

English for Intermediate ENG

Academic Year	: 2021-2022
Credit Hour	: (3-3-0) 3
Course web page	: https://classroom.google.com
	Class code : ??????????
Pre-requisites	: English for pre intermediate

Catalog Description:

This Intermediate English course is designed to help students learn the skills involved in the writing process, applied grammar, and reading comprehension, and apply these skills to everyday English. Students will gain initial competence in writing a variety of sentence types, paragraphs, and a very basic essay, as well as in reading proficiently at an intermediate level in an academic setting. Students will gain confidence, acquire knowledge, think critically, and upgrade their skills in the three content areas to increase their success in future college courses.

Reference Book:

- Liz. John. Soar, Mike. Sayer "The New Edition The New Headway Intermediate Student Book", or any new edition. (Can be downloaded from the Course web page).

Course Outcomes:

This course is aimed at foreign language users of English. It is ideal for students who want to improve their English-speaking skills, fluency, and confidence for work or social purposes. Improve your reading, writing, listening, and speaking skills as well as grammar and vocabulary. Lessons are student-centred and provide lots of opportunities to practise speaking in English.

Student learning outcome:

Students will deploy ideas from works of criticism and theory in their own reading and writing. Research. Students will identify topics and formulate questions, identify appropriate methods and sources for research, and engage ethically with sources. Oral Communication.

Weekly Teaching Plan:

<p>Week 1,2</p>	<p>It's a wonderful world!</p> <hr/> <p>Auxiliary verbs do, be, have p7</p> <p>Naming the tenses Present, Past, Present Perfect p7</p> <p>Questions and negatives What did you do last night? Cows don't eat meat. p7</p>
<p>Week 3&4</p>	<p>Get happy!</p> <hr/> <p>Present tenses Present Simple Does she work in a bank? p15 Present Continuous Is he working in France at the moment? p15 Simple or continuous? She usually drives to work, but today she isn't driving. She's walking. p17 Present passive We are paid with the money people give. Children are being treated with a new kind of medicine. p18</p> <p style="text-align: right;">First Quiz</p>
<p>Week 5&6</p>	<p>Telling tales</p> <hr/> <p>Past tenses Past Simple and Continuous He danced and sang. He was laughing when he saw the baby. p23 Past Simple and Past Perfect I didn't laugh at his joke. Why? Had you heard it before? p24 Past Passive A Farewell to Arms was written by Ernest Hemingway. p27</p>



	Second Quiz
Week 7&8&9	<p>Doing the right thing</p> <p>Modal verbs (1) – obligation and permission <i>have (got) to, can, be allowed to</i> <i>Children have to go to school.</i> <i>I can stay at my friend's house.</i> <i>We're allowed to wear jeans. p31</i></p> <p><i>should, must</i> <i>We should take traveller's cheques.</i> <i>You must write to us every week. p33</i></p> <p style="text-align: right;">Third Quiz</p>
Week 10&11&12	<p>On the move</p> <p>Future forms <i>going to and will</i> <i>I'm going to buy some.</i> <i>I'll get a loaf. p39</i></p> <p>Present Continuous <i>We're playing tennis this afternoon. p39</i></p> <p style="text-align: right;">Forth Quiz</p>
Week 13&14	<p>I just love it!</p> <p>Questions with like <i>What's she like?</i> <i>What does she look like?</i> <i>What does she like doing? p47</i></p> <p>Verb patterns <i>I enjoyed meeting your friends.</i> <i>I just wanted to say thank you.</i> <i>You made me feel welcome. p49</i></p> <p style="text-align: right;">Fifth Quiz</p>
Week 14	



Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
✓	✓	✓				

Course Outcomes:

Students who study principles of physics will be able to

- 1- Understand the tenses, verbs and other relevant related to the English language. (i)
- 2- Gain a knowledge and understanding of fundamental of English language concepts in the areas covered in this class.(i)
- 3- Apply an understanding of these concepts to various tenses and conditions. (ii)

Students Behavior in Class

In all classes, to ensure a respectful environment that allows all students to learn effectively, please adhere to the following expectations.

