies and Sounds, Animation and Slide Transition, slide Master, Slide show option. [6 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	During the 5-8 weeks of the course, the students will learn How to differentiate between the different components of the computer and how to deal well with the operating system Windows 10, with homework and class exercises to reinforce the material that learned in class. Multiple quizzes will help to assess learning the material. There is one midterm which covers the first part of the course. During the last 6 weeks of the course students will use their knowledge to work on a project related to atmospheric sciences. This will involve the use and process atmospheric datasets by MS Excel. Team projects will be set throughout the stages of the course.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	11	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	<u>Introduction</u> Introduction to computer system, History of Computers, Generations of Computers, Computers Hardware and Software Understanding Computer System Components and Communicate, Input, Output, and Storage
Week 2	<u>Operating System Basics</u> An introduction to the operating system Types of Operating Systems (Windows, Linux, OS) and their features. Comparing (Windows, Linux, OS)
Week 3	<u>Windows 10</u> Windows 10 - definition and functions, basics of Windows10, basic components of Windows10, icons, types of icons, taskbar, activating windows.
Week 4	<u>Windows 10</u> Using desktop, title bar, running applications, exploring computer, managing, files and folders, copying and moving files and folders.
Week 5	<u>Windows 10</u> Control panel, display properties, adding and removing software and hardware, setting date and time, screen saver and appearance, using Windows 10 accessories
Week 6	<u>Networking – Internet – Communications</u> Computer network is an interconnection between two or more hosts/computers. Different types of networks include LAN, WAN, MAN. communication through the internet by using Email, Internet Chat, Video Conference. Resources of internet "World Wide Web" WWW, access web "Web Browser".
Week 7	<u>Microsoft Office (2016)</u> Components of Microsoft Office Microsoft Office word (2016)

	Text Basic - Typing the text, Alignment of text, Editing Text, Find & Replace Text Formatting and saving file- File bar (New, Open, Close, Save, Save As), font options, Change the Text Case, Line spacing, Paragraph spacing, Shading text and paragraph, Working with Tabs and Indents.
Week 8	<u>Midterm Exam</u>
Week 9	<u>Microsoft Office word (2016)</u> Working with Objects- Shapes, Clipart and Picture, Word Art, Smart Art, Page Number, Date & Time, Text boxes, Word art, symbols and Chart. Header & Footers-Inserting, Custom Header and Footer, add section break to a document. Multilevel numbering and Bulleting, Page bordering and background, Tables, Changing Word Options, Proofing the document, Page Setup, Print options.
Week 10	<u>Microsoft office Excel (2016)</u> Introduction to Excel interface, understanding rows and columns, Naming Cells, working with excel workbook and sheets, Formatting excel work book, Currency, Accounting and other formats, Modifying Columns, Rows and Cells. Creating and Setting up a Simple Formulas, Date and Time Functions, Financial Functions, Logical Functions Mathematical and Statistical Functions, Text Functions.
Week 11	<u>Microsoft office Excel (2016)</u> Sort and filtering data, using number filter, Text filter, Custom filtering, removing filters from columns, Conditional formatting, Inserting Column, Pie chart etc., Create an effective chart with Chart Tool, Design, Format, and Layout options, adding chart title, changing layouts, Chart styles, editing chart data range, editing data series, Changing chart.
Week 12	<u>Microsoft office Excel (2016)</u> Analyzing atmospheric data Using PivotTables and Pivot Charts Understand PivotTables, create a PivotTable, Framework Using the PivotTable and PivotChart, Create Pivot Chart from pivot Table, inserting slicer, Creating Calculated fields.
Week 13	<u>Microsoft office PowerPoint (2016)</u> Introduction to PowerPoint interface, creating slides and applying themes, inserting new slide, changing layout of slides, duplicating slides, Copying and pasting slide, applying themes to the slide layout, changing theme color, Slide background, Formatting slide background, using slide views, Inserting Hyperlinks and Action Buttons, Edit Hyperlinks and Action Button, Word Art and Shapes.
Week 14	<u>Microsoft office PowerPoint (2016)</u> Working with Movies and Sounds- Inserting Movie from a Computer File, Inserting Audio file, Audio Video playback and format options, Video options, adjust options, Reshaping and bordering Video. Animation and Slide Transition- Default Animation, Custom Animation, modify a Default or Custom Animation, Reorder Animation Using Transitions, apply a Slide Transition, Modifying Transition, Advancing to the Next Slide.
Week 15	<u>Microsoft office PowerPoint (2016)</u> Using slide Master- Inserting layout option, creating custom layout, Inserting place holders, Formatting place holders. Slide show option- Start slide show, Start show from the current slide, rehearse timing, Creating custom slide show.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Showing Computer System Components and the connection between them, Input and Output devices, teach the students use the mouse, key board
Week 2	Lab 2: View the user interface of operating systems (Windows, Linux, OS) and the contents of the interface of each operating system and the difference between them. Introduction to Windows.
Week 3	Lab 3: Components of Windows 10, icons, types of icons, taskbar, activating windows.
Week 4	Lab 4: Managing files and folders, drives, running applications, title bar components.
Week 5	Lab 5: Control panel: adding and removing software and hardware, setting date and time, screen saver and appearance, using Windows 10 accessories.
Week 6	Lab 6: Resources of internet "World Wide Web" WWW, access web "Web Browser".
Week 7	Lab 7: Title Bar, Menu Bar, Tool Bar, FORMAT, Rulers, Active Window, Status Bar.
Week 8	Midterm Exam
Week 9	Lab 8: Typing the texts and formatting in MS-Word.
Week 10	Lab 9: Basic functions and formulas in MS-Excel.
Week 11	Lab 10: Create presentation by adding slides, applying animations, set times to slides in MS-PowerPoint

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Abraham, s. Operating systems concepts/abraham silberschatz; peter baer galvin; greg gagne (no. 005.12 s719o.).	available as PDF
Recommended Texts	Fernandes, J. M. (2022). Essentials of computing systems. UMinho Editora. https://doi.org/10.21814/uminho.ed.93	available as PDF
Required Texts	Bucki, L. A., Walkenbach, J., Alexander, M., Kusleika, R., & Wempen, F. (2013). Office 2013 Bible: The comprehensive tutorial resource (Vol. 808). John Wiley & Sons	available as PDF
Websites	https://www.udemy.com/course/introduction-to-computer-science/?utm_source=adwords&utm_medium=udemyads&utm_campaign=DSA_Catchall_la_EN_cc.ROW&utm_content=deal4584&utm_term=.ag_88010211481_.ad_535397282061_.kw_.de.c_.dm_.pl_.ti_dsa-406594358574_.li_9069858_.pd_.&matchtype=&gclid=EAlaIqObChMIhYjEgK3Z_wlV2fqyCh2GZQN4EAAYASAAEgI0fD_BwE https://www.youtube.com/watch?v=DzTCFsdXMP4	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Democracy and Human Rights		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU02			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	1	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Amjad Z. Taama		e-mail	amjadztatmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Professor		Module Leader's Qualification	M.Sc.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Ghassan Kareem Mijthab		e-mail	drghassankareem@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1- تعريف الطالب بما يعنيه مصطلح الديمقراطية والنظام الديمقراطي وحقوق الانسان وحياته الأساسية، فضلاً عن زيادة معرفة الطالب بالجانب المفاهيمي النظري والتطور التاريخي للديمقراطية وحقوق الانسان. 2- تمكين الطالب من ممارسة حقوقه بصورة فعالة من خلال التنمية الشاملة لشخصيته والاحساس بكرامتها واحترام حقوق الآخرين وحياتهم الاساسية بما يتفق وقيم المجتمع الديمقراطي. 3- تنمية مهارات ومعارف الطالب فيما يتعلق بادراك حقوق الانسان والديمقراطية وتأثيراتها على المجتمع. 4- فهم واستنباط اهم التجارب العالمية فيما يتعلق بالديمقراطية او تلك التي حاولت النهوض بحقوق الانسان، ومحاولة استنباط ما يمكن تطبيقه في مجتمعاتنا المحلية. 5- - التعريف بالدستور وبالانتخابات وابرز التجارب الانتخابية، وتحفيز الطلبة على أهمية المشاركة الفاعلة في الحياة السياسية.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- التعرف بحقوق الانسان 2- التعرف على أبرز سمات ومزايا وخصائص حقوق الانسان 3- مراجعة جذور وتاريخ حقوق الانسان 4- تحليل تطور فكرة حماية حقوق الانسان في العصر الحديث 5- التعرف على ما تضمنته الشريعة الدولية لحقوق الانسان 6- تسليط الضوء على المنظمات والهيئات الدولية المعنية بالدفاع عن حقوق الانسان 7- التعرف بالديمقراطية 8- التعرف على اشكال وصور الديمقراطية 9- مراجعة جذور وتاريخ الديمقراطية 10- تسليط الضوء على الدستور والديمقراطية 11- معرفة ما تعنيه جرائم الإبادة الجماعية 12- التعرف على الضمانات التي تكفل النظام الديمقراطي
Indicative Contents المحتويات الإرشادية	يمثل التعليم والتثقيف في مجال الديمقراطية وحقوق الانسان عملية تدوم مدى الحياة وتنمي المعارف والمهارات كما انها تعزز الشخصية وواجه السلوك سعياً لتحقيق حماية مستدامة لحقوق الانسان وحياته، فضلاً عن ان التثقيف بحقوق الانسان تسهم في صون كرامة البشر سعياً لإقامة مجتمعات تحترم وتقدر حقوق الانسان، ومن ثم تعمل على إقامة نظام ديمقراطي رصين.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	الاستراتيجية الرئيسة التي سيتم تبنيها في تقديم هذه المادة ستركز على تشجيع الطلبة على تقبل المواضيع المرتبطة بالديمقراطية وحقوق الانسان، ومحاولة تحسين بعض المهارات المرتبطة بها، وسيتم تحقيق ذلك من خلال البرامج التعليمية التفاعلية او من خلال اتباع بعض الطرق تدريس الحديثة.
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Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب ل ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	المفهوم العام لحقوق الانسان
Week 2	التعريف بالإنسان والحق وحقوق الانسان
Week 3	سمات وخصائص وأنواع حقوق الانسان
Week 4	جذور حقوق الإنسان وتطورها في تاريخ البشرية
Week 5	تطور فكرة حماية حقوق الانسان في العصر الحديث
Week 6	حقوق الإنسان في الحضارات القديمة والشرائع السماوية
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit

Week 8	مفهوم ومعنى الديمقراطية
Week 9	اشكال وصور الديمقراطية
Week 10	الخلفية التاريخية للديمقراطية
Week 11	سمات النظام الديمقراطي ومزاياه
Week 12	المكونات الرئيسة للديمقراطية
Week 13	الدستور والديمقراطية
Week 14	الدستور الدائم لجمهورية العراق 2005
Week 15	الانتخابات
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	محاضرات في الديمقراطية وحقوق الانسان	نعم
Recommended Texts	الديمقراطية وحقوق الانسان: تطورها مضامينها وحمايتها	نعم
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Arabic Language		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU06			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	1	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Dr. Entiha Abbas Aliwi		e-mail	Enteaaabbas@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assist. Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Monim H. Al-Jiboori		e-mail	monim.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/11/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1- مساعدة الطالب على حب اللغة العربية لغة القرآن الكريم. 2- التعرف على مواطن الجمال في اللغة العربية وآدابها. 3- أن يكتسب الطالب القدرة على دراسة فروع اللغة العربية. 4- تعريف الطالب بألفاظ اللغة العربية الصحيحة وتراكيبها وأساليبها السليمة بطريقة مشوقة وجذابة. 5- تنمية الطالب مهارات اللغة السليمة في المخاطبات الرسمية
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- تعلم خصائص اللغة ومميزاتها عن اللغات الأخرى 2- تحقيق الكفاءات اللغوية والقواعدية في أداء الطلبة للغة العربية في كل من الانشاء والقواعد والاملاء 3- تشخيص مواطن الاعراب في مادة اللغة العربية 4- معرفة الحركات (الفتحة والضمة والكسرة) واصوات اخرى مثل همزة الفصل والوصل. 5- قراءة الكلمات والجمل وفهم معانيها والربط بينها 6- اكتساب الطالب القدرة على التعبير الصحيح في التخاطب ، والتحدث ، و الكتابة. 7- تعلم اساسيات كتابة الاعداد 8- يتضح لدى علامات الاصلية والفرعية للجمل العربية 9- رفع مستوى الطالب على القراءة الصحيحة ، والنطق السليم ، وفهم الأفكار 10- تعليم الطالب بحفظ قدر كافٍ من النصوص الأدبية ، وأن يستمتع بها ، ويتذوق مظاهر الجمال فيها
Indicative Contents المحتويات الإرشادية	جلسة إرشادية تحقيق فرصة المسترشد ليعبر عما بداخله ويسلك بحرية فعلى المرشد حسن الاصغاء ودقة الملاحظة وتركيز الانتباه لكل قول أو فعل كي يدرك المرشد الجوانب المختلفة للمشكلة والمحافظة على اللغة الفصحى والابتعاد عن العامية ومعالجة الأخطاء الشائعة.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	التعليم هو انتقال الطلاب من مرحلة التركيز على المهارات بالدرجات الابتدائية إلى مرحلة التركيز على تبني وأن الطلاب يقوموا بمواجهه كثير من المطالب من أجل قراءة المعلومات عبر الكتب الدراسية، ويقوموا كذلك بتدوين الملاحظات أثناء المحاضرات، كما يتم العمل بطريقة مستقلة، بجانب التعبير.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	نبذة مختصرة عن أهمية اللغة
Week 2	محاضرة عن اقسام اللغة العربية
Week 3	محاضرة عن اقسام الجملة العربية في لغتنا
Week 4	محاضرة عن اقسام الجملة الاسمية والفعلية في اللغة
Week 5	محاضرة عن كتابة العدد
Week 6	محاضرة عن جمل التمييز
Week 7	محاضرة كيفية وضع علامات التنقيط
Week 8	<u>Midterm Exam</u>
Week 9	محاضرة عن الادب العربي
Week 10	محاضرة عن اقسام الادب العربي
Week 11	محاضرة عن اقسام الشعر العربي مع نموذج من قصائده
Week 12	محاضرة عن اقسام النثر مع نموذج من نثره
Week 13	محاضرة تضم تطبيقات عملية لكل المواد اللغة
Week 14	محاضرة (اختبارات عملية لكل مواد الادب)
Week 15	معرفة الهمزة المتوسطة والمتطرفة
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	محاضرات في اللغة العربية العامة	نعم
Recommended Texts	اللغة العربية لغير الاختصاص	نعم
Websites		

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

Course Description of First Level (Second Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Weather Instruments and Observations		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	MU010501204			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Dr. Hussain Abodi Nemah		e-mail	Husain_abodi.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Monim H. Al-Jiboori		e-mail	monim.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamental of Atmospheric Sciences	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn the basics of measurement systems. 2. Learning unit's measurements of the Atmospheric variables. 3. Learn the Weather Instruments Systems 4. Learn how to deal with atmospheric parameters. 5. Learn the Meteorological data Analysis 6. Learn about the Meteorological Weather Maps and stations codes
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The weather observation system is very important to our life, so the course outcomes includes :- 1- Understanding weather instruments techniques. 2- Understanding how to use it and what type of instruments can need in variable cases. 3- The ability of the student to read the surface stations codes and analyze the upper level observations. 4- Dealing with upper level atmospheric observations and radar data.
Indicative Contents المحتويات الإرشادية	<u>Part A. General concepts of measurement systems (2 hr.)</u> Meteorological observations reasons. Observing Parameters. observations ways Steps needed to make measurements for a specific application Instruments and measurement systems <u>Part B. Atmospheric observed variables and units measurements (4 hr.)</u> Global Observing System (GOS) Global Telecommunication System (GTS) Global Data-processing and Forecasting System (GDPFS) Global Observing System (GOS) and its components Observing Systems Conventional Observing System Modern Observing Systems Types of Automated Weather Observing Systems (AWOS) Advantages of automated weather observing systems Disadvantages of automated observations Universal Time <u>Part C. Atmospheric Variables (4 hr.)</u> Temperature Reasons of variables measurements Place determinations Temperature Sensors Liquid-in-Glass Thermometer Resistance Thermometer Thermistors Thermocouple Sonic thermometers Radiation thermometers Thermometer Response Time Sensor exposure Sitting Surface Sensors