- Be on time in class hall (Plan for the transport delay possibilities). If you are late, be quiet and find a seat quickly (minimize disturbances to both the instructor and other students).
- Do not speak to your friends during the lectures. If you have a question about the material, please raise your hand to ask the instructor.
- Ensure that mobile devices are set to silent mode to avoid disrupting the class. Also, please do not use electronic devices to access games, Facebook, twitter or other non-related course material.
- If you feel that you affected by the behavior of other students, please let the instructor know your concerns so he can solve the problem.
- Don't ask the instructor about the following:
 1. Exam question patterns
 2. Increase your grade or letter
 3. Postpone exam or extend the due dates (deadlines) for submission projects and homework.

Failure to meet behavioral expectations may result in a request to leave the lecture hall.

Copy and Paste Policy

Students should avoid copy and paste jobs for their projects and/or any other assignments. However, sharing mark policy will be subjected, If the instructor notice any coping evidences, in this case, each student mark=Work Mark / No. of coping students)

Email Policy

The instructor will be happy to answer questions related to course content via email. Complex technical questions should be addressed in tutorial, during office hours, or by appointment. Emails must come from official University email addresses. The instructor will not respond to outside email addresses.

Grading Policy:

Students Attendance	2pt	Attendance is compulsory and absenteeism of more than 30% of classes will cause grade "NA".
Select higher quizzes	8pt	
1 st term Exam	15pt	
2 nd term Exam	15pt	
Overall	40pt	
Final Exam	60pt	
Total	100pt	

Exam Policy

- All exams will be Closed-Book, Closed-Notes. Bring a calculator, pencil, and eraser for the exams.
- No phones or electronic devices are allowed to use during the exams. Phones and electronic devices must be switched off and put away during the final exam.
- The final exam must be completed in order to complete the course.
- Quizzes 40-minute duration time, will be held at the end of the class period on the dates indicated on the weekly schedule.
- Sharing of items during the exams is prohibited (e.g. calculators, rulers, erasers, etc.) under any circumstances.

Instructor : Dr. Ziad Shakeeb Al Sarraf (Lecturer)
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ENDWR 307

Academic Year	: 2023-2022 Full time
Credit Hour	: (2-0-0) 2
Pre-requisites	: Engineering Management

وصف مقرر المادة الدراسية

تهدف الإدارة الهندسية إلى تخطيط وتنظيم وتوجيه ورقابة جهود الأفراد داخل المشروع الصناعي أو الخدمي للوصول إلى الأهداف المقررة، عن طريق الاستخدام الأمثل لعناصر الإنتاج (التمثلة في المواد الخام، الآلات، الأيدي العاملة، رأس المال) بأقل التكاليف وبأفضل الإمكانيات والوسائل المتاحة، عليه فإن مقرر المادة الدراسة يشمل المواضيع التي تعزز الحالة المعرفية للطالب وترفده بالمعلومات الأساسية اللازمة والتي تخص هذا الجانب المعرفي المهم لجميع المهندسين عامة ومهندسي الميكانيك بشكل خاص.

تتضمن مواد المقرر الآتي :

التعاريف والمصطلحات والمفاهيم الأساسية للإدارة الهندسية والتي تمثل مدخلاً ضرورياً للمواضيع اللاحقة. ومن المواضيع المهمة موضوع الإدارة العامة الذي يشمل مفهوم الإدارة والمدير بوصفه العنصر الفعال في أي منظمة سواء كانت إنتاجية أو خدمية، كما سيتعرف الطالب على المستويات الإدارية وأنواع الهياكل التنظيمية في المنظمة، كما يشمل المقرر موضوع إدارة الإنتاج والعمليات الذي يختص بعناصر النظام الإنتاجي وقياس الإنتاجية في أي منظمة وقياس الكفاءة والفعالية، ويدرس الطالب كذلك أسلوب تحليل نقطة التعادل جبرياً وبيانياً لحساب كمية الإنتاج التي تحدد مناطق الربح والخسارة.