	<u>Part D. Atmospheric Precipitation measurements (2 hr)</u> Precipitation Estimation (QPE) RAIN GAUGE Tipping bucket rain gauge Remote Sensing of QPE Precipitation radar Doppler precipitation radar Measuring precipitation from space Satellite QPE <u>Part E. Cloud observations (2 hr)</u> Classification Of Clouds Observations Height of Cloud Bases above the Surface for Various Locations Cloud Identification Clouds with large vertical extending Optical appearances Measurement of cloud height using a balloon Cloud Height and Remote Sensing <u>Part F. Upper levels observation (4 hr)</u> Atmospheric pressure levels Countor lines Isothermal lines Isobaric lines Meteorological stations codes <u>Part G. Meteorological data Analysis (2 hr)</u> Maps Grid point Global forecasting centers ECMWF Center NOA Centers Data models Data interpolation Missing data Data resolution Converting data
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, The learning and Teaching Strategies includes; 1. Identify the atmospheric meteorological weather variables, and its unit for measurements. 2. Describe the weather instrument tools with its basic work mechanisms

	- Describe the types of meteorological weather measuring tools , and the type of observing systems. - Describe the data sources and the global data centers. - Describe temperature and moisture measurements , with its basic principles , sensors types and response time - Describe the measurements mechanisms of precipitation, pressure and wind speed. - Understanding the upper atmospheric measurements ,weather radar and satellite observations . Finally Demonstrate knowledge of the measurement tools and methods used by scientists to study the natural world in the lab.
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	<u>General concepts of measurement systems</u> Basic data processing methods Simple Statistics Significant figures
Week 2	Temperature measurement Basic principles Sensor types How to measure atmospheric temperature
Week 3	Pressure measurement Basic principles Sensors How to measure atmospheric pressure
Week 4	Moisture measurement Moisture Variables and Basic Principles Sensors How to measure relative Humidity.
Week 5	Moisture measurement – continue Moist virtual Effect Determining air density How to estimate air density? Propagation of measurement errors
Week 6	<u>Atmospheric Precipitation measurements</u> Precipitation measurement Rain gauges Remote sensing measurement of precipitation How to measure rainfall Review
Week 7	Wind measurement Dynamic force anemometers Measuring wind speed
Week 8	<u>Midterm Exam</u>
Week 9	Wind measurement - continue Pressure pulse frequency anemometers (sonic anemometer) Thermal anemometers Wind profilers
Week 10	Radiation measurement Basic principles Sensors Simple experiment on radiation measurement
Week 11	<u>Cloud observations</u> Cloud measurement Cloud properties and types Cloud formation and precipitation Cloud measurement - continue

	Cloud-radiation-climate feedback Sensors
Week 12	<u>Upper levels observation</u> Upper atmosphere measurement Radiosonde GPS dropsonde Driftsonde
Week 13	Upper levels observation Atmospheric pressure levels Countor lines Meteorological stations codes
Week 14	<u>Meteorological data Analysis</u> Data Analysis Global forecasting centers ECMWF Center NOA Centers Data models
Week 15	data Analysis -continue Missing data Data resolution Converting data
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1. Explanation of various aerobic devices
Week 2	Lab 2. Visit the ground station and identify the existing devices and how to work and the way of taking measurements from different devices in practice
Week 3	Lab 3. Explanation of the surface station codes ,General formula of surface code
Week 4	Lab 4. Drawing and analysis of surface observation codes and instruments used for measurement
Week 5	Lab 5. Explanation of the wind &The Temperature codes in detail ,Wind& temperature measured Instruments
Week 6	Lab 6. Apply real cods on the surface map
Week 7	Lab 7. Explanation of the atmospheric pressure &The pressure slope groupcodes in detail
Week 8	<u>Midterm Exam</u>
Week 9	Lab 9. Explain the codes of the upper atmosphere layers
Week 10	Lab 10. Explanation of the level code 850 mb, 700mb, 500mb,300mb

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Stephen Burt, 2012: The Weather Observer's Handbook. Cambridge University Press, 458 p.	available as PDF
Recommended Texts	1- Fred V. Brock and Scott J. Richardson, 2001: Meteorological Measurement Systems. Oxford University Press, 305p. 2- Giles Harrison, 2015: Meteorological Measurements and Instrumentation. Wiley-Blackwell, 278 p.	available as PDF
Websites	https://www.youtube.com/watch?v=fRbM8p8DT1g https://www.youtube.com/watch?v=wMJmUAOp8g8 https://www.google.com/search?rlz=1C1CHBD_arlQ908IQ908&sxsrf=APwXEde172qa56oR-z7mjB74cgo_XYAi8g:1687294490300&q=weather+tools&tbm=vid&sa=X&ved=2ahUKEwj67ebl3dL_AhUdS_EDHdzwDe8Q0pQJegQICxAB&biw=1366&bih=612&dpr=1	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Electrical Physics		Module Delivery	
Module Type	Support		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010501205			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Dr. Baydaa Jaafar		e-mail	baidaa71.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph.D.
Module Tutor	No if available		e-mail	E-mail
Peer Reviewer Name	Dr. Ali Mohammed		e-mail	alialsalihi.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1-Learn the basic fundamentals of Electrical General Physics Science. 2- Learn and understand the Electric Forces & Electric Fields 3- Understand the theoretical basics of Electrical Energy & Capacitance Potential Difference & Electric Potential. 4- Understand the theoretical basics of Current & Resistance, Electric Current, Resistance, and Ohm's Law, Resistivity. 5- Learn the Direct Current Circuits, Sources of emf, Resistors in Series, Resistors in Parallel, Kirchhoff's Rules and Complex DC Circuits, RC Circuits. 6- Magnetic Force on a Current-Carrying Conductor, Torque on a Current Loop: Galvanometers and Electric Motors, Motion of a Charged Particle in a Beta-Field 7-Describing Induced Voltages and Inductance, Magnetic Flux, Faraday's Law of Induction, Motional emf, 8- Understand the theoretical basics of Vibrations and Waves, Hooke's Law, Energy, and Motion of a Simple Harmonic Oscillator (SHO). 9- Describing Sound, Characteristics of Sound Waves, Energy and Intensity of Sound Waves, Spherical and Plane Waves, The Doppler Effect. 10- Learn the Electromagnetic Radiation (Photons) Properties of Electromagnetic (E/M) Radiation, The Electromagnetic Spectrum, The Formation of Spectra, and the Doppler Effect of Light. 11- Understand the theoretical basics of Reflection and Refraction of Light Huygens' Principle, Reflection of Light, Refraction of Light, Dispersion, and Prisms.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- learn fundamental concepts in Electrical general physics. 2- Electric Forces & Electric Fields. 3- Current & Resistance Superconductors. 4- Electrical Energy, and Power. Induced Voltages and Inductance. 5- Vibrations and Waves. 6- Sound Characteristics of Sound Waves. 7- Energy, and Intensity of Sound Waves. 8- Electromagnetic Radiation (Photons) 9- Reflection and Refraction of Light.
Indicative Contents	<u>Part A. Electric Forces & Electric Fields (2 hr.)</u> <u>Part B. Electrical Energy & Capacitance (8 hr.)</u> Potential Difference & Electric Potential, Electric Potential of Point Charges, Potentials & Charged Conductors, Capacitors, Combination of Capacitors, Energy Stored in Charged Capacitors, Capacitors with Dielectrics <u>Part C. Current & Resistance (6hr)</u> Electric Current, Resistance, and Ohm's Law, Resistivity, Temperature Variation of Resistance, Superconductors, Electrical Energy, and Power. Electric Current, Resistance, and Ohm's Law, Resistivity, Temperature Variation of Resistance, Superconductors, Electrical Energy, and Power. <u>Part D. Direct Current Circuits and Magnetism 6hr)</u> Magnets, Magnetic Field of the Earth, Magnetic Fields, Magnetic Force on a Current-Carrying Conductor, Torque on a Current Loop: Galvanometers and Electric Motors, Motion of a Charged Particle in a Beta-Field, Ampere's Law, Solenoids, Magnetic Domains Sources of emf, Resistors in Series, Resistors in Parallel, Kirchhoff's Rules and Complex DC Circuits, RC Circuits. <u>Part E. Vibrations and Waves and sound (6hr)</u> Hooke's Law, Energy and Motion of a Simple Harmonic Oscillator (SHO), Pendulum Motion, Types of Waves, The Interference and Reflection of Waves. Characteristics of

	Sound Waves, Energy and Intensity of Sound Waves, Spherical and Plane Waves, The Doppler Effect, The Interference of Sound Waves, Standing Waves, Forced Vibrations and Resonance, and Standing Waves in Air Columns. Reflection and Refraction of Light Huygens' Principle, Reflection of Light, Refraction of Light, Dispersion, and Prisms.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	During the 10-13 weeks of the course, the learning and Teaching Strategies include; 1. Identify the Electric Forces & Electric Fields Method for Assessment: Graded exams, worksheets, pre-and post-course survey 2. Describe the Current & Resistance Method for Assessment: Graded exams, worksheets, pre-and post-course survey 3. Describe the Induced Voltages and Inductance Method for Assessment: Graded exams, worksheets, and pre-and post-course surveys. 4. Describe the Vibrations and Waves and sound. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 5. Electromagnetic Radiation (Photons) Finally, Demonstrate knowledge of the tools and methods used by scientists to study the practical part in the lab.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered
Week 1	<u>Electric Forces</u> Properties of Electric Charge, Insulators and Conductors, Coulomb's Law.
Week 2	<u>Electric Fields</u> The Electric Field, Electric Field Lines, Conductors in Electrostatic Equilibrium, The Electric Flux, and Gauss's Law.
Week 3	<u>Electrical Energy</u> Potential Difference & Electric Potential, Electric Potential of Point Charges, Potentials & Charged Conductors.
Week 4	<u>Capacitance</u> Capacitors, Combination of Capacitors, Energy Stored in Charged Capacitors, Capacitors with Dielectrics.
Week 5	<u>Current & Resistance</u> Electric Current, Resistance, and Ohm's Law, Resistivity, Temperature Variation of Resistance, Superconductors, Electrical Energy, and Power.
Week 6	<u>Direct Current Circuits</u> Sources of emf, Resistors in Series, Resistors in Parallel, Kirchhoff's Rules and Complex DC Circuits, RC Circuits.
Week 7	<u>Magnetism</u> Magnets, Magnetic Field of the Earth, Magnetic Fields, Magnetic Force on a Current-Carrying Conductor, Torque & Ampere's Law Torque on a Current Loop: Galvanometers and Electric Motors, Motion of a Charged Particle in a Beta-Field, Ampere's Law, Solenoids, Magnetic Domains
Week 8	<u>Midterm Exam</u>
Week 9	<u>Induced Voltages and Inductance</u> Magnetic Flux, Faraday's Law of Induction, Motional emf, Generators and Motors, Self-Inductance, RL Circuits, and Energy Stored in a Magnetic Field.
Week 10	<u>Vibrations and Waves</u> Hooke's Law, Energy and Motion of a Simple Harmonic Oscillator (SHO), Types of Waves, The Interference and Reflection of Waves.
Week 11	<u>Sound</u> Characteristics of Sound Waves, Energy and Intensity of Sound Waves, Spherical and Plane Waves, The Doppler Effect.
Week 12	Standing Waves The Interference of Sound Waves, Standing Waves, Forced Vibrations and Resonance, Standing Waves in Air Columns.
Week 13	<u>Electromagnetic Radiation (Photons)</u> Properties of Electromagnetic (E/M) Radiation, The Electromagnetic Spectrum, The Formation of Spectra and the Doppler Effect of Light, Blackbody Radiation, Spectroscopy: The Study of Spectra.
Week 14	<u>Blackbody Radiation</u> Blackbody Radiation, Spectroscopy: The Study of Spectra.
Week 15	<u>Reflection and Refraction of Light</u> Huygens' Principle, Reflection of Light, Refraction of Light, Dispersion and Prisms.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Achieve Ohm's Law
Week 2	Electrical conductivity account
Week 3	The relation between resistance and temperature
Week 4	The relation between resistance and length and type of wire
Week 5	Water turbine and charge
Week 6	Air turbine (electricity from water energy)
Week 7	Electrical discharge
Week 8	Midterm Exam
Week 9	Solar Radiation
Week 10	Characteristics of Sound waves in empty columns
Week 11	Radiation from bright objects

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1- Huge D. Young and Roger A. Freedman, 2012: University Physics, 13 th Edition, Addison Wesley, 1598 p.	available as PDF
Recommended Texts	1- Giambattista A., Richardson B., Richardson R., 2007 :College Physics, Second Edition, Mc Graw Hill, USA.	available as PDF
Websites	https://www.physicsclassroom.com https://www.liberty.edu/online/courses/phys201/ https://www.coursera.org/courses?query=physics https://physics.oregonstate.edu/undergraduate/ecampus https://www.straighterline.com/online-college-courses/sciences/general-physics-i/ https://edukan.edu/course/general-physics-i/	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors

	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Calculus		Module Delivery	
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010501206			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	1	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Dr. Jasim Hameed Kadhum		e-mail	jasim.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Asraa Khtan Abdulkareem		e-mail	dr.asraa.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn the basics and fundamental of math. 2. Learn and understand the properties of limits 3. Learn the theoretical derivatives rules 4. Learn laws of Inverse Trigonometric functions 5. Learn laws of Hyperbolic functions 6. Understand integration rules of Trigonometric functions 7. Understand the method of integration
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the primary concepts in calculus. 2. Understand the laws of limits 3. Understand the rules and applications of derivatives 4. Understand the laws and derivatives of inverse Trigonometric functions 5. Understand the applications of Hyperbolic functions laws 6. Understand the integration rules and functions 7. Learn the method of integration
Indicative Contents المحتويات الإرشادية	<u>Part A. Limits and Continuity (4 hr.)</u> Limits Properties of Limits Limits Involving Infinity Continuity Limits at Infinity <u>Part B. Derivatives (4 hr.)</u> Rules for Calculating Derivatives The Derivative of an Inverse The Derivative as a Rate of Change Applications of the Derivative <u>Part C. Applications of the Derivative (4 hr)</u> Graphing of Functions Maximum/Minimum Problems Related Rates Falling Bodies <u>Part D. Trigonometric and Inverse Trigonometric functions (4 hr)</u> Trigonometric and Inverse Trigonometric functions Laws of Inverse Trigonometric functions Derivatives of Inverse Trigonometric functions <u>Part E. Hyperbolic functions (4 hr)</u> Hyperbolic functions Laws of Hyperbolic functions Derivatives of Hyperbolic functions.