كما يتضمن المقرر دراسة أسلوب المخاطبات الإدارية والتي يتعرف بها الطالب كيفية التعامل مع الكتب الرسمية والتقارير الإدارية والفنية والأمور التي يجب مراعاتها في الرسالة الإدارية، كما يشمل المقرر دراسة التوصيف الوظيفي وأهميته في إدارة أي منظمة، ومن جانب آخر يدرس الطالب الأسلوب العلمي في إنشاء المشروع الاستثماري وكيفية إدارته والمراحل التي يمر بها ودراسة الجدوى المبدئية والتفصيلية للمشروع، ويتضمن المقرر دراسة نظم إدارة وضمان الجودة والتي يتعرف فيها الطالب على ماهية الجودة ومتطلبات تطبيق برامج الجودة الشاملة وأدواتها والتعرف على مفهوم الأيزو والتعرف على خرائط ضبط الجودة.

أما الموضوع الآخر هو السلامة الصناعية والصحة المهنية في المنشآت الصناعية والخدمية التي تختص بمفهوم السلامة المهنية وحوادث العمل والمسؤولين عن تطبيق برامج السلامة المهنية والنتائج المترتبة عليها، كما يشمل المقرر أساليب اتخاذ القرارات في إدارة الأعمال، أما الموضوع الآخر يشمل إدارة الصيانة والتي تعد أحد المتطلبات المهمة في أي منشأة صناعية أو خدمية وتشمل مفهوم عن الصيانة وأهدافها وتصنيفات الصيانة وكلف الصيانة والاستبدال والمفاضلة بين الصيانة الوقائية والعلاجية. ويتضمن المقرر دراسة عن المشاريع والتخطيط لها إدارياً وفنياً وإدارتها وتحديد المسارات المناسبة للانجاز حسب المتطلبات ودراسة مخطط جانتي وشبكة العمل وتحديد المسار الحرج

اما الموضوع الاخر ضمن المقرر فهو السيطرة النوعية فيما يخص المواد الاولية او المنتج , ثم دراسة الخزين والتخطيط لحجم الخزين والسيطرة على العملية , وتنبؤ الطلب كما أن موضوع تعريف المهندس بكيفية اعداد جداول المواصفات والكميات والاسس العامة للمناقصات والعقود من المواضيع التي تم تناولها ضمن مواد المقرر الدراسي نظرا لأهميته في مجالات عمل المهندس بشكل عام

References Book

- 1- ترجمة د. فكتور يوسف توفيق Introduction To Industrial Engineering, Richard C. Vaughn
- 2 - ادارة الانتاج والعمليات, الطبعة الثالثة, 2009, أ د عبد الكريم محسن Production and Operation Management
- 3- ادارة الانتاج والعمليات مرتكزات معرفية وكمية , 2008 أ.د غسان قاسم اللامي
- 4- بحوث العمليات وتطبيقاتها , أ.د خالد جرجيس عبو , الجامعة التكنولوجية , بغداد 1987
- 5- كتاب مترجم Robert F. Hartley , Cleveland University , 2000 Management Mistakes And Successes .
- 6- مواقع علمية رصينة على شبكة الانترنت
- 7- التخطيط الاستراتيجي , عرض نظري وتطبيقي , 2009 , د.مجيد الكرخي

بعد دراسة الطالب للمقرر يفترض ان يكون قادرا على

- استخدام الموارد المتاحة استخداما كفوعا وفعالا في مختلف المجالات الصناعية.
- استخدام المهارات الانسانية اللازمة للتعامل مع الرؤساء والمرؤوسين
- استخدام العلوم التطبيقية وبحوث العمليات وتحليل وبناء النظم في حلول عملية لمختلف المشكلات الصناعية.
- فهم المعايير المهنية والأخلاقية المرتبطة بممارسة الادارة الهندسية.
- المشاركة والاشراف الميداني في اعمال الادارة الهندسية التخصصية وفي مختلف الشركات الصناعية
- ممارسة وظائف الادارة الصناعية في التخطيط والتنظيم والتوجيه والرقابة .
- الاشتراك في مختلف اللجان الفنية والادارية
- اعداد دراسة الجدوى الفنية لمختلف المشاريع .
- الاشراف والتوجيه والرقابة على متطلبات ضمان الجودة في المنظمة .
- الاشراف على اعمال الصيانة بمختلف انواعها
- العمل على تطبيق أنظمة الصحة المهنية والسلامة العامة
- التعامل بمنهجية فريق العمل والتخطيط الاستراتيجي وتقييم الأداء وتحليل الانتاجية



Weekly Teaching Plan:

Week 1 &2 Oct. 2021	Industrial management (Defin ,Terms and concepts) Organization and organizational structures and Functional description
Week 3	Administrative correspondences and technical reports & Decision making homework
Week 4 &5	Plant Location (Consept and significance) (The Consequences of trade-offs), Methods Of Plant Location(Qualitive , Break-Even analysis)
First Quiz	
Week 6	Transportation Network Method, Center Of Gravity Method
Week 7	Project Management , Process flow design Home work
Week 8 & 9	Projects Selection Methods , Project Control, Gantt Chart & Pert Chart and critical path analysis
second Quiz	
Week 10	Production and operations management
Week 11&12	Quality Control & International organization for standardization The seven basic tools of total quality management Monthly exam
Week 14	Management of maintenance &replacement

Week 15	Industrial safety and occupational healthy
	Final exam

سلوكيات الطلبة في الفصل

- لضمان بيئة محترمة تسمح لجميع الطلاب بالتعلم بفعالية ، يرجى الالتزام بالامور التالية.
- الحضور في الموعد المحدد في قاعة الدرس مع الاخذ بنظر الاعتبار احتمالات تأخير في وسائط النقل. وخاصة للمحاضرة الاولى
 - لا تتحدث مع أصدقائك أثناء المحاضرات. إذا كان لديك سؤال حول المادة ، يرجى رفع يدك لتطلب من المدرس وطرح السؤال.
 - تأكد من ضبط أجهزة الجوال على الوضع الصامت ،أيضاً يُرجى عدم استخدام الأجهزة الإلكترونية للوصول إلى الألعاب أو Facebook أو twitter أو مواد أخرى غير ذات الصلة.
 - إذا كنت تشعر بأنك تأثرت بسلوك الطلاب الآخرين ، فالرجاء إخبار المدرس بمخاوفك حتى يتمكن من حل المشكلة.
 - لا تسأل المدرس عن التالي:
1. أنماط أسئلة الامتحان
 2. زيادة درجتك
 3. تأجيل امتحان أو تمديد مواعيد الاستحقاق (المواعيد النهائية) للواجبات المنزلية.

ارشادات عامة

- يجب على الطلاب تجنب نسخ حلول الواجبات المنزلية او اي مهام اخرى .
- يمكن الاجابة عن الاسئلة المتعلقة بالمادة الدراسية عبر الصف الالكتروني .

تقنيات ووسائل التدريس

- الوسائل التقليدية لالقاء المحاضرات النظرية
- عروض أفلام للجانب التطبيقي لبعض المواضيع
- زيارات ميدانية لورش العمل او المؤسسات ذات العلاقة بالمادة الدراسية
- الصف الالكتروني
- اي نشاط اخر يمكن اضافته خلال السنة الدراسية

Grading policy

2 quizzes (each one of 10 pt)	10 pt	
2 home works	10 pt	
1 Monthly exam (each one 20 pt)	20 pt	
Final exam	60 pt	
Total	100 pt	

التعليمات الامتحانية

- في جميع الامتحانات يمنع استخدام الكتاب المنهجي او اي مصدر اخر.
- جلب الة حاسبة وقرطاسية مناسبة للامتحان وتمنع الاستعارة من الزملاء.
- لايسمح باستخدام الهواتف او الاجهزة الالكترونية اثناء الاختبارات.
- يجب اطفاء الهواتف والاجهزة الالكترونية ووضعها في الامتحان .
- يتضمن المنهج اربع اختبارات فجائية مدة كل منها 20 دقيقة وامتحان شهري لكل فصل مدة كل منها 50 دقيقة .