	<u>Part F. Integrals (4 hr)</u> Integration rules Integration of trigonometric functions Integration of exponential and logarithmic Integration of inverse trigonometric functions
	<u>Part G. Methods of integration (6 hr)</u> Integration by Parts Integration Using Tables Trigonometric Integrals Integration by Partial Fractions Trigonometric Substitution method

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, the leaning and Teaching Strategies includes; 1. Identify the primary concepts in Calculus. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 2. Describe the laws of limits and Derivatives Rules Method for Assessment: Graded exams, worksheets, pre- and post- course survey 3. Describe the Inverse Trigonometric functions Method for Assessment: Graded exams, worksheets, pre- and post- course survey. 4. Describe the Hyperbolic functions Method for Assessment: Graded exams, worksheets, pre- and post- course survey 5. Describe and Understand Integration rules Hyperbolic functions Method for Assessment: Graded exams, worksheets, pre- and post- course survey 6. Understand the method of integration

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	<u>Limits and Continuity</u> Limits Properties of Limits Continuity
Week 2	limits Involving Infinity Limits at Infinity
Week 3	<u>Derivatives</u> Rules for Calculating Derivatives The Derivative of an Inverse
Week 4	The Derivative as a Rate of Change Applications of the Derivative
Week 5	<u>Applications of the Derivative</u> Graphing of Functions Maximum/Minimum Problems
Week 6	Related Rates Falling Bodies

Week 7	<u>Midterm Exam</u>
Week 8	<u>Trigonometric and Inverse Trigonometric functions</u> Trigonometric and Inverse Trigonometric functions
Week 9	Laws of Inverse Trigonometric functions Derivatives of Inverse Trigonometric functions
Week 10	<u>Hyperbolic functions</u> Hyperbolic functions Laws of Hyperbolic functions Derivatives of Hyperbolic functions.
Week 11	<u>Integrals</u> Integration rules Integration of trigonometric functions Integration of exponential and logarithmic
Week 12	Integration of inverse trigonometric functions
Week 13	<u>Methods of integration</u> Integration by Parts Integration Using Tables
Week 14	Trigonometric Integrals Trigonometric Substitution method
Week 15	Integration by Partial Fractions
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	James Stewart, 2012: Calculus, 7 th ed., Brooks/Cole, Cengage Learning, 1368 p.	available as PDF
Recommended Texts	- Larson, R. and B. H. Edwards, 2010: Calculus, 9th ed., Brooks/Cole, Cengage Learning, 1334 p. - Crowell, B. 2005: Calculus. Benjamin Crowell, 179 p.	available as PDF
Websites		

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Programming Language for Atmospheric Sciences (Python)		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010501207			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	1	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Dr. Sama Al-Dabbagh		e-mail	sama.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Ahmed S. Hassan		e-mail	ahmed.s.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn the basics of Python including running programs. 2. Learn how to open, read and write different types of files 3. Learn the basis of looping, conditional statements and functions 4. Learn how to deal with arrays 5. Learn how to graph up data using Python.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introduce the programming languages, and specially Python and its features and applications and how to be familiar with Python environment. 2. List various data types, objects, attributes, and methods 3. Describe data structure 4. Be able to use tuples and data dictionaries 5. Understand basic python functions for use in the atmospheric sciences 6. Be capable of using basic functions like “if” and different types of loops and building blocks. 7. Define basic python Modules 8. Be able to work with different types of data files such as CSV, txt and NetCDF files. 9. Learn how to visualize atmospheric data as 1D and 2D plots
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – Python Basics [34 hrs]</u> Introduction to Python – Features of Python, Advantages and Applications, PyCharm and Jupyter environment, Writing First Python Program, Python as a Calculator, General syntax, Variable names and Assignment, Numeric data types, Objects, Attributes, and methods, The none data types, Strings and flow charts. [8 hrs] Lists and Tuples, Dictionaries – elements, ranges of indexes, Dictionaries, Alternate Means of Creating Dictionaries, creating and accessing, adding elements, Functions and Methods for Dictionaries. [4 hrs] NumPy Arrays – Importing, Python Arrays vs. NumPy Arrays, 1-D and 2-D Array, Array indexing, Ranges of indices, Ranges with 2-D arrays, Creating Zeroed, Single Valued and Empty Arrays, Creating Arrays with numpy.arange(), numpy.linspace(), numpy.logspace(), copying Arrays, The where Function, Saving NumPy Arrays, Loading .npy, .npz and .pickle Files. [8 hrs] Operators and Mathematical Functions –Operators: Numerical operators and their Comparison, Augmented Assignment and Boolean. Mathematical Functions: - Built-in Functions with Examples, the math Modules and Functions with examples, Special Functions in numpy Module, Importing Individual Functions from Modules. [8 hrs] Revision problem classes. [6 hrs] <u>Part B - Loops and building blocks, visualizing Data as 1-D & 2-D [32 hrs]</u> Program Flow and Control – Interactive Input, Conditional Statements (if, elif, else, Multiple Conditions, single line conditional statements), Loops (for and while), Skipping to Top of Loop with continue, breaking out of a Loop, Verifying Input with while Loop, Code Blocks. [12 hrs]

	File Input/Output – Opening/ Closing, File Selection, Directory Selection, reading, writing and saving different types of files including Txt, CSV and NetCDF Files, using Numpy Arrays in Writing and Reading. [8 hrs] Modules and Functions – Defining and Using a Function, Using Keywords, Modules, sys.path Variable, Namespace Consideration, Documentation Strings.[4 hrs] Plotting Data – Plotting 1-D and 2D by using functions to draw points, lines, axis, titles, scales, legends, choosing font options, color bars. [8 hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-12 weeks of the course, the students will learn how to program in Python, with homework and class exercises to reinforce the material that learned in class. Multiple quizzes will help to assess learning the material. There is one midterm which covers the first part of the course. During the 13-15 weeks of the course students will use their knowledge to work on a project related to atmospheric sciences. This will involve the use and process atmospheric datasets. Team projects will be set throughout the stages of the course.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1,#2,#3 and #6
	Assignments	1	5% (5)	3	LO #1,#2
	Projects / Lab.	1	15% (15)	Continuous	All
	Report	1	10% (10)	13	LO #1 - #6
	Midterm Exam	2hr	10% (10)	8	LO #1 - #5

Summative assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	<u>Introduction to Python</u> Introduction to programming languages and Python, Features of Python, Advantages of Python, Python Applications, Download and Install Python using PyCharm and Jupyter, Writing Your First Python Program: Hello World, Python as a Calculator
Week 2	<u>Syntax and Data Types</u> General syntax, Variable names and Assignment, Numeric data types, Objects, Attributes, and methods, The none data types, Strings and flow charts
Week 3	<u>Lists and Tuples, Dictionaries</u> Accessing elements of a collection, Nested elements, using ranges of indexes, the range function, Striding and reversing using ranges, Accessing Nested Elements, Assigning/Reassigning Elements, Lists versus Arrays, Functions and Methods for Lists, The range() Function, Dictionaries, Alternate Means of Creating Dictionaries, creating and accessing, adding elements, Functions and Methods for Dictionaries.
Week 4	<u>NumPy Arrays</u> Importing NumPy, Python Arrays vs. NumPy Arrays, Creating a 1-D Array, Creating a 2-D Array, Array indexing, Ranges of indices, Using Ranges with 2-D arrays, Creating Zeroed, Single Valued and Empty Arrays, Creating Arrays with Same Shape and Type as Existing Array
Week 5	<u>NumPy Arrays(continue)</u> Creating Arrays with numpy.arange(), numpy.linspace(), numpy.logspace(), copying Arrays, The where Function, Saving NumPy Arrays, Loading .npy, .npz and .pickle Files
Week 6	<u>Operators and Mathematical Functions</u> Numerical operators, Comparison Operators, Augmented Assignment Operators, Boolean Operators, Mathematical Functions, Built-in Math Functions Examples, The math Module, The numpy Module, Constants in math Module, Functions in the math Module, Trig Functions in the numpy Module
Week 7	<u>Operators and Mathematical Functions(continue)</u> Exponents and Logs in the math Module, Numeric Functions in the numpy Module, Modulo Arithmetic in numpy Module, Special Functions in numpy Module, Functions for Infinity/NaN in the numpy Module, Loading Modules, Aliasing Modules, Importing Individual Functions from Modules
Week 8	<u>Mid Exam</u>
Week 9	<u>Program Flow and Control (continue)</u> Interactive Input, Input of Multiple Values, Conditional Statements (if, elif, else, Multiple Conditions, single line conditional statements), Loops (for and while), Skipping to Top of Loop with continue, Breaking out of a Loop, Verifying Input with while Loop
Week 10	<u>Program Flow and Control (continue)</u> Code Blocks
Week 11	<u>File IO</u> Opening/Closing Files, Interactive File Selection, Interactive Directory Selection, reading from Text Files, Writing Text to Files, Reading and Writing CSV Files, The CSV Module is Flexible, Using the with Statement, Writing and Reading Numpy Arrays to Text Files.

Week 12	File IO Working with NetCDF files, opening, reading and saving NetCDF files in Python
Week 13	Modules and Functions Defining and Using a Function, Using Keywords, Modules, sys.path Variable, Namespace Consideration, Documentation Strings.
Week 14	Plotting Data 1D
Week 15	Plotting Data 2D
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to PyCharm and Jupyter environment, and write the first python program
Week 2	Lab 2: Practicing the syntax and data types
Week 3	Lab 3: Practicing lists and Tuples
Week 4	Lab 4: Practicing dictionaries using built-in functions
Week 5	Lab 5: Importing NumPy, data structure applications
Week 6	Lab 6: Practical sessions about Operators and Mathematical Functions and Numpy functions
Week 7	Lab 7: Applied programs about Conditional Statements (if, elif, else, Multiple Conditions, single line conditional statements)
Week 8	Mid Exam
Week 9	Lab 9: Applied programs about Loops (for and while)
Week 10	Lab 10: Improve for and while loop: continue, Breaking out of a Loop, Code Blocks
Week 11	Lab 11: Read CSV files and process the atmospheric data
Week 12	Lab 12: Read txt files and process the atmospheric data
Week 13	Lab 13: Read NetCDF files and process the atmospheric data
Week 14	Lab 14: Plotting Data 1-D
Week 15	Lab 15: Plotting Data 2-D

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1. DeCaria, A. (2022): Scientific Programming, Analysis and Visualization with Python, sundog publishing, Madison, Wisconsin.	available as PDF
Recommended Texts	2. Lin, J., Aizenman, H., Manette Cartas Espinel, E., Gunnerson, K., & Liu, J. (2022). An Introduction to Python Programming for Scientists and Engineers.	available as PDF available as PDF

	Cambridge: Cambridge University Press. doi:10.1017/9781108571531 3. Amos, D., Bader, D., Jablonski, J., & Heisler, F. (2021). Python Basics: A Practical Introduction to Python 3. (No Title).	
Websites	https://www.python.org/	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	General Chemistry		Module Delivery	
Module Type	Support		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010501208			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	1	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Name: Dr. Mesoun Abdul Hussein		e-mail	chemaysoon70@gmail.com
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Monim H. Al-Jiboori		e-mail	monim.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	26/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn the basics and fundamentals of chemistry. 2. Learn and understand the chemical equations and how to balance them 3. Learn and understand the theoretical Rules of chemical calculations. 4. Learn and understand the laws of gases in the atmosphere and environment. 5. Learn and understand the arrangement of elements in the period table 6. Understand the features and properties of the chemical elements 7. Understand the effect of the positive nucleus' charge on the movement of the valance electrons that will share in the chemical reactions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the basics and fundamentals of chemistry. 2. Understand the properties of the chemical elements of this table 3. Understand the law of blocking 4. Understand the calculating the atomic particles. 5. Understand the types of atomic' particles 6. Understand the theoretical rules of gases 7. Understand the devices and methods used to measure the atmospheric pressure
Indicative Contents المحتويات الإرشادية	<u>Part A. General Chemistry (6 hr.)</u> The basics and fundamentals of chemistry The branches of chemistry The chemical equations and how to balance them The theoretical Rules of chemical calculations. <u>Part B. The period table (6 hr.)</u> The arrangement of elements The features and properties of the chemical elements of this table The effect of the positive nucleus' charge on the movement of the valance electrons that will share in the chemical reactions The law of blocking <u>Part C. The isotopes (4 hr.)</u> The rule of calculating the a.m.u (the atomic weight) of each element <u>Part D. The contents of the atom (2 hr.)</u> Types of atomic' particles <u>Part E. theoretical rules (4 hr)</u> the 3 rules of gases and their applications in the atmosphere <u>Part F. The devices (4 hr)</u> some devices used to measure the atmospheric pressure <u>Part G. Methods of calculations (4 hr)</u> Two methods to calculate the pressure in different environments

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	During the 16-17 weeks of the course, the learning and Teaching Strategies include:
	1. Identify the primary concepts in chemistry. Method for Assessment: oral exams, practical reports, quizzes
	2. Describe the arrangement of elements Method for Assessment: oral exams, quizzes, reports
	3. Describe the features and properties of the chemical elements Method for Assessment: oral exams, quizzes, and reports.
	4. Describe the effect of the positive nucleus' charge on the movement of the valence electrons that will share in the reactions and calculate the blocking Method for Assessment: oral and written exams, quizzes, and reports.
	5. Calculate the a.m.u (the atomic weight) of each element Method for Assessment: written exams, quizzes
	6. Understand the rules of gases and their applications in the atmosphere Method for Assessment: written exams, quizzes
	7. Describe the devices used to measure the atmospheric pressure Method for Assessment: oral and written exams, quizzes, and reports.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 16 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	<u>General Chemistry</u> The basics and fundamentals of chemistry The branches of chemistry
Week 2	The chemical equations and how to balance them
Week 3	The theoretical Rules of chemical calculations.
Week 4	<u>The periodic table</u> The arrangement of elements in the period table
Week 5	The features and properties of the chemical elements
Week 6	The effect of the positive nucleus' charge on the movement of the valance electrons that will share in the chemical reactions.
Week 7	The law of blocking
Week 8	<u>Midterm Exam</u>
Week 9	<u>The isotopes</u> The identification of isotopes
Week 10	The rule of calculate the a.m.u (the atomic weight) of each element and a weekly exam
Week 11	<u>The contents of the atom</u> The atomic contents Particles: electrons, protons, neutrons
Week 12	<u>Theoretical rules</u> The 3 rules of gases and their applications in the atmosphere Calculations of gases' pressure, volumes, and temperatures
Week 13	<u>Devices</u> Types of devices used to measure the gases and atmospheric pressure
Week 14	The difference between the devices
Week 15	<u>Methods of calculations</u> Two methods to calculate the pressure in different environments
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1. Glassware, tools and devices used in a chemistry laboratory
Week 2	Lab 2. Experiment of preparation for an initial standard solution
Week 3	Lab 3. Experiment of preparation for a secondary standard solution
Week 4	Lab 4. Experiment of finding the concentration of a strong base, NaOH, with a strong acid, HCl
Week 5	Lab 5. Experiment of finding the concentration of a weak base NaHCO_3 with a strong acid HCl
Week 6	Lab 6. Experiment of finding the percentage of the crystallization water
Week 7	Lab 7. Experiment of finding the equivalent weight of zinc
Week 8	<u>Midterm Exam</u>
Week 9	Lab 8. Experiment of recrystallization of compounds

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Ballhausen, I. C. "Introduction to chemistry", Longmans, Green and Co., New York, Toronto, London (1962).	available as an online PDF
Recommended Texts	Geary, W. J. "Coordination Chemistry Review", 7(1), 81 (1971).	available as an online PDF
Websites		

Grading Scheme

مخطط الدرجات

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	English Language		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU01			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	1	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Farah A. Raheem		e-mail	E-mail
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M A English Literature	
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Ali Raheem	e-mail	aliraheem@uomustansiriyah.edu.iq	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Urging students to acquire and revise their previous knowledge of the basics of English language in general. 2. Urging students to learn and master the use of English grammar for the first seven units of the curriculum approved by the Iraqi Ministry of Higher Education. 3. Enabling students to acquire, improve and practice the various skills of English language (listening, speaking, reading and writing) for the first seven units of the curriculum approved by the Iraqi Ministry of Higher Education. 4. Enabling students to use English language in their academic study of science instead of the Arabic language to achieve scientific progress. 5. Enabling students to communicate in English with others in their daily life inside/outside the campus.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Students will be able to speak English as fluently as possible. 2- Students will be able to listen and understand English conversations, talks or lectures in English better than before. 3- Students will be able to read and comprehend written works such as scientific books, lectures, reports and papers in English easier than before. 4- Students will be able to write in English better than before, such as lab reports, explanations, and definitions . 5- Students will be able to use English grammar correctly more than before. 6- Students will be able to use their improved English language skills in their academic career more than ever before
Indicative Contents المحتويات الإرشادية	<u>Unite 1 . Hello (4 hr.)</u> Grammar :V. to be , This is... Vocabulary: Greetings , Numbers, Introduction. Everyday English: Greetings & conversation <u>Unite 2 . Your world (4 hr.)</u> Grammar : Subject pronouns, V. to be in questions Vocabulary: Countries, Nouns, Adjectives Everyday English: Numbers, Countries. <u>Unite 3 . All about you (4 hr.)</u> Grammar : V. to be in questions, Negative, & Short Answers Vocabulary: Jobs & personal Information& interviews.

	Everyday English: Social Expressions <u>Unite 4 . Family and friends (4 hr.)</u> Grammar : Possessive adjectives, Possessive 's , has/have& Adjective + noun Vocabulary: The family & Describing a friend Everyday English: The alphabet , On the phone, & Saying email addresses <u>Unite 5 . The way I live (4 hr.)</u> Grammar : Present Simple, a and an & Adjective + noun. Vocabulary: Sports/ Food/ Drinks, Adjectives & Languages and nationalities. Everyday English: How much is it? , Numbers1-100 & prices. <u>Unite 6 . Every day (4 hr.)</u> Grammar : Present Simple, Questions and negatives & Adverbs of frequency. Vocabulary: The time, Verbs and nouns & Words that go together. Everyday English: Days of the week & Prepositions of time <u>Unite 7 . My favourites (4 hr.)</u> Grammar : Question words ,Pronouns(Subject/Object/Possessive) & this and that Vocabulary: Adjectives, Opposite adjectives, & Places Everyday English: Can (questions)
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 14- 15 weeks of the first semester, The following learning and Teaching Strategies will be used : 1- Beginner students need more careful staged approach with plenty of drillings, repetition, and revisions. So, a step by step technique will be effective. 2- Use question technique to stimulate discussion, emphasize the value of students' answers, and encourage active participation. 3- Emphasizing and improving previously acquired English language skills and abilities. 4- Encouraging learners to work together in chat groups to improve their speaking skills. Ask them to do a written homework to improve their writing skills as well.

	5- Make use of <i>iTools</i> or <i>New Headway Plus Beginner Digital Edition</i>, videos and audio tracks using the smart board to motivate learners to hear and acquire better English pronunciation especially to improve listening and speaking skills. 6- Using social media, YouTube channels and reliable applications to facilitate the independent learning process and make it more fun. 7- Encourage learners to participate in language activities, online courses and international language tests such as TOEFL and IELTS as an optional extracurricular activity. 8- Linking different English language skills with learners' other scientific curriculums by presenting short scientific lectures in English on smart boards and asking them to answer questions, write reports, prepare oral presentations as homework, or participate in a group discussion inside the class
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative	Quizzes	1	10% (10)	10,12	LO #3, #4 and # 5

assessment	Assignments	1	10% (10)	14	LO #4, #5, and #6
	Listening Exam (Project)	1	10% (10)	2,4,10,12	LO #1, and #2
	Oral Discussions (Report)	1	10% (10)	All	All
Summative assessment	Midterm Exam	2hr	10% (10)	1-6	All
	Final Exam	3hr	50% (50)	All	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introductory lecture: "English Language: Importance, Concepts, & Methods of Teaching". Notes about <i>New Headway plus : beginner</i> Unit -1- Student's book : Hello! WHAT'S YOUR NAME? p.6 INTRODUCTIONS p.7 HOW ARE YOU? p.8 EVERYDAY ENGLISH: Good morning! p.9 VOCABULARY AND SPEAKING: What's this in English? p.10-11
Week 2	Unit -1- Workbook: Hello! INTRODUCTIONS p. 4 Nice to meet you P.5 Vocabulary: p.6-7

	EVERYDAY ENGLISH: Good morning! p.8 Do not forget! p.9 Writing : p.10-11
Week 3	Unit -2- Student's book : Your world SHE'S FROM JAPAN p.12 QUESTIONS p.13 PRACTICE : Cities and countries p.14-15 READING AND SPEAKING : Where are they from? p.16 EVERYDAY ENGLISH : Numbers 11-30 p.17
Week 4	Unit -2- Workbook: Your world Countries p.12 Am/are/ is p.13 Listening: At a wedding p. 14 Questions p. 14 Adjectives p. 14 Reading : Where are they p.15 Listening p. 16 Everyday English : Numbers 11-30 p. 16 Do not Forget! p.17 Writing : p.18-19
Week 5	Unit -3- Student's book : All about you Jobs p. 18 Negatives and questions p.18

	Personal information p.19 STUDENTS WALK FOR CHARITY p.20 Practice p. 21 READING AND LISTENING : The charity walk p.22 EVERYDAY ENGLISH : Social expressions (1 p.23
Week 6	Unit -3- Workbook: All about you Jobs p.20 Questions and negatives : is/isn't p.21 Negatives and questions : I'm not/they aren 't p.22 Listening p.23 Vocabulary p.23 Everyday English : Social expressions (1) p. 24 Do not forget p.25 Writing: p.26-27
Week 7	Midterm Exam
Week 8	Unit -4- Student's book : Family and Friends MY FAMILY : Possessive' S p.24-25 Practice p. 26 Annie's brother p.27 Practice p. 28 READING AND WRITING : My best friend p28-29 EVERYDAY ENGLISH : The alphabet p.30 On the phone p.31

Week 9	Unit -4- Workbook: Family and friends Possessives p.28-29 Vocabulary p.29 Alfie and his family p.30 Reading : Who's happy? p.31 Vocabulary p.32 Everyday English :The alphabet p.32 Do not forget p.33 Writing: p.34-35
Week 10	Unit -5- Student's book : The Way I Live Sports/Food/Drinks p. 32 Present Simple -I/you/we/they p.32 -33 Reading and speaking : COLIN BRODIE FROM DUNDEE p.34-35 VOCABULARY AND PRONUNCIATION : Languages and nationalities p.36-37 LISTENING AND SPEAKING : At a dinner Party p.38 Everyday English p.39
Week 11	Unit -5- Workbook: The Way I Live Sports, food, drink p.36 Things I like p.37 Present Simple : The swimmer Michael Phelps p.38 LISTENING p.39 Everyday English : How much is it? p.40

	Do not forget p.41 Writing: p. 42-43
Week 12	Unit -6- Student's book : Every day The time p.40 WHAT TIME DO YOU GET UP? p.41 Elliot's DAY p.42-43 PRACTICE : Lois's day p. 44-45 VOCABULARY AND SPEAKING : Words that go together p.46 EVERYDAY ENGLISH : Days of the week p.47
Week 13	Unit -6- Workbook: Every day The time p.44 Present Simple p.45-46 Pronunciation p.47 Prepositions p.47 Vocabulary p.47 Reading: Barack Obama, America's first black President p.48 EVERYDAY ENGLISH : Days of the week p.49 Writing: p. 50-51
Week 14	Unit -7- Student's book : My favourites Question words p.48-49 THIS IS MY FAVOURITE ... p.50

	PRACTICE : I like them! p.51 VOCABULARY : Adjectives p. 52 READING AND WRITING : A postcard from San Francisco p.53 EVERYDAY ENGLISH p.54-55
Week 15	Unit -7- Workbook: My favourites Questions p.52-53 Pronouns and possessives p.54 this/ that p.54-55 Vocabulary : Adjectives : happy/miserable p.55 EVERYDAY ENGLISH p.56 Don't forget! p.57 Writing: p. 58-59
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
	Non

Learning and Teaching Resources

مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1- Soars, John and Liz. <u>New Headway Plus : Beginner Student's Book</u>, 1st Edition, Oxford University Press, Oxford , (2014). Digital Edition , With DVD- ROM. Required Units 1-7 only. Soars, John and Liz. <u>New Headway Plus : Beginner Workbook without Key</u>, 1st Edition, Oxford University Press, Oxford , (2014). Digital Edition , With new writing Micro- skills. Required Units 1-7 only.	Both Books are available as printed copies & PDF Notes : Most of PDF and printed copies are different from the required edition. Besides, some printed editions and PDF of the Workbook are with Key.
Recommended Texts	1- Murphy, Raymond. <u>English Grammar In Use</u>. 3rd Edition, Oxford University Press, Oxford,(2012). 2- Soars, John and Liz & Merifield, Sue. <u>Headway Beginner Teachers' Guide. 5th Edition</u>, Oxford University Press, Oxford , (2019). (For Teachers)	Available as a printed copy & PDF Available as a PDF
Websites	1- Oxford University Press/English Language Teaching Worldwide, https://elt.oup.com/, an online website supports teachers who teach Headway plus Beginner text books. 2- BBC Learning English , https://www.bbc.co.uk /learning English , an online website also available as an application on Google play, and social media sites. It presents free different programs to improve English Language Skills.	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
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	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria

Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

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Course Description of Second Level (First Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Fundamentals of Thermodynamics		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010502101			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	2	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Dr. Thaer Obaid Roomi		e-mail	th.roomi.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant Professor		Module Leader's Qualification	
Module Tutor	No if available		e-mail	
Peer Reviewer Name	Dr. Yaseen K. Altimimi		e-mail	yaseen.altimimi.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. This course deals with the fundamentals of Thermodynamics including thermodynamic systems and properties, relationships among the thermos-physical properties, the laws of thermodynamics (First and second) and applications of these basic laws in thermodynamic systems. Also, the course will take into account some basic examples of how thermodynamics work such as Carnot cycle and Clausius inequality and entropy. 2. This course will provide the essential tools required to study Atmospheric Thermodynamic in Semester 2. 3. The experimental side will focus on the physics of thermodynamic variables and measurement.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course students will be able to: 1. Use thermodynamic terminology correctly. 2. Explain fundamental concepts relevant to thermodynamics. 3. Derive and discuss the first and second laws of thermodynamics. 4. Solve problems using the properties and relationships of thermodynamic fluids. 5. Analyse basic thermodynamic cycles (such as Carnot cycle). 6. The understanding of thermodynamic properties and processes will assist students in other related coursework. 7. Explain the concept of entropy.
Indicative Contents المحتويات الإرشادية	<u>Part A. Math review and thermodynamic definitions (4 hr.)</u> Math review, thermodynamics concepts and definitions. <u>Part B. Thermodynamic systems, types of energy and thermodynamics temperature (4 hr.)</u> Systems, types of energy, thermodynamic processes, and thermodynamic temperature. <u>Part C. First law of thermodynamic and enthalpy (4 hr)</u> First law of thermodynamic, pure substances, ideal gases, and enthalpy. <u>Part D. The second law of thermodynamic (2hr)</u> Second law of thermodynamics, thermal efficiency <u>Part E. Carnot cycle , Clausius inequality, and entropy (4hr)</u> Second law of thermodynamics, thermal efficiency

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	During the 10-13 weeks of the course, the learning and Teaching Strategies include; 1. Reviewing the mathematic relationships necessary for thermodynamics process. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 2. Describe hemodynamics systems and types of energy. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 3. Describe the First law of thermodynamics, and enthalpy. Method for Assessment: Graded exams, worksheets, and pre-and post-course surveys. 4. Describe the second law of Thermodynamic and entropy. Method for Assessment: Graded exams, worksheets, pre-and post-course survey
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	Continuous	LO #A (1-2) , #A(3-4)
	Assignments	1	5% (5)	Continuous	LO #B
	Projects / Lab.	1	15% (15)	Continuous	All
	Report	1	10% (10)	13	LO #2 and #6
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #A - #B
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Math Review Partial Derivatives and Differentials, The Chain Rule, The Product Rule and the Quotient Rule, Partial Differentiation is Commutative, Integration of Partial Differentiation
Week 2	Thermodynamics: Concepts and definitions What is thermodynamics?, Branches of thermodynamics, Thermodynamic terms
Week 3	Thermodynamic Systems and Types of Energy Systems, Equilibrium, Types of Energy, State Variables and the Fundamental Equation,
Week 4	Extensive Versus Intensive Variables, Transformations, Reversible and Irreversible Processes
Week 5	Thermodynamic Temperature Definition of thermodynamic temperature; The relationship of temperature, motions, conduction, and thermal Energy; Practical applications for thermodynamic temperature
Week 6	The First Law of Thermodynamics Zeroth Law, First Law, Second Law, Third Law, The First Law of Thermodynamics in Detail
Week 7	Properties of Pure Substances Pure substances, Characteristics and Properties Of Pure Substances, Characteristics And Properties Of Mixtures Or Impure Substance
Week 8	Midterm Exam
Week 9	Ideal Gases and Real Gases

	Ideal Gas and Real Gas, Form of Ideal Gas Law Most Used by Meteorologists, Useful Relations for Comparing Two States of an Ideal Gas, Internal Energy of an Ideal Gas
Week 10	<u>Enthalpy</u> Enthalpy, Change of state, Latent of heat and enthalpy
Week 11	<u>Second law of thermodynamics</u> Definition, statements of second law, thermal efficiency
Week 12	<u>Carnot cycle</u> Carnot cycle, The Carnot principles
Week 13	<u>Clausius inequality and entropy</u> Clausius inequality, Entropy
Week 14	<u>Solutions of important thermodynamic questions</u> Selected questions with solutions
Week 15	<u>Review</u>

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction, The science of Thermodynamics , dimensions and units , some definitions , types of systems, properties of systems.
Week 2	Measuring specific heat capacity by mixing method & using a calorimeter
Week 3	Ideal gas law
Week 4	The relation of gas volume and temperature & finding absolute zero
Week 5	Investigation of the Stefan-Boltzmann law
Week 6	Midterm Exam
Week 7	Thermocouple scaling and using it as a thermometer
Week 8	The relation between heat and electrical energy (Joule equivalent)
Week 9	Dependence of temperature on the volume of a gas at constant pressure
Week 10	The apparent expansion coefficient of a fluid (water)
Week 11	Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	[1]: Terano H. and R. Tanamor, 2015: Basic Thermodynamics. A Fundamentals of Thermodynamics. Lab Lambert, Germany. [2]: Balmer R. T., 2011: Modern Engineering Thermodynamics. Elsevier , UK.	available as PDF
Recommended Texts	[1]: Jeremy Tatum, heat and Thermodynamics. LibreTexts, 2024.	available as PDF

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Synoptic Meteorology		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	MU010502102			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	2	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Dr. Hussain Abodi Nemah		e-mail	Husain_abodi.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Monim H. Al-Jiboori		e-mail	monim.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	1/06/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn an introduction to weather maps systems. 2. Learning how to represents weather phenomena on maps. 3. Learn plotting contour lines on surface and upper weather maps. 4. Learn how to analyzing the weather maps and determine the weather systems. 5. studying the air masses, fronts, jet stream, and the polar front low development. 6. Learn Meteorological Weather Maps and stations codes.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The synoptic analysis system is very important to our life, so the course outcomes includes :- 1- Understanding Synoptic Analysis of weather maps. 2- Build a scientific base of physical principles of how the weather system forms. 3- Understand How the system develops such as low and high pressure systems. 4- Ability to give a complete view about the weather by analyzing charts. .
Indicative Contents المحتويات الإرشادية	<u>Part A. Introduction (Scales of Atmospheric Motion, Synoptic Meteorology, Analysis and interpretation). (2 hr.)</u> Planetary, synoptic and micro scales. Tasks of a synoptic meteorologist. consideration of observations and numerical prediction fields Analysis of weather observations Conceptual models <u>Part B. Principles of the weather elements, Weather systems, Buys Ballot's Law (4 hr.)</u> Surface Map Winds Pressure Surface Features in the Weather Maps Upper Air Map Winds and Vertical Air Motions divergence and convergence Moisture and Pressure <u>Part C. wind (4 hr.)</u> General circulation Air Masses Classification of Air Masses Modification of masses <u>Part D. Fronts. (4hr)</u> general properties of fronts Cold Front Warm Front Stationary Front Occluded Fronts Occluded Front Development Polar Front Theory