Mechanical Engineering Department

Instructor : Marwan Fakhri Basheer

Room No. :

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Last updated : November 2022



Engineering Analysis

MEC301

Fall course	:	2023
Credit hour	:	(2-1-0) 3
Course web page	:	https://classroom.google.com
Class code	:	flt3xkf
Pre-requisites	:	Engineering Math I, Engineering Math II

Reference Books:

- Erwin Kreyszig, Herbert Kreyszig, and Edward J. Norminton, "Advanced Engineering Mathematics", Tenth Edition, John Wiley & Sons, 2011. (can be downloaded from the Course web page).
- K. A. Stroud and Dexter J. Booth, "Advanced Engineering Mathematics", Forth Edition, Palgrave Macmillan, 2003. (can be downloaded from the Course web page).

Catalog Description:

The subject covers different analytical topics including special functions (Gamma function and Beta function), Partial differential equations PDE's (One dimensional wave equation, One dimensional heat equation, two dimensional Laplace equation), Complex number. The objective of the course is study of advanced methods in mathematics for solution of engineering problems.

Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
✓					✓	

Course Outcomes:

Upon successful completion of this course, students will be able to:



- 1) Understand some special functions (Gamma function and Beta function) (i).
- 2) Using mathematical manipulation to solve problems of Gamma and Beta functions (i,vi).
- 3) Understand the basic concepts of partial differential equations and the related initial and boundary conditions (i).
- 4) Classifying the types of partial differential equations (i,vi).
- 5) Applying separation of variables method to solve wave, heat, and Laplace equations (i).
- 6) Formulating the general and particular solutions of partial differential equations (i,vi).
- 7) Finding solutions of complex numbers (i,vi).

Weekly Teaching Plan: October 2, 2022, to January 12, 2023

Week 1	Special functions: Gamma function with solution of problems.
Week 2	Solution of problems on Gamma function.
	Quiz
Week 3	Beta function with solution of problems.
Week 4	Solution of problems on Beta function.
	Quiz
Week 5	Partial differential equations PDEs: Basic concepts, Boundary conditions, Initial conditions, types of PDE.
Week 6	Types of boundary conditions, fundamental theorem (superposition principle), One-dimensional wave equation.
Week 7	Applying the method of separating variables (product method) to find the solution of wave equation.
	Quiz
Week 8	Solution of problems on wave equation.
Week 9	Heat Flow with application and solution of problems.
	Quiz
Week 10	Solution of problems on heat flow.



Week 11	Laplace equation and its solution with solution of problems.
	Midterm exam
Week 12	Complex number, complex plane, properties of the arithmetic operations, complex conjugate numbers, solution of problems.
Week 13	Polar form of complex numbers, triangle inequality, multiplication and Division in polar form.
	Quiz
Week 14	Integer powers of Z , roots, solution of problems.
Week 15	Review
Week 16	Final Exam

Grading Policy:

Quizzes	20pt	Note: Attendance is compulsory, and absence of more than five lectures leads to a zero attendance mark.
Midterm Exam	15pt	
Attendance	5pt	
Final Exam	60pt	
Total	100pt	

Students Behavior in Class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about engineering analysis topics.

Copy and Paste Policy



The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.

Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice.

Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
 - No mobile or programmable calculator is allowed
 - Sharing items with other students in the exam is prohibited
 - The final exam must be completed to complete the course.
-

Instructor : Dr. Saddam Atteyia Mohammad
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Co-Instructor : Zenaamoyaser Abid
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CONDUCTION HEAT TRANSFER

MEC302

Spring course	:	2023
Credit hour	:	(2-1-0) 3
Course web page	:	https://classroom.google.com
Class code :	:	
Pre-requisites	:	Conduction Heat Transfer

Reference Books:

- Heat transfer , tenth edition(2010) , J.P. Holman , McGRAW hill international edition
- Fundamental of HEAT and MASS transfer, Seventh Edition, Theodore L. Bergman, Adrienne S, Lavine, Frank P. Incropera, David P. Dewitt John Wiley & Sons, 2011

Catalog Description:

This course is an introduction to the principal concepts and methods of heat transfer. The objectives of this integrated subject are to develop the fundamental principles and laws of heat transfer and to explore the implications of these principles for system behavior; to formulate the models necessary to study, analyze and design heat transfer systems through the application of these principles; to develop the problem-solving skills essential to good engineering practice of heat transfer in real-world applications

- The modes of heat transfer
- Steady state conduction – one dimension – (plane wall , radial systems)
- Insulation and thermal resistance value, the overall heat transfer coefficient , critical thickness of insulation
- Heat source systems , cylinder with heat sources, conduction - convection systems
- Heat transfer by the extended surface area (fins)
- Unsteady state conduction (lumped – heat capacity system)
- Transient heat flow in semi – infinite solid

The credit hour equals one unit, and one theoretical hour equals two or three practical hours



The mathematical models of the physical systems are explained, The law of heat conduction, Fourier's law. Newton's law, energy, and equivalent methods are used for fully solved examples.