	<u>Part E. Jet Stream , (2 hr)</u> Stream Waves Jet Stream is important Formation of Polar Front Jet (Polar Jet) Formation of Sub Tropical Jet Jet Streams and Developing Mid-latitude Cyclones <u>Part F. Weather maps (surface and upper maps) (4 hr)</u> Upper air observations Time of observation Format of the upper air report Upper-Level Weather Maps Isothermal lines Isobaric lines Geopotential height Meteorological stations codes
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, The learning and Teaching Strategies includes; 1. Identify the atmospheric synoptic concept. 2. Describe the air masses in the atmosphere. 3. Ability to analyze weather maps. 4. Describe weather systems from meteorological maps. 5. Identifying atmospheric fronts. 6. Describe jet stream theory. 7. Identify pressure systems with air convergence and divergence. 8. Understanding the upper atmospheric measurements, meteorological codes. Finally Demonstrate knowledge of the synoptic meteorology charts.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	108	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	Continuous	LO #1, #2 and #3, #4
	Assignments	1	5% (5)	Continuous	LO #2
	Projects / Lab.	1	15% (15)	Continuous	All
	Report	1	10% (10)	12	LO #1 and #2
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #1 - #2
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	<u>Introduction</u> Scales of Atmospheric Motion Synoptic Meteorology Analysis and interpretation
Week 2	<u>Weather Maps</u> Surface maps upper air maps Upper air code
Week 3	<u>Contouring Weather Maps</u> Contour lines and types pressure analysis Low and high pressure systems pressure systems extensions, discontinuity, waves
Week 4	<u>Air Masses</u> Types of air masses formation methods of air masses prevailing air masses Thermal inversions.
Week 5	<u>Fronts</u> Introduction warm front warm front circulation cold front
Week 6	<u>Fronts - continue</u> cold front circulation horizontal and vertical structure of cold front frontal theory rule of locating fronts on weather maps

Week 7	<u>Atmospheric forces</u> Dynamic force anemometers Hydrostatic Balance Geostrophic Balance Friction force
Week 8	<u>Midterm Exam</u>
Week 9	<u>Wind measurement - continue</u> Pressure pulse frequency anemometers (sonic anemometer) Thermal anemometers Wind profilers
Week 10	<u>Life Time of Frontal Low</u> Classical model Structure of open wave subtropical fronts polar fronts
Week 11	<u>Jet Stream</u> Definition polar jet streams subtropical jet streams
Week 12	<u>Upper levels observation</u> TIME OF OBSERVATION FORMAT OF THE UPPER-AIR REPORT Upper-Level Weather Maps
Week 13	<u>Upper levels observation - continue</u> Atmospheric pressure levels 500mb 700mb 850mb
Week 14	<u>Upper-Level Station on maps</u> Countor lines Meteorological stations codes Upper-Level Station Model
Week 15	<u>Identification and position groups of meteorological codes.</u> Wind Indicator Block number Station number True wind direction Standard Isobaric level data Geopotential height

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1. Explanation of various aerobic devices
Week 2	Lab 2. Visit the ground station and identify the existing devices and how to work and the way of taking measurements from different devices in practice
Week 3	Lab 3. Explanation of the surface station codes ,General formula of surface code
Week 4	Lab 4. Drawing and analysis of surface observation codes and instruments used for measurement
Week 5	Lab 5. Explanation of the wind &The Temperature codes in detail ,Wind& temperature measured Instruments
Week 6	<u>Midterm Exam</u>
Week 7	Lab 6. Apply real cods on the surface map
Week 8	Lab 7. Explanation of the atmospheric pressure &The pressure slope group codes in detail
Week 9	Lab 8. Explain the codes of the upper atmosphere layers
Week 10	Lab 9. Explanation of the level code 850 mb, 700mb, 500mb,300mb

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Gordon, A., Grace, W., Byron-Scott, R., & Schwerdtfeger, P. (2016). <i>Dynamic meteorology</i> . Routledge.	available as PDF
Recommended Texts	1- Holton, J. R., & Hakim, G. J. (2013). <i>An introduction to dynamic meteorology</i> (Vol. 88). Academic press. 2- Hakim and, G. J., & Torn, R. D. (2008). Ensemble synoptic analysis. <i>Meteorological Monographs</i> , 33(55), 147-162.	available as PDF
Websites	https://www.youtube.com/watch?v=FFovMWHZMhA https://www.youtube.com/watch?v=EDHd5jaoSvo https://www.youtube.com/watch?v=ryXQgoiznWs	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Hydrometeorology		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	MU010502103			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Dr. Osama Tarek Ahmed		E-mail	osamaaltaai77@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		E-mail	E-mail
Peer Reviewer Name	Dr. Osama Tarek Ahmed		E-mail	osamaaltaai77@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn the basics fundamentals of Hydrometeorology and Hydrology. 2. Learn and understand the effect of the Water cycle on atmospheric parameters. 3. Learn the theoretical basics of Hydrometeorology laws. 4. Learn how to deal with theoretical and estimated Evaporation. 5. Understand the theoretical basics of Hydrometeorology. 6. Understand how can you apply Hydrometeorology law and the Water cycle to atmospheric parameters such as Flow, Rainfall, Groundwater, and others.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The most important output of learning the current study material is to make the student take a complete and simplified picture as much as possible about the subject of Hydrometeorology, Hydrometeorology is a branch of meteorology and hydrology that studies the transfer of water and energy between the land surface and the lower atmosphere. UNESCO has several programs and activities in place that deal with the study of natural hazards of hydrometeorological origin and the mitigation of their effects. Among these hazards are the results of natural processes or phenomena of atmospheric, Hydrological, or oceanographic nature such as floods, tropical cyclones, drought, and desertification. Many countries have established an operational hydrometeorological capability to assist with forecasting, warning, and informing the public of these developing hazards, one of the most important outputs that can be acquired by the student at the end of the course is: 1. Preparing, in an initial way, for knowledge of the basics of Hydrometeorology. 2. Make the student able to estimate the amounts of evaporation and the most important environmental, hydrology, and some factors affecting the water cycle. 3. Developing the student's ability to understand the causes of climate change, which depend on the water cycle elements in the atmosphere as a result of fossil fuel combustion. 4. There are many advantages and experiences that the student will acquire at the end of the semester.
Indicative Contents المحتويات الإرشادية	<u>Part A. Introduction to Hydrometeorology (4 hr.)</u> 1-1. Definition of Hydrometeorology 1-2. Importance of Hydrometeorology 1-3. Applications of Hydrometeorology <u>Part B. Water Cycle (4 hr.)</u> 2-1. Nature of the water cycle 2-2. Elements of the water cycle <u>Part C. Sources of Water (4 hr.)</u> 3-1. Flow 3-2. Rainfall 3-3. Groundwater 3-4. Ice melting <u>Part D. Evaporation (4 hr.)</u> 4-1. Mass transfer 4-2. Energy balance equation 4-3. Application of energy balance equation 4-4. Evapotranspiration 4-5. Percolation 4-6. Interception <u>Part E. Precipitation (4 hr.)</u>

	5-1. Types of precipitation 5-2. Precipitation intensity 5-3. Methods of measuring precipitation 5-4. Standard rain gauge 5-5. Tipping bucket rain gauge 5-6. Automated rain gauge 5-7. Weather Radars <u>Part F. Methods of Observations and Networking (4 hr.)</u> 6-1. Stations network method 6-2. Field method 6-3. Automatic weather stations
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, the learning and Teaching Strategies include; 1. Identify the primary elements of the Water cycle. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 2. Describe the Sources of Water. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 3. Describe the Evaporation. Method for Assessment: Graded exams, worksheets, pre- and post-course surveys. 4. Describe the Precipitation. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 5. Describe Methods of Observations and Networking. Method for Assessment: Graded exams, worksheets, pre-and post-course survey 6. Applying the human classification subject in the classroom. Finally, demonstrate knowledge of the tools and methods used by scientists to study the natural world in the lab.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	Continuous	LO #1,#2,#3 and #6
	Assignments	1	10% (10)	Continuous	LO #1,#2
	Projects / Lab.	2	10% (10)	Continuous	LO #4
	Report	1	10% (10)	13	LO #1 - #6
Summative assessment	Midterm Exam	2hr	10% (10)	9	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	<u>Introduction to Hydrometeorology</u> Definition of Hydrometeorology Importance of Hydrometeorology Applications of Hydrometeorology
Week 2	<u>Water Cycle</u> Nature of the water cycle
Week 3	Elements of the water cycle
Week 4	<u>Sources of Water</u> Flow Rainfall
Week 5	Groundwater Ice melting
Week 6	<u>Evaporation</u> Mass transfer
Week 7	Energy balance equation Application of energy balance equation
Week 8	Evapotranspiration Percolation Interception
Week 9	Midterm Exam
Week 10	Precipitation Types of precipitation Precipitation intensity
Week 11	Methods of measuring precipitation
Week 12	Standard rain gauge Tipping bucket rain gauge Automated rain gauge

Week 13	Weather Radars
Week 14	<u>Methods of Observations and Networking</u> Stations network method
Week 15	Field method Automatic weather stations

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	- Fundamentals of Hydrology, 2nd ed., by Tim Davie, Routledge, 2018. - Hydrometeorology Forecasting and Applications, by Kevin Sene, Springer, 2020.	available as PDF
Recommended Texts	Millington P, Olson D, McMillan S (2006) Integrated River Basin Management from Concepts to Good Practice. Briefing Note 6. System Modelling in River Basin Management. http://www.wds.worldbank.org/	available as PDF
Websites	http://www.wds.worldbank.org/ https://uomustansiriyah.edu.iq/e-learn/profile.php?id=108	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Atmospheric Chemistry		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010502104			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Dr. Nadia Mohammed Abed		e-mail	Nadia.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification		
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Monim H. Al-Jiboori		e-mail	monim.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	1/6/2024	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Introducing students to atmospheric chemistry. 2. Introducing students to the layers of the atmosphere, their altitudes, and their components. 3. Gave an introduction to the chemistry of Earth's atmosphere 4. Gave a specific focus on the stratosphere and troposphere. 5. Focus on the fundamental natural processes controlling trace gas and aerosol concentrations in the atmosphere 6. Focus on the fundamental natural processes controlling trace gas and aerosol concentrations in the atmosphere. 7. Introduce students to how human activity has affected these processes at local, regional and global levels. 8. Specific topics include composition and structure of Earth's atmosphere. 9. Learnings stratospheric ozone depletion. 10. Chemistry of the regional and global troposphere. 11. Learnings urban smog and trends in air pollution.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Improve the abilities of the students to learn key concepts in atmosphere. 2. Understand the characteristic and composition of atmospheric layers 3. Learn and understand the atmospheric parameters and its relationship with atmospheric layers. 4. Learn and understand the effect of gases in the Atmosphere. 5. Understand the impact of Ozone depletion. 6. Introduce the basic concepts of atmospheric chemistry as they pertain to atmospheric science. 7. Developing an in-depth knowledge of chemical processes in the atmosphere (including chemical kinetics, photochemistry, physical chemistry, thermodynamics and biogeochemical cycling during atmospheric transport) and apply these concepts in homework problems and exam questions. 8. Calculating atmospheric concentrations of trace constituents, equilibrium constants, chemical decay rates, and other chemical information as applied to the atmosphere, as applied in homework problems and exam questions. 9. Be able to describe various atmospheric chemistry issues related to regional air quality and global climate, and the impacts on society and human health.
Indicative Contents المحتويات الإرشادية	<u>Part A. The layers of the Atmosphere (hr.)</u> Terms and Definitions The Evolution of the Atmosphere The Variable Gases The greenhouse gases Carbon dioxide Ozone Methane The suspended particles matter Aerosols Troposphere Stratosphere Mesosphere Thermosphere Atmospheric characteristic layers <u>Part B. Atmospheric parameters (hr.)</u> Atmospheric gases

	Atmospheric layers Atmospheric layers according to content of gases Characteristic of the atmospheric layers <u>Part C. Variation of the Seasons (hr.)</u> Ozone depletion The effect of Ozone layer <u>Part D. Atmospheric moisture (hr)</u> Greenhouse effect Smog <u>Part E. Cloud formation (hr)</u> Acid Rain <u>Part F. Air pollution (hr)</u> Sources and Types of Air Pollution Primary Pollutants Secondary Pollutants Acid Precipitation <u>Part G. Anthropology effect on the Atmosphere (hr)</u>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, The leaning and Teaching Strategies includes; 1. Identify the primary elements that compose the atmosphere. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 2. Describe the vertical structure of the atmosphere. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 3. Describe the factors governing the variation of the seasons. Method for Assessment: Graded exams, worksheets, pre- and post- course survey. 4. Describe the processes related to cloud formation and precipitation including the role of atmospheric stability. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 5. Describe atmospheric pollution. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 6. Applying the human classification subject on classroom. Finally Demonstrate knowledge of the tools and methods used by scientists to study the natural world in the lab.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	<u>The layers of the Atmosphere</u> ☐ Introduction to atmospheric chemistry ☐ Chemistry, photochemistry and cyclic processes in atmospheres
Week 2	☐ Origins of the atmospheres in the Solar system ☐ The variety of atmospheres in the solar system
Week 3	☐ The stratosphere ☐ The ozone layer and its significance ☐ Oxygen-only chemistry.
Week 4	☐ Evolution of the atmosphere and life ☐ Importance of minor constituents in atmospheric chemistry
Week 5	☐ Catalytic cycles for ozone destruction, reservoirs, etc. ☐ Perturbations to stratospheric ozone
Week 6	☐ Sources and sinks of minor species ☐ Atmospheric measurements of minor species, atoms and radicals

Week 7	☐ Man's contribution to catalytic species ☐ Pressures and temperatures in the Earth's atmosphere; "greenhouse" heating
Week 8	Midterm Exam
Week 9	☐ The CFC problem; halons - bromine chemistry; CFC alternatives ☐ Polar ozone chemistry - the Antarctic "hole" and Arctic perturbations
Week 10	☐ Trends in ozone concentrations - their detection and their consequence ☐ The troposphere
Week 11	☐ Sources and sinks of tropospheric gases; biological sources ☐ Oxidation in the troposphere: initiation, oxidation, ozone production
Week 12	☐ The importance of the oxides of nitrogen; PAN; the nitrate (NO ₃) radical ☐ The importance of the hydroxyl radical
Week 13	☐ Heterogeneous chemistry, air pollution and related topics ☐ Aerosols and droplets, and chemistry occurring on and in them ☐ Homogeneous and heterogeneous oxidation of Sulphur compounds
Week 14	☐ London smog and acid rain ☐ Photochemical air pollution and Los Angeles smog
Week 15	☐ The differences between acid rain and normal rain

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	John H. Seinfeld and Spyros N. Pandis, 2016: Atmospheric Chemistry and Physics: from Air Pollution to Climate Change, 3rd Ed. John Wiley and Sons, 1149 p.	
Recommended Texts	[1]: Introduction to Atmospheric Chemistry, by Daniel J. Jacob. Princeton University Press, 1999. [2]: Introduction to Atmospheric Chemistry, by Peter Hobbs. Cambridge University Press, 2000. [3]: Environmental Chemistry 10th Edition, by Stanley Manahan. CRC Press, 2017	
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer Science II		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU04			
ECTS Credits	3			
SWL (hr/sem)	75			
Module Level	2	Semester of Delivery		1
Administering Department	05	College	01	
Module Leader	Asist. Prof. Hind Saleem Ibrahim		e-mail	hind@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Asist. Prof.		Module Leader's Qualification	MSc.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Ahmed S. Hassan		e-mail	ahmed.s.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	01/06/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Introduction to technical computing methods in the atmospheric sciences 2. How the input () Function Works 3. Creating and Using a Class 4. Inheritance in Python 5. Modeling Real-World Objects 6. Storing Multiple Classes in a Module 7. use of specialized software and data analysis systems for meteorological applications. 8. Plotting and Styling Individual Points with scatter() 9. Plotting a Series of Points with scatter() 10. Calculating Data Automatically 11. Using a Colormap 12. Downloading Data 13. The CSV File Format 14. Plotting Data in a Temperature Chart 15. The datetime Module 16. Downloading World Population Data 17. Plotting Numerical Data on a World Map 18. Testing the country_codes Module
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand model, components of computer and how it works. 2. Storing Your Functions in Modules 3. Importing an Entire Module 4. Importing All Functions in a Module 5. Making an Instance from a Class 6. Importing All Classes from a Module 7. The matplotlib Gallery 8. Plotting a Series of Points with scatter() 9. Extracting and Reading Data 10. Plotting a Second Data Series
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – PYTHON CRASH COURSE [12hrs].</u> An intensive and fast-paced educational program designed to teach the basics of Python programming quickly. A crash course typically aims to provide learners with essential skills and knowledge in a short amount of time, often covering the most important concepts, tools, and techniques. [12 hrs] <i>Python Crash Course</i> is written to learn the basics of programming quickly so you can focus on interesting projects, and you like to test your understanding of new concepts by solving meaningful problems, <i>Python Crash Course</i> is also perfect for middle school and high school teachers who want to offer their students a project-based introduction to programming. ". [2 hrs] Revision problem classes [2 hrs] <u>Part B - Data Visualization [16 hrs]</u> The second project introduces you to data visualization. Data scientists aim to make sense of the vast amount of information available to them through a variety of visualization techniques. You'll work with data sets that you generate through code,

	data sets downloaded from online sources, and data sets your programs download automatically. After you've completed this project, you'll be able to write programs that sift through large data sets and make visual representations of that stored information.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Python is a cross-platform programming language, which means it runs on all the major operating systems. Any Python program you write should run on any modern computer that has Python installed. However, the methods for setting up Python on different operating systems vary slightly. Python on Linux Linux systems are designed for programming, so Python is already installed on most Linux computers. The people who write and maintain Linux expect you to do your own programming at some point and encourage you to do so. For this reason there's very little you have to install and very few settings you have to change to start programming.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	11	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

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

	Report/ Theoretical	1	10% (10)	13	LO #1- #8
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction In this WEEK and the next you'll learn what lists are and how to start working with the elements in a list. Lists allow you to store sets of information in one place, whether you have just a few items or millions of items. Lists are one of Python's most powerful features readily accessible to new programmers, and they tie together many important concepts in programming.
Week 2	WORKING WITH LISTS learned how to make a simple list, and you learned to work with the individual elements in a list. In this WEEK you'll learn how to loop through an entire list using just a few lines of code regardless of how long the list is. Looping allows you to take the same action, or set of actions, with every item in a list. As a result, you'll be able to work efficiently with lists of any length, including those with thousands or even millions of items.
Week 3	IF STATEMENTS Programming often involves examining a set of conditions and deciding which action to take based on those conditions. Python's if statement allows you to examine the current state of a program and respond appropriately to that state. In this WEEK you'll learn to write conditional tests, which allow you to check any condition of interest. You'll learn to write simple if statements, and you'll learn how to create a more complex series of if statements to identify when the exact conditions you want are present. You'll then apply this concept to lists, so you'll be able to write a for loop that handles most items in a list one way but handles certain items with specific values in a different way.
Week 4	DICTIONARIES In this WEEK STUDENTS WILL learn how to use Python's dictionaries, which allow you to connect pieces of related information. You'll learn how to access the information once it's in a dictionary and how to modify that information. Because dictionaries can store an almost limitless amount of information, I'll show you how to loop through the data in a dictionary. Additionally, you'll learn to nest dictionaries inside lists, lists inside dictionaries, and even dictionaries inside other dictionaries.
Week 5	User Input and while Loops Most programs are written to solve an end user's problem. To do so, you usually need to get some information from the user. For a simple example, let's say someone wants to find out whether they're old enough to vote. If you write a program to answer this question, you need to know the user's age before you can provide an answer.

Week 6	<u>Functions</u> In this WEEK you'll learn to write functions, which are named blocks of code that are designed to do one specific job. When you want to perform a particular task that you've defined in a function, you call the name of the function responsible for it. If you need to perform that task multiple times throughout your program, you don't need to type all the code for the same task again and again; you just call the function dedicated to handling that task, and the call tells Python to run the code inside the function. You'll find that using functions makes your programs easier to write, read, test, and fix
Week 7	In this WEEK you'll also learn ways to pass information to functions. You'll learn how to write certain functions whose primary job is to display information and other functions designed to process data and return a value or set of values. Finally, you'll learn to store functions in separate files called modules to help organize your main program files.
Week 8	<u>Midterm Exam</u>
Week 9	<u>Classes</u> Object-oriented programming is one of the most effective approaches to writing software. In object-oriented programming you write classes that represent real-world things and situations, and you create objects based on these classes. When you write a class, you define the general behavior that a whole category of objects can have. When you create individual objects from the class, each object is automatically equipped with the general behavior; you can then give each object whatever unique traits you desire. You'll be amazed how well real-world situations can be modeled with object-oriented programming.
Week 10	<u>Files and Exceptions</u> Now that you've mastered the basic skills you need to write organized programs that are easy to use, it's time to think about making your programs even more relevant and usable. In this WEEK you'll learn to work with files so your programs can quickly analyze lots of data.
Week 11	<u>Testing Your Code</u> When you write a function or a class, you can also write tests for that code. Testing proves that your code works as it's supposed to in response to all the input types it's designed to receive. When you write tests, you can be confident that your code will work correctly as more people begin to use your programs. You'll also be able to test new code as you add it to make sure your changes don't break your program's existing behavior. Every programmer makes mistakes, so every programmer must test their code often, catching problems before users encounter them.
Week 12	<u>Data Visualization</u> The Data Visualization project starts in THIS WEEK, in which you'll learn to generate data and create a series of functional and beautiful visualizations of that data using matplotlib and Pygal. Downloading Data teaches you to access data from online sources and feed it into a visualization package to create plots of weather data and a world population map. Finally, IN THIS WEEK shows you how to write a program to automatically download and visualize data. Learning to make visualizations allows you to explore the field of data mining, which is a highly sought-after skill in the world today.
Week 13	<u>Generating Data</u> <i>Data visualization</i> involves exploring data through visual representations. It's closely associated with <i>data mining</i>, which uses code to explore the patterns and connections in a data set. A data set can be just a small list of numbers that fits in one line of code or many gigabytes of data.
Week 14	Making beautiful representations of data is about more than pretty pictures. When you have a simple, visually appealing representation of a data set, its meaning becomes clear to viewers. People will see patterns and significance in your data sets that they never knew existed. Fortunately, you don't need a supercomputer to visualize complex data. With Python's efficiency, you can quickly explore data sets made of millions of individual data points on just a laptop.
Week 15	<u>Downloading Data</u> In this chapter you'll download data sets from online sources and create working

	visualizations of that data. An incredible variety of data can be found online, much of which hasn't been examined thoroughly. The ability to analyze this data allows you to discover patterns and connections that no one else has found. We'll access and visualize data stored in two common data formats, CSV and JSON. We'll use Python's csv module to process weather data stored in the CSV (comma-separated values) format and analyze high and low temperatures over time in two different locations. We'll then use matplotlib to generate a chart based on our downloaded data to display variations in temperature in two very different environments: Sitka, Alaska, and Death Valley, California.
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Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Python Language, review.
Week 2	Lab 2: Accessing Elements in a List, looping through an entire list.
Week 3	Lab 3: a simple example: The following short example shows how if tests let you respond to special situations correctly.
Week 4	Lab 4: a simple dictionary Consider a game featuring aliens that can have different colors and point values.
Week 5	Lab 5: how the input() function works The input() function pauses your program and waits for the user to enter some text.
Week 6	Lab 6: how to write certain functions whose primary job is to display information and other functions designed to process data and return a value or set of values.
Week 7	Midterm Exam
Week 8	Lab 7: Creating and using a Class You can model almost anything using classes.
Week 9	Lab 8: reading from a file An incredible amount of data is available in text files.
Week 10	Lab 9: testing a function To learn about testing, we need code to test. Here's a simple function that takes in a first and last name, and returns a neatly formatted full name
Week 11	Lab 10: Installing matplotlib First, you'll need to install matplotlib, which we'll use for our initial set of visualizations.
Week 12	Lab11: the CsV file format One simple way to store data in a text file is to write the data as a series of values separated by commas, called comma-separated values.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Python Crash Course. A Hands-On, Project-Based Introduction to Programming , by Eric Matthes. Copyright © 2016 by Eric Matthes. ISBN-10: 1-59327-603-6, ISBN-13: 978-1-59327-603-4 . Publisher : William Pollock	available as PDF
Recommended Texts	Python Tutorial Release 3.7.0 Guido van Rossum and the Python development team September 02, 2018, Python Software Foundation; email: docs@python.org	available as PDF
Required Texts	PYTHON PROGRAMMING EXERCISES, GENTLY EXPLAINED AL SWEIGART AUTHOR OF AUTOMATE THE BORING STUFF WITH PYTHON INVENTWITHPYTHON.COM FOREWORD BY TREY HUNNER, Copyright © 2022 by Al Sweigart. All rights reserved. ISBN-13: 979-8-3553-8768-6	available as PDF
Websites	https://www.python.org/	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	English Language II		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU01			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	2	Semester of Delivery		
Administering Department	05	College	01	
Module Leader	Farah A. Raheem		e-mail	muttalibifar@gmail.com
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M A English Literature	
Module Tutor		e-mail	E-mail	
Peer Reviewer Name	Dr. Ali Raheem	e-mail	aliraheem@uomustansiriyah.edu.iq	
Scientific Committee Approval Date	01/06/2024	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Upgrading Student's Knowledge of English Language to a pre-intermediate Level. 2. Integrating Students' previous language studied Lessons in E1 with the new ones in E2. 3. Urging students to practice previous different acquired Language skills i.e (listening, speaking, reading and writing) in E1 in their daily life. 4. Encouraging students to use their previous acquired Language skills in their scientific academic fields replacing Arabic Language with English.. 5. Encouraging students to communicate with international colleagues in the equivalent field of study in international Universities.																
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Students will develop their speaking skills more than before. Students will develop their listening - comprehending skills for most of Audio Products such as Long talks, reports , Lectures & etc. . Students will develop their reading - comprehending skills more than before . Students will develop their writing skills more than before. Students will develop their using of English grammar in to a pre-intermediate level.																
Indicative Contents المحتويات الإرشادية	<table border="0"> <tr> <td>Present Simple & continuous</td><td>Units 1&2</td></tr> <tr> <td>Past Simple & continuous</td><td>Unit 3</td></tr> <tr> <td>Simple Perfect Past & Present</td><td>Units 7& 14</td></tr> <tr> <td>Future Tense</td><td>Unit 5</td></tr> <tr> <td>Modal Auxiliary Verbs</td><td>Units 5, 8 ,9, 10 &12</td></tr> <tr> <td>Expressions of Quantity & Articles</td><td>Unit 4</td></tr> <tr> <td>Prepositions & Verb Patterns 1 &2</td><td>Unit 3 , 5 & 10</td></tr> <tr> <td>Social Expressions 1 &2</td><td>Units 1 & 12</td></tr> </table> Note 1 : Teachers should ask student to do some exercises as a weekly homework from the Student Book &Workbook. Note 2 : Teachers should ask student to study selected reading Passages, Writing , and Listening as a weekly homework from the Student book &Workbook.	Present Simple & continuous	Units 1&2	Past Simple & continuous	Unit 3	Simple Perfect Past & Present	Units 7& 14	Future Tense	Unit 5	Modal Auxiliary Verbs	Units 5, 8 ,9, 10 &12	Expressions of Quantity & Articles	Unit 4	Prepositions & Verb Patterns 1 &2	Unit 3 , 5 & 10	Social Expressions 1 &2	Units 1 & 12
Present Simple & continuous	Units 1&2																
Past Simple & continuous	Unit 3																
Simple Perfect Past & Present	Units 7& 14																
Future Tense	Unit 5																
Modal Auxiliary Verbs	Units 5, 8 ,9, 10 &12																
Expressions of Quantity & Articles	Unit 4																
Prepositions & Verb Patterns 1 &2	Unit 3 , 5 & 10																
Social Expressions 1 &2	Units 1 & 12																

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Teachers of this curriculum should use the following learning and teaching Strategies and techniques during this semester: 1- A rapid review of what the students learned in the Beginner's level in brief will revise their linguistic knowledge and abilities in English Language. 2- Short and direct oral questions will stimulate students to participate in class activities such as group/individual discussions that improve their linguistic knowledge and abilities. 3- To supply students with clear & correct pronunciation, teachers should use the <i>i Tools</i> or <i>New Headway Plus Pre Intermediate Digital Edition</i>. This technique will help to draw the students' attention to the teacher and curriculum completely. Besides it will connect their sight of pictures, colors or writings appeared on the smart board with their listening and reading skills. In this way, teaching - learning process will be emphasized more. 4- To keep in touch with modern life, teachers should make use of social media in teaching process using reliable web sites such as B B C learning English web site and you tube channel to support self learning process. Also. students can use the chatGPT (English Teacher) to practice long talks and conversations using English Language in Virtual Reality. 5- Teachers should urge their students to make use of their language abilities in their scientific study. This can be achieved easily by asking them to explain. define, enumerate or even classify some scientific terms in a listened or read text. 6- Moreover, teachers should give a direct general notes concerning the writing style of reports & Papers students will be asked to write in their scientific study.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	Continuous	LO # 1, # 6
	Assignments	2	10% (10)	Continuous	LO #3, #4, and #5
	Listening Exam (Project)	1	10% (10)	Continuous	LO #2
	Oral Discussions (Report)	1	10% (10)	Continuous	LO #1
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	

	Material Covered
Week 1	Tenses Revision Present Simple & continuous Units 1&2 1.1 Tenses 1.2 Questions 2.1 Present Simple 2.2 Present Continuous 2.3 Present Simple and Present Continuous
Week 2	Tenses Revision Past Simple & continuous Unit 3 3.1 Past Simple 3.2 Past Continuous

	3.3 Past Simple and Present Continuous	
Week 3	Tenses Revision Simple Perfect Past & Present 7.1 Present Perfect 7.2 Present Perfect & Past Simple 14.1 Past Perfect	Units 7& 14
Week 4	Future Tense : Will & Going To 5.3 Will 9.2 Will 5.3 Going to	Unite 5& 9
Week 5	The Passive 11.1 The Passive Form & Use	Unite 11
Week 6	Introduction to Modal Auxiliary Verbs 8.2 Introduction to Modal Auxiliary Verbs 8.3 Should 8.4 Must 5.3 Will 9.2 Will	Units 5, 8 ,9, 10 &12
Week 7	Midterm Exam	
Week 8	Introduction to Modal Auxiliary Verbs 10.2 Used to 10.3 Used to and the Past simple 12.2 Might	Units 5, 8 ,9, 10 &12
Week 9	Expressions of Quantity & Articles 4.1 Expressions of Quantity 4.2 Articles - a and the	Unit 4
Week 10	Prepositions & Verb Patterns 1 &2 3.4 Prepositions in Time expressions 5.1 Verb Patterns 1 10.1 Verb Patterns 2	Unit 3 , 5 & 10
Week 11	Selected Listening Skills : Social Expressions 1 &2 Social Expressions 1	Units 1 & 12 P.13

	Social Expressions 2 P.101 Note: Teachers can select any Listening tracks to train students
Week 12	Selected Writing Skills Note: Teachers can select any Writing subject from the syllabus (in the Workbook) to train students
Week 13	Selected Speaking Skills Note: Teachers can select any Speaking subject from the syllabus to train students
Week 14	Selected Reading Skills Note: Teachers can select any Reading Passages from the syllabus to train students
Week 15	Selected Reading Skills Note: Teachers can select any Reading Passages from the syllabus to train students