Graduate outcomes (GOs) addressed by the course:

I	ii	iii	iv	V
✓	✓	✓	✓	✓

Course Outcomes:

Upon successful completion of this course, students will be able to

- 1) The advantage of developing the students ability to understand conduction heat transfer object (i)
- 2) Know the types of energy and practice applications (ii)
- 3) Know the heat transfer effect on solid(iii)
- 4) How can be calculate the heat lost and gain from or by the system.(iii,iv)
- 5) How can be calculate the heat lost by the Unsteady state conduction (iii.v)



Weekly Teaching Plan: February 26, 2023, to July 2, 2023

Week 1-2	Introduction , dimensions and unit, The modes of heat transfer, The properties (thermal conductivity, heat transfer coefficient)		
Week 3-4	Steady state conduction – one dimension – (plane wall , radial systems)		
	Solved problems chapter No.1	Homework 1	Quiz
Week 5-7	Insulation and thermal resistance value, the overall heat transfer coefficient , critical thickness of insulation Heat source systems , cylinder with heat sources		
	Solved problems chapter No.2	Homework 2,3	Quiz
Week 8-9	Heat source systems , cylinder with heat sources, conduction - convection systems		
	Solved problems chapter No.2	Homework 4	Quiz
Week 10-11	The extended surface area (fins)		
	Solved problems chapter No.2	Homework 5	Quiz
Week 12	1st term Examination		
Week 13-14	Unsteady state conduction (lumped – heat capacity system)		
	Solved problems chapter No.4	Homework 6	Quiz
Week 15 -16	Transient heat flow in semi – infinite solid		
	Solved problems chapter No.4	Homework 7	Quiz
Week 17	2 nd term Examination		
Final Exam			

1. وصف طريقة توزيع الدرجات على اعمال الطلبة

Grading Policy:

Home works	5pt	<p>Note: Attendance is compulsory, and absence from more than five lectures leads to a zero attendance mark.</p>
Quizzes	5pt	
Attendance and Participation	5pt	
1 st term Exam	10pt	
2 nd term Exam	15pt	
Final Exam	60pt	
Total	100pt	



Students' behavior in class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.

Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice.

Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
 - No mobile or programmable calculator is allowed
 - Sharing items with other students in the exam is prohibited
 - The final exam must be completed to complete the course.
-

Instructor: Ass. Professor Maan S. M. Al - Dabbagh

Room No.: 116

Email: maandabbagh@uomosul.edu.iq



الملحقات

<u>Graduate Outcomes</u>	<u>محصلات الخريجين : يرجى قراءة ملف البوربوينت</u>	<u>1</u>
<u>Course learning outcomes</u>	<u>الاهداف التعليمية للمقرر الدراسي : يرجى قراءة ملف البوربوينت</u>	<u>2</u>
	<u>طريقة توزيع الدرجات : يرجى قراءة ملف البوربوينت والمثال التالي (تقييم مباشر)</u>	<u>3</u>
	<u>عمل استبيان للطلاب لمعرفة مدى تحقق محصلات الخريجين الموضوعه (تقييم غير مباشر)</u>	<u>4</u>
	<u>الحافظة : تحتوى جميع الملفات المتعلقة بالمقرر جاهزة للتدقيق</u>	<u>5</u>

- المطلوب يحدد الاستاذ عدد المخرجات التي ممكن تحقيقها خلال الفصل الدراسي على الاقل 2 من المخرجات باستثناء مشروع التخرج والذي يجب ان يحقق جميع المخرجات ان امكن.
- الاهداف التعليمية المتوقع من الطالب الحصول عليها بعد اجتيازه للمقرر بنجاح يتم صياغتها حسب تصنيف بلوم بما يتوافق مع محصلات الخريجين التي تم اختيارها
- اضافة لما ذكر اعلاه يتم اتباع نفس الاجراء وتحديد المخرجات المتوقع تحقيقها في كل امتحان او واجب بيتي او امتحان قصير كما موضح في المثال التالي. وكذلك عمل احصائية لبيان مدى المخرجات المتحققة اعتماداً على نسبة النجاح لكل عمل (واجب , امتحان , الخ).

Assessment tools for ME414								
		ملاحظات	i	ii	iv	v	SUM	نسبة النجاح
Home works	5pt	ما المحصل التعليمي المستهدف تحقيقه من الواجب ؟						
HW1	1pt			1			1	70 %
HW2	1pt			1			1	80 %
HW3	1pt				1		1	80 %
HW4	1pt				1		1	80 %
HW5	1pt						1	70 %
							5 pt	3.8 pt
Quizzes	5pt	ما المحصل التعليمي المستهدف تحقيقه من الامتحان القصير ؟					1	
Q1	1pt			1			1	50 %
Q2	1pt			1			1	60 %
Q3	1pt				1	1	1	40 %
Q4	1pt					1	1	40 %
Q5	1pt					1		30 %



							5 pt	2.2 pt
1 st term Exam	10pt	ما المحصل التعليمي المستهدف تحقيقه؟	2	2	3	3	10 pt	5 pt
2 nd term Exam	15pt		4	2	4	5	15 pt	9 pt
Final Exam	60pt		10	15	20	15	60 pt	45 pt
Participation+ Attendance	5 pt						5 pt	5 pt
Total	100pt		14	20	31	24	100pt	64 pt





Kinematics Analysis MEC 303

Academic Year	:	2022-2023 Full Time Study: (Autumn Course)
Credit Hour	:	(2-0-0) 2
Course web page	:	https://classroom.google.com
		Class code : 4gtjgc
Pre-requisites	:	Engineering Mechanics, Mechanics of Materials of Materials.

Catalog Description:

ABOUT THE COURSE:

This course will deal with kinematic analysis of mechanisms and machines. It will include motion analysis of linkage mechanisms, open and closed-chain planar robots, and geared transmission. The discussion will start with an introduction to the subject matter and nomenclature, and will cover direct and inverse kinematics, velocity and acceleration analysis, kinematic path generation for robots, singularities in kinematic chains, principle of virtual work and force analysis, and kinematic analysis of gear transmission. The course will demonstrate various concepts by working out problems relevant to real life applications of mechanisms. The course is expected to help students in their basic understanding and use of kinematic analysis. An Introduction to theory of machines, definitions, basic concepts, simple mechanisms and machines. Fast review on engineering mechanics : displacement, velocity and acceleration, relative motion, circular motion, torque and angular motion, simple harmonic motion. Position analysis in machines and mechanisms: introduction, coordinate systems, methods for determinations for positions (Graphical, Analytical and Vector loop methods). Velocity analysis in machines and mechanisms: introduction, absolute and relative velocity, velocity of an point on the link, velocity of sliding block on rotating link, methods for determinations for velocities (Relative velocity diagram (Graphical), Analytical or algebraic and instantaneous center methods), rubbing velocity. Acceleration analysis in machines and mechanisms: introduction, methods for determinations for accelerations: (Acceleration diagram Method (Graphical), acceleration of block sliding on rotating link. Forces in links, analytical or algebraic methods for determination of accelerations). Cams: Introduction, Types of desired motion, method of analysis and designing of cams.



Mechanical Engineering Department

Course Text Books:

- Mechanics of Machines, (Elementary and Examples), by: J. Hannah and R. C. Stephens, all editions, 1984, 2017,
- Mechanics of Machines, (Advanced and Examples), by: J. Hannah and R. C. Stephens, all editions, 1984, 2017,
- Mechanics of Machines, by Cleghorn, W. L., Oxford University Press, First, and Second Editions, 2005, 2009, 2015.
- Theory of Machines, by: R. S. Khurmi and J. K. Gupta, First-Edition 2010.
- Theory of Machines, by: Thomas Bevan, C.B.S. Publishers.
- Theory of Machines, by: S. S. Ratan, Tata McGraw Hill.
- Theory of Machines, by: P. L. Ballaney, Khanna Publishers, India-Delhi.