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
	Non

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1- Soars, John and Liz. <u>New Headway Plus : Pre-Intermediate Student's Book</u>, 1st Edition, Oxford University Press, Oxford , (2014). Digital Edition , With DVD- ROM. Soars, John and Liz. <u>New Headway Plus : Pre-Intermediate Workbook with Key</u> , 1st Edition, Oxford University Press, Oxford , (2014). Digital Edition , With new writing Micro- skills. Required Units 1-7 only.	Both Books are available as printed copies & PDF Notes : Most of PDF and printed copies are different from the required edition. Besides, some printed editions and PDF of the Workbook are with Key.
Recommended Texts	1- Murphy, Raymond. <u>English Grammar In Use</u>. 3rd Edition, Oxford University Press, Oxford,(2012). 2- Soars, John and Liz & Merifield, Sue. <u>Headway Pre-Intermediate Teachers' Guide</u>. 5th Edition, Oxford University Press, Oxford , (2019). (For Teachers)	Available as a printed copy & PDF Available as a PDF
Websites	1- Oxford University Press/English Language Teaching Worldwide, https://elt.oup.com/, an online website supports teachers who teach Headway plus <u>Pre-Intermediate</u> text books. 2- BBC Learning English , https://www.bbc.co.uk/learning English , an online website also available as an application on Google play, and social media sites. It presents free different programs to improve English Language Skills.	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors

	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

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

Course Description of Second Level (Second Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Atmospheric Thermodynamics		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code				
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	2	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Dr. Thaer Obaid Roomi		e-mail	th.roomi.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant Professor		Module Leader's Qualification	
Module Tutor	No if available		e-mail	
Peer Reviewer Name	Dr. Yaseen K. Altimimi		e-mail	yaseen.altimimi.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	03/06/2024		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamental od Thermodynamics	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Reviewing the main concepts of thermodynamics in the weather concept. 2. Teaching the students, the fundamentals of using the atmospheric thermodynamics in computing and predicting the thermodynamics variables by using thermodynamics diagrams. 3. To prepare the students to carry out experimental investigation and analysis at later stages of graduation. 4. Give students essential knowledge for other modules such as atmospheric dynamics and atmospheric boundary layers in Level 3.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A. Knowledge and understanding: A.1 The student will be familiar with the principles and systems of thermodynamics of the atmosphere, latent heat and work done, and inverse processes in the atmosphere. A.2 The student should be able to explain the system and the heat capacity when the volume is constant, the heat capacity when the pressure is constant, and the sensible and latent heat. A.3 The student describes the formulas of the zero, first, second, third of atmospheric thermodynamics. A.4 the student should be able to explain how to calculate entropy as well as thermodynamic functions for ideal gases. A5. Other lectures such as humidity, stability, and vertical coordinates will be useful. B. Mental skills: B.1 The student distinguishes between closed systems and open systems, components and balance of state, as well as between inverse operations and variables of state functions. B.2 That the student relates the internal energy and enthalpy, as well as the intrinsic processes in ideal gases. B.3 The student analyzes information obtained from the Internet regarding topics related to internal energy, enthalpy and also the intrinsic processes in ideal gases. B.4 The student compares the heat capacity at constant volume and heat capacity at constant pressure. C. Practical and professional skills: C.1 That the student identify the basic units of the thermodynamics of the atmosphere, the inverse processes of the atmosphere and the variables of the state functions. C.2 The student should use the Internet to increase information on topics related to internal energy, enthalpy, and self-processes in ideal gases. C.3 That the student perform some experimental exercises to calculate entropy and find the internal energy and enthalpy. D. General and transferable skills: D.1 The student should be able to link what does he/she learn from the atmospheric thermodynamics with what he/she learned in the module in the fundamentals of atmospheric sciences. D.2 The student should be able to use thermodynamic diagrams and computer programs to help understand the use the atmospheric thermodynamics knowledge.
Indicative Contents	<u>Part A. Fundamentals of atmospheric thermodynamics (6 hr.)</u> Atmospheric composition and structure, Atmospheric processes, Laws of thermodynamics, Adiabatic processes, Potential temperature, Entropy. <u>Part B. Thermodynamics of dry and moist air (6 hr.)</u> Convection and lapse rate, moisture variables, Latent heat and phase transformations, The Clausius-Clapeyron equation. <u>Part C. Atmospheric stability (6hr)</u> The force of gravity, Geopotential, Hydrostatic equilibrium, The hypsometric equation, Mean sea level pressure reduction, Hydrostatic stability, Buoyancy,

	Stability of air parcels, Measures of stability, Stability of air layers, Vertical mixing processes Part D. Thermodynamic diagrams and their applications (6hr) Skew T – Log P thermodynamic diagrams, Description of the diagram, Skew-T Parameters
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, the learning and Teaching Strategies include; 1. Identify the atmospheric thermodynamic variables and systems Method for Assessment: Graded exams, worksheets, pre-and post-course survey 2. Describe the Dry and Moist air process Method for Assessment: Graded exams, worksheets, pre-and post-course survey 3. Describe the Atmospheric stability Method for Assessment: Graded exams, worksheets, and pre-and post-course surveys. 4. Describe the Thermodynamic diagrams Method for Assessment: Graded exams, worksheets, pre-and post-course survey

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (5)	Continuous	LO #A (1-2) , #A(3-4)
	Assignments	1	5% (5)	Continuous	LO #B
	Projects / Lab.	1	15% (15)	Continuous	All
	Report	1	10% (10)	13	LO #2 and #6
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #A - #B
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	<u>Atmospheric Thermodynamic variables and systems</u> Atmospheric composition and structure, thermodynamic systems, Atmospheric processes
Week 2	<u>Laws of thermodynamics</u> Introduction, zeroth – First – Second- Third law of thermodynamics
Week 3	<u>Potential temperature and Entropy</u> Adiabatic assumption, potential temperature, entropy
Week 4	<u>Thermodynamics of dry air</u> Convection and lapse rate, .
Week 5	<u>Thermodynamic of moist air</u> moisture variables, Latent heat and phase transformations, The Clausius-Clapeyron equation.
Week 6	<u>Vertical thermodynamic structure of atmosphere</u> The force of gravity, Geopotential, Hydrostatic equilibrium, The hypsometric equation
Week 7	<u>Atmospheric Stability</u> Hydrostatic stability, Buoyancy, Stability of air parcels, Measures of stability, Stability of air layers, Vertical mixing processes
Week 8	<u>Midterm Exam</u>
Week 9	<u>Stability Measurement</u> Measures of stability, Stability of air layers, Vertical mixing processes
Week 10	<u>Skew T – Log P diagrams</u> Description of the diagram
Week 11	<u>Skew T – Log P variables</u> How to determine and draw the thermodynamic variables on the thermodynamic diagrams
Week 12	<u>Skew T – Log P Indices Part 1</u> Determination of the variables: CAPE, CCL index, EHI index
Week 13	<u>Skew T – Log P Indices Part 2</u> Equivalent Potential Temperature, FRZ index, K-index
Week 14	<u>Review</u>
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Water vapor in air
Week 2	Determination of relative humidity
Week 3	Description of Skew-T/log-P thermodynamic diagram
Week 4	Using the skew-T/log-P thermodynamic diagram to determine some thermodynamic variables
Week 5	Using the skew-T/log-P thermodynamic diagram to predict the lifting condensation level (LCL) and the level of free convection (LFC)
Week 6	Using the skew-T/log-P thermodynamic diagram to find the equivalent temperature (T_e) for some observational stations.
Week 7	Using the skew-T/log-P thermodynamic diagram to predict the relative humidity

Week 8	Estimation of CAPE
Week 9	Prediction of K-Index
Week 10	Estimation of minimum and maximum temperatures
Week 11	Review

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	[1]: Anastasios A. Tsonis, 2007: An Introduction to Atmospheric Thermodynamics. Cambridge University Press, 2 nd Ed., New York, USA. [2]: Gerald R. North and Tatiana L. Erukhimova, 1980: Atmospheric thermodynamics. Cambridge University Press, New York, USA. .	available as PDF
Recommended Texts	[1]: Amanda H. L. and J. J. Cassano , Applied Atmospheric Dynamics. John Wiley & Sons Ltd, 2006.	available as PDF
Websites	https://uot.edu.ly/moduledescription.php?module=AT303&program=123&lang=en http://www.met.psu.edu/intranet/course-syllabi-repository/spring-2017-syllabi/meteo-431-atmospheric-thermodynamics http://www.met.psu.edu/intranet/course-syllabi-repository/spring-2017-syllabi/meteo-431-atmospheric-thermodynamics	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Climatology		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010502206			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Prof. Dr. Ahmed Sami Hassan		e-mail	ahmed.s.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Prof. Dr. Alaa Mutar Shayia		e-mail	al.shayia.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	03/06/2024		Version Number	0.1

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The course is aimed at providing an introduction to the physical processes underlying atmospheric and weather phenomena, including the climate system 1 - Climatology continues to lead as the most comprehensive presentation of our dynamic climate system. 2 - The full comprehension of its processes that enhances clarity and gradation of all maps, climatology -graphs, and images to help readers better understand the diversity of climate within varying climate types. 3 - The Course appeals to all students, as it covers the basics of atmospheric science in the early chapters and provides the breadth and depth of topics to challenge the more experienced reader. 4 - Climatology and its application aims to improve students' communication skills, encourage critical-thinking, and invoke a sense of social responsibility, making it the clear choice in this rapidly developing science
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Participation in the course is expected to enable the student to: - apply the relevant physical laws governing weather and climate, - determine global weather systems and climate differences, - determine the climate of a given locality, - evaluate the influence of the landscape (e.g. a mountain range) on weather and climate. - seek out relevant information on weather and climate
Indicative Contents المحتويات الإرشادية	<u>Part A. Introduction to climatology (2 hr.)</u> <u>Part B. Climate System: Atmosphere and Hydrosphere (2 hr.)</u> <u>Part C. Climate System: Cryosphere and Land surface (lithosphere) (4 hr.)</u> <u>Part D. Energy exchange near surface components (4 hr)</u> <u>Part E. Global hydrology and water balance (4 hr)</u> <u>Part F. Climate and General Circulation (4 hr)</u> <u>Part G. Climate classification (4 hr)</u> <u>Part H. Applied of climatology (4 hr)</u>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	During the 10-13 weeks of the course, The learning and Teaching Strategies includes; 1. Identify the primary elements that compose of climate. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 2. Describe the Climate System Method for Assessment: Graded exams, reports, pre- and post- course survey 3. Describe the some models to estimated Climate . Method for Assessment: Graded exams, examples and problems, pre- and post- course survey. 4. Describe the processes of interactions between Climate System and atmospheric elements (aerosols and gasses). Method for Assessment: Graded exams, projects , problems and examples, pre- and post- course survey 5. Describe wave theory for light responsible for light properties. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 6. Interpreted some atmospheric phenomena and relation with climate system .
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (5)	Continuous	LO #1, #2 and #4
	Assignments	2	10% (5)	Continuous	LO #3 and #5
	Projects / Lab.	1	10% (10)	Continuous	LO #2 and #4
	Report	1	10% (10)	12	LO #1 - #4
Summative assessment	Midterm Exam	2hr	20% (10)	7	LO #1 - #2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to climatology Description of the climate system and its components
Week 2	The Atmosphere Composition and temperature
Week 3	Climate System: Atmosphere and Hydrosphere
Week 4	Climate System: Cryosphere and Land surface (lithosphere)
Week 5	Energy exchange near surface
Week 6	Global hydrology and water balance
Week 7	Midterm Exam
Week 8	Climate and General Circulation
Week 9	Climate classification
Week 10	Applied of climatology
Week 11	Climate impacts
Week 12	Climatic Data (used, analysis, and assimilation)
Week 13	Climate feedbacks
Week 14	Action of climate as part of sustainability
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Robbert V. and Anth Ony J. Vega, <i>Climatology, Fourth Edition</i> , Copyright © 2018 by Jones & Bartlett Learning, LLC, an Ascend Learning Company. PP. 433	available as PDF
Recommended Texts	The Global Climate System: Patterns, Processes, and Teleconnections, by Howard A. Bridgman, John E. Oliver, Cambridge University Press, 2006	available as PDF
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Agrometeorology		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010502207			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Dr. Iqbal Khalaf Khames		e-mail	iqbal.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant Professor		Module Leader's Qualification	Ph.D.
Module Tutor			e-mail	
Peer Reviewer Name	Dr.Asraa K. Abdulkareem		e-mail	dr.asraa.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	03/06/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn the basics of agrometeorology and its applications. 2. Learn and understand the effect of some weather elements and their role in plant growth. 3. Learn the impact of the weather hazards on agriculture productions 4. Understand the basics of Structure of greenhouses 5. Learn the types of droughts 6. Learn the Impact of Climate Change on the Agricultural Sector
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Improve the abilities of the students to learn key concepts in Agrometeorology and knowing the difference between it and meteorology, climatology, hydrology sciences. 2. Learn importance of Solar Radiation and Its Role in Plant Growth. 3. Understand Environmental Temperature and Crop Production. 4. Understand the impact of the weather hazards on agriculture productions 5. Learn how greenhouse work and greenhouse gas emissions. 6. Learn how to calculate the amount of CO ₂ sequestered in a tree per year 7. Knowing the types of drought and ways to calculate some of its indicators 8. Impact of Climate Change on the Agricultural Sector 9. Understand soil and its heat balance 10. Learn application of Remote Sensing in Agrometeorology .
Indicative Contents المحتويات الإرشادية	<u>Part A. Introduction of Agrometeorology and its importance (6 hr.)</u> Agrometerology Meteorology Climatology Weather Climate Efficient harvesting of all crops Avoidance Environmental protection Judicious irrigation to crops Automatic weather station weather hazards <u>Part B. Effect of radiation and temperature on plant growth (2 hr.)</u> Air temperature Radiation Photosynthetically Active radiation Guard cells Respiration Leaves Stomata Roots Turgor Wind Moisture

	<u>Part C. CO2 sequestered (4 hr.)</u> Carbon dioxide Dry weight Weight of carbon Diameter Height of the tree Wood Age of the tree <u>Part D. greenhouse (6 hr)</u> Building with glass Playhouse Planters Greenhouse effect Long waves Short waves Heating Natural ventilation Run-off Cost, shape and design Global warming <u>Part E. Impact of Climate Change on the Agricultural Sector (2 hr)</u> Global warming Adaptation strategies t Temperature increase Damage by brown Harvest time Regions suitable <u>Part F. application of Remote Sensing in Agrometeorology (4 hr)</u> Land mapping Irrigation monitoring Crop health analysis Crop production forecasting Crop health analysis Identification of pests and disease
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, The leaning and Teaching Strategies includes; 1. Identify the the basics of agrometeorology and its applications. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 2. Describe greenhouse gas emissions. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 3. Describe Impact of Climate Change on the Agricultural Sector. Method for Assessment: Graded exams, worksheets, pre- and post- course survey. 4. Describe CO2 sequestered. Method for Assessment: Graded exams, worksheets, pre- and post- course survey

	5. Describe the impact of the weather hazards on agriculture productions. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 6. application of Remote Sensing in Agrometeorology. Finally Demonstrate knowledge of the tools and methods used by scientists to study the natural world
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction Definition of Agrometeorology. Importance and applications of Agrometeorology The relation between physical climatology and agrometeorology and their effects
Week 2	Solar Radiation and Its Role in Plant Growth

Week 3	Environmental Temperature and Crop Production. Covering, wind barriers, and other precautions
Week 4	impact of the weather hazards on agriculture productions Aridity Desertification
Week 5	impact of the weather hazards on agriculture productions Snow Hail Winds Fooled
Week 6	Greenhouse Structure of greenhouses. Types of greenhouses Climate of greenhouses Temperature, humidity, and warming process greenhouse gas emissions
Week 7	calculate CO₂ sequestered
Week 8	Midterm Exam
Week 9	Photosynthesis and respiration
Week 10	Meteorology drought
Week 11	Hydrology Drought
Week 12	Agriculture drought
Week 13	Impact of Climate Change on the Agricultural Sector
Week 14	soil Definition of soil. Transfer of heat within soil Nature of soil
Week 15	application of Remote Sensing in Agrometeorology

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Agrometeorology: principles and applications of climate studies in agriculture. Mavi, H. S., & Tupper, G. J. CRC Press(2004).,	available as PDF
Recommended Texts	Agricultural Meteorology and Climatology / Branislava Lalic, Josef Eitzinger, Anna Dalla Marta, Simone Orlandini, Ana Firanj Sremac, Bernhard Pacher. – Firenze: Firenze University Press, 2018.	available as PDF
Websites	https://www.slideshare.net/slideshow/agrometeorological-lecture-notes-for-observers-2/47646011#5 https://www.wfp.org/publications	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Sustainable Environment		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010502208			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	2	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Zahraa Salah Mahdi		e-mail	Zahraa.atmsc@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assist. Professor		Module Leader's Qualification	MSc.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Osama Tarek Ahmed		e-mail	osamaaltaai77@uomustansiriyah.edu.iq
Scientific Committee Approval Date	03/6/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn the basics fundamental of Environmental Sustainability. 2. Learn and understand the effect of environmental pollution and its causes and how to control it. 3. Learn soil pollution ,its causes and its effects. 4. Learn the sources of air pollution and understand how can we controlling global warming. 5. Learn about renewable and non-renewable energy sources (Advantages and disadvantages).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The most important learning outcomes of the current subject are for the student to have a complete and simplified picture as much as possible about environmental sustainability and its impacts of human activities, as it encourages the adoption of intellectual sustainability and the development of environmental skills and enhances awareness of biodiversity and innovation in the field of environmental solutions. Sustainable development is achieved by adopting advanced programs for the sustainability of natural and environmental resources for future generations, and sustainable education encourages the development of skills and values that contribute to building strong and sustainable societies on the economic, social and environmental levels. one of the most important outputs that can be acquired The student at the end of the course is: 1-Promote critical thinking about the environmental impacts of everyday actions and encourage the search for sustainable solutions. 2-Stimulate students' active participation in environmental projects and practical learning activities. 3-Promote environmental awareness and encourage the adoption of environmentally friendly lifestyles. 4-Activate students' social responsibility and encourage them to think about their role as individuals and members of society, and how they can contribute to achieving sustainable development. 5-Develop the student's ability to understand the causes of climate change, which depend on the increase in greenhouse gases in the atmosphere as a result of the combustion of fossil fuels.
Indicative Contents المحتويات الإرشادية	<u>Part A. Concept Sustainable (2 hr.)</u> Introduction to Sustainable Sustainability History Development, Goals of Sustainable <u>Part B. Determinants of Sustainable Development: (2 hr)</u> Consumption, Production, and Distribution, Indicators of Sustainable Development. <u>Part C. Components of sustainability (2 hr)</u> Environmental Sustainability Social Sustainability Economical Sustainability <u>Part D. (2 hr)</u> Linkages Between Sustainable Development, Environment, and Poverty

	<u>Part E. Environmental Pollution (6 hr.)</u> Water pollution Soil pollution Air pollution sources <u>Part F . Global Warming and Green House Effects (2 hr.)</u> Sources, causes, effects and control Ozone Layer Depletion <u>Part G. Types of Energy (2 hr)</u> Renewable energy (Solar energy, Wind energy, Hydro energy, Geothermal energy Biomass energy) Advantages and disadvantages of renewable energy <u>Part H. Types of Energy (2 hr)</u> Non-renewable energy (Coal, Crude Oil, and Natural Gas) Advantages and disadvantages of Non-renewable energy Particulate Matter from Energy Use <u>Part I. Environmental disasters (2 hr)</u> Dust Storms, Floods, and drought <u>Part J. Sustainability in Building Design and Sustainable Building Axes: (6 hr)</u> Location and Land, Energy Management. Water management and treated water, Materials and waste management. Reducing operational waste and Recycling, Indoor environmental quality. Location and Land, Energy Management.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	During the 10-13 weeks of the course, The leaning and Teaching Strategies includes; 1.Explain the basic concepts of sustainable development. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 2.Describe atmospheric pollution. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 3. Describe the water and soil pollution . Method for Assessment: Graded exams, worksheets, pre- and post- course survey. 4.Describe the types of Renewable energy. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 5. Describe the types of non-Renewable energy. Method for Assessment: Graded exams, worksheets, pre- and post- course survey 6. Describe Environmental disasters. Method for Assessment: Graded exams, worksheets, pre- and post- course survey

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Concept Sustainable Concept Sustainable, Introduction to Sustainable Development, Goals of Sustainable Development, Models of Sustainable Development
Week 2	Determinants of Sustainable Development: Consumption, Production, and Distribution, Indicators of Sustainable Development.
Week 3	Components of sustainability Environmental Sustainability Social Sustainability Economical Sustainability
Week 4	Linkages Between Sustainable Development, Environment, and Poverty
Week 5	Environmental Pollution Water pollution: Sources, causes, effect and control
Week 6	Environmental Pollution Soil Pollution: Sources, causes, effect and control

	Air Pollution: Sources, causes, effect and control
Week 7	Midterm Exam
Week 8	<u>Global Warming and Green House Effects</u> Sources, causes, effect and control <u>Ozone Layer Depletion</u>
Week 9	<u>Types of Energy</u> Renewable energy Advantages and disadvantages of renewable energy
Week 10	<u>Types of Energy</u> Non-renewable energy (Coal, Crude Oil, and Natural Gas) Advantages and disadvantages of Non-renewable energy Particulate Matter from Energy Use
Week 11	<u>Prevention and Management of Disasters:</u> Dust Storms, Floods and drought
Week 12	<u>Sustainability in Building Design,</u> Sustainable Building Axes: Location and Land, Energy Management
Week 13	<u>Sustainable Building Axes:</u> Water management and treated water, Materials and waste management
Week 14	<u>Sustainable Building Axes:</u> Reducing operational waste and Recycling, Indoor environmental quality
Week 15	<u>Sustainable Building Axes:</u> Location and Land, Energy Management
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1- Tracey, S. and Anne, B., 2008, "Sustainable Development linking economy, society, environment", OECD insights 2- GEOLOGY and the ENVIRONMENT” 7e by Pipkin, Trent, Hazlett, and Bierman, 2014	available as PDF
Recommended Texts	Peter, P. Rogers, Kazi, F. Jalal, and John, A. Boyd, 2008, "An Introduction to Sustainable Development", Glen Educational Foundation, Inc.	available as PDF
Websites	https://www.uomustansiriyah.edu.iq/e-learn/UOMTeach/video_lectures/show_lectures.php https://uomustansiriyah.edu.iq/e-learn/UOMTeach/index.php https://youtu.be/zx04KI8y4dE?si=FaTP2xBMOH9gyuJy https://youtu.be/myZAvqqp9Jc?si=ituilXbwucfpmx_k	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Differential Equations		Module Delivery	
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU010502209			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	2	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Dr. Mohammed Abdul Hadi		e-mail	mohraf_98@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Ahmed S. Hassan		e-mail	ahmed.s.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	03/06/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	- This course is devoted to build an elementary-intermediate level of knowledge for the second-year students in the Atmospheric department within the college of science. - Students will deal with several types of ordinary differential equations along with the studying the main concepts of the course, for example, the definition of a differential equation, a solution of a differential equation, etc. - The main goal of this course is to enable students to utilizing the field of differential equations in their study. - It is necessary for the students to benefit from differential equations when advancing to higher levels of their study. - This course will make it possible for students to move forward in their academic journey and get benefits from analyzing and studying the most significant types of differential equations, for example, Separable equation and singular solution, Exact Equations, Linear of differential equation and Bernoulli equations, and Second-Order differential equation with Constant coefficients.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Recognize the difference between the algebraic equation and differential equation. - Recognize the difference between the dependent and the independent variables in the same differential equation. - Making sure that the given function is indeed represents a solution to the desired differential equation. - Solving the various kinds of differential equations. - Employing what they have been taught to serve as an effective tool in their academic study towards getting their Bachelor's degree in their majors.
Indicative Contents المحتويات الإرشادية	Part A. First order differential equation (4 hr.) - Definition, Order, Degree of Differential Equation - The Solution of differential equations - Application of first-order equation - Methods of Solution Differential equations - Separable equation and singular solution - Homogeneous LDE, Exact Equation Part B. Second-Order differential equation (4 hr.) - Solve of second – order differential equation with constant variables - Find General Solutions with Change of Variables - Euler Method and Modified Euler Method

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	During the 10-13 weeks of the course, the leaning and Teaching Strategies includes;
	1. Identify the primary concepts in DEs. Method for Assessment: Graded exams, worksheets, pre- and post- course survey
	2. Describe the Derivatives Rules Method for Assessment: Graded exams, worksheets, pre- and post- course survey
	3. Describe the solution of DE Method for Assessment: Graded exams, worksheets, pre- and post- course survey.
	4. Describe the initial conditions and solution of DE Method for Assessment: Graded exams, worksheets, pre- and post- course survey

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المناهج الاسبوعي النظري	
	Material Covered
Week 1	First order differential equation Definition, Order, Degree. diff. eq and The Solution of differential equations
Week 2	Application of first-order equation and Methods of Solution Differential equations
Week 3	Separable equation and singular solution
Week 4	Homogeneous LDE and Non - Homogeneous LDE
Week 5	Exact Equations
Week 6	Not Exact Equations
Week 7	Midterm Exam
Week 8	Linear of differential equation and Bernoulli equations
Week 9	The Operator D
Week 10	Solve of Second-Order differential equation with Constant coefficient and zero right hand
Week 11	Solve of Second-Order differential equation with Constant coefficient and not zero right hand – part I
Week 12	Solve of Second-Order differential equation with Constant coefficient and not zero right hand – part II
Week 13	Find General Solutions with Change of Variables
Week 14	Euler Method
Week 15	Modified Euler Method
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	differential equations. computing a modeling	available as PDF
Recommended Texts	-	available as PDF
Websites		

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Arabic Language II		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU16			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	2	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Dr. Entiha Abbas Aliwi		e-mail	Enteaaabbas@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Monim H. Al-Jiboori		e-mail	monim.atmsc@uomustansiriyah.edu.iq
Scientific Committee Approval Date	03/6/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- مهارة الاستماع بدرس اللغة العربية دراسة علمية . 2- مهارة الحديث عن طريق المناقشة داخل قاعات الدرس . 3- مهارة الكتابة العلمية للغة العربية . 4- القدرة على التمييز بين الجمل العربية. 5- القدرة على قراءة البحوث العلمية بالعربية .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- القدرة على كتابة المقال العلمي . 2- تحقيق الكفاءات اللغوية والقواعدية في اداء الطلبة للغة العربية في كل من الانشاء والقواعد والاملاء 3- تشخيص مواطن الاعراب في مادة اللغة العربية 4- معرفة الحركات (الفتحة والضمة والكسرة) واصوات اخرى مثل همزة الفصل والوصل. 5- قراءة الكلمات والجمل وفهم معانيها والربط بينها 6- اكتساب الطالب القدرة على التعبير الصحيح في التخاطب ، والتحدث، و الكتابة. 7- تعلم اساسيات كتابة الاعداد 8- يتضح لديه علامات الاصلية والفرعية للجمل العربية 9- رفع مستوى الطالب على القراءة الصحيحة ، والنطق السليم ، و فهم الأفكار 10- تعليم الطالب بحفظ قدر كافٍ من النصوص الأدبية ، وأن يستمتع بها ، ويتذوق مظاهر الجمال فيها
Indicative Contents المحتويات الإرشادية	يتيح تعريف الطلبة بالأحكام المهمة الخاصة باللغة العربية والقواعد الضرورية لصقل لغتهم العربية باطار سليم يتناسب مع ضرورات عملهم في المهن المدنية ليعبر عما بداخله ويسلك بحرية فعلى المرشد حسن الاصغاء ودقة الملاحظة وتركيز الانتباه لكل قول أو فعل كي يدرك المرشد الجوانب المختلفة للمشكلة والمحافظة على اللغة الفصحى و الابتعاد عن العامية و معالجة الأخطاء الشائعة.

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	استراتيجيات هذا المقرر هو تمكين المتعلم من استخدام اللغة العربية استخداما صحيحا للإفهام والفهم وبناء الجمل بالشكل اللغوي السليم وتحديد اللغة الفصيحة السليمة .

Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب ل ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	Continuous	LO #1, #2 and #8, #9
	Assignments	2	10% (10)	Continuous	LO #2, #3 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	LO #5, #6 and #9
	Report	1	10% (10)	12	LO #5 and #8
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	الاسماء المعربة
Week 2	النصوص الشعرية العصر العباسي ابو تمام
Week 3	أدوات النحو
Week 4	الفعل الصحيح والمعتل
Week 5	الاحرف المشبهة بالفعل
Week 6	اعراب الافعال الخمسة
Week 7	فتح همزة ان وكسرها
Week 8	Midterm Exam
Week 9	الشعر العربي المعاصر : بدر شاكر السياب
Week 10	الضاد والظاء مع الامثلة
Week 11	الالف اللينة بكل انواعها
Week 12	الفنون النثرية : قصة حي بن يقظان
Week 13	محاضرة تضم تطبيقات عملية لكل مواد اللغة
Week 14	محاضرة (اختبارات عملية لكل مواد الادب)
Week 15	مراجعة تهيئة للامتحان

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	اللغة العربية العامة لأقسام غير الاختصاص :د. عبد القادر حسن امين ،وزارة التعليم العالي والبحث العلمي الجامعة المستنصرية 1890م	نعم
Recommended Texts	اللغة العربية للأقسام غير الاختصاص د. سعد علي زاير – د. بيمان جلال أحمد	نعم
Websites	العربية الجامعية لغير المتخصصين ، د. عبده الراجحي ،دار النهضة العربية ، لبنان ، 2007	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	The Crimes of the Baath Regime in Iraq		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MU03			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	2	Semester of Delivery		2
Administering Department	05	College	01	
Module Leader	Ahmed Akeel Abd		e-mail	ahmed.ageel@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant Lecturer		Module Leader's Qualification	M.Sc.
Module Tutor	No available		e-mail	E-mail
Peer Reviewer Name	Dr. Ghassan Kareem Mijthab		e-mail	drghassankareem@uomustansiriyah.edu.iq
Scientific Committee Approval Date	03/06/2024		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	تبصير هذه الاجيال باسلوب فكري وثائقي يكشف لهم عن جرائم هذا النظام البعثي بحق الشعب العراقي ، وتضمن هذا المنهج مفاتيح معرفية وضعت بيد الطالب الجامعي يقوى بها على مروجي اكاذيب البعث واعلامه المزيف
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- تعريف الشباب الجامعي بجرائم ارتكبتها نظام جائر في العراق خاصة واثرها في المنطقة الاقليمية العامة و العالم كله 2- الوقوف على بطش هذا النظام بالوثائق والصور و التواريخ حتى يتسنى لهذا الجيل التأكد من كل تلك الجرائم بحق كل من انتهج سبيل الحق وحب الوطن و رفض النهج البعثي المجرم.
Indicative Contents المحتويات الإرشادية	تعليم الطالب الجامعي كيفية مواجهة الاعلام الزائف مستند على الوقائع التاريخية لما مر به العراق من حكم دكتاتوري وبالتالي مواجهة أي محاولة لاثارة الفكر البعثي او محاولة التمجيد له في الاوساط الشبابية .

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	الاستراتيجية الرئيسة التي سيتم تبنيها في تقديم هذه المادة ستركز على : المناقشة ، الاستجواب ، المحاضرة ، اوراق العمل ، السماح لطلبة بطرح الاسئلة.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب ل ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	مفهوم الجرائم واقسامها
Week 2	انواع الجرائم
Week 3	القرارات الصادرة من المحكمة
Week 4	الجرائم النفسية
Week 5	اليات الجرائم النفسية
Week 6	اثار الجرائم النفسية
Week 7	عسكرة المجتمع
Week 8	Midterm Exam
Week 9	موقف النظام البعثي من الدين
Week 10	صور انتهاكات حقوق الانسان
Week 11	اماكن السجون والاحتجاز لنظام البعث
Week 12	تدمير المدن والقرى سياسة الارض المحروقة
Week 13	احداث مقابر الابداء الجماعية المرتكبة من النظام
Week 14	جرائم المقابر الجماعية
Week 15	مقابر الابداء الجماعية لتي تعود للاحداث المذكورة
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	كتاب جرائم حزب البعث في العراق / وزارة التعليم العالي	نعم
Recommended Texts	المراجع ومواقع الانترنت	نعم
Websites		

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