Course Reference Books :

- Theory of Machines, by Robert L. Norton, all editions.
- Design of Machinery , by Robert L. Norton, all editions.
- Theory of Machines, by R. K. Bansal.
- Theory of Machines, by W. G. Green, Bluckie and Sons Limited.
- Or any related books.

Course Outcomes:

The course contributes to the following student outcomes:

1. Students shall gain clear knowledge about mechanisms and machines.
2. Students shall demonstrate the ability to draw the kinematic diagrams of actual mechanisms and determine, visualize their mobility.
3. Students shall demonstrate the ability to determine the position, velocities and acceleration (both linear and angular) of various points and links in mechanisms and machines using three essentials methods: Analytical, graphical and vector methods .
4. Students have an ability to use the techniques, skills and modern engineering tools necessary for engineering practice (2D and 3D WM, Solid Work, Inventor soft ware's).

Weekly Teaching Plan:

Week 1	Introduction to Mechanics of Machines
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Mechanical Engineering Department

	<ul style="list-style-type: none"> ❖ Introduction to theory of machines, definitions, basic concepts, simple mechanisms and machines, showing mechanisms and machines using mini data show. ❖ Fast review on Engineering Mechanics : displacement, velocity and acceleration, relative motion, circular motion, torque and angular motion, simple harmonic motion.
Week 2,3,4	Introduction, Positions analysis and Velocity analysis.
	<ul style="list-style-type: none"> ❖ Position analysis in machines and mechanisms: introduction, coordinate systems, methods for determinations for positions (Graphical, Analytical and Vector loop methods), solved examples, tutorial sheet #1. ❖ Velocity analysis in machines and mechanisms: introduction, absolute and relative velocity, velocity of an point on the link, velocity of sliding block on rotating link, methods for determinations for velocities (Relative velocity diagram (Graphical), Analytical or algebraic and instantaneous center methods), Rubbing Velocity, solved examples, tutorial sheet #2.
Weeks 5,6,7,8	Introduction to Acceleration analysis
	<ul style="list-style-type: none"> ❖ Acceleration analysis in machines and mechanisms: introduction, methods for determinations for accelerations: (Acceleration diagram Method (Graphical), Acceleration of Block Sliding on Rotating Link. Forces in Links.
First Quiz # 1 +Exam#1	
Weeks 9,10,11	Continued..... Analytical or algebraic Methods for determination of accelerations),
	Solved examples and tutorial sheet #3.
Second Quiz # 2	



Weeks 10&11	Gears and Gears Trains
	❖ Tooth gears: introduction, Types of Gears, Applications, Force analysis in spur gears, solved examples.
Week 12	Cams Design and Analysis
	❖ Cams: Introduction, types of cam and follower mechanisms, Types of desired motion, method of analysis and designing of cams profiles.

Students Behavior in Class

In all classes, to ensure a respectful environment that allows all students to learn effectively, please adhere to the following expectations.

- Be on time in class hall (Plan for the transport delay possibilities). If you are late, be quiet and find a seat quickly (minimize disturbances to both the instructor and other students). [SEP]
- Do not speak to your friends during the lectures. If you have a question about the material, please raise your hand to ask the instructor.
- Ensure that mobile devices are set to silent mode to avoid disrupting the class. Also, please do not use electronic devices to access games, Face book, twitter or other non-related course material.
- If you feel that you affected by the behavior of other students, please let the instructor know your concerns so he can solve the problem. [SEP]
- Don't ask the instructor about the following:
 1. Exam question patterns
 2. Increase your grade or letter
 3. Postpone exam or extend the due dates (deadlines) for submission projects and homework.

Failure to meet behavioral expectations may results in a request to leave the lecture hall.

Copy and Paste Policy

Students should avoid copy and paste jobs for their projects and/or any other assignments. However, sharing mark policy will be subjected, If the instructor notice any coping evidences, in this case, each student mark=Work Mark / No. of coping students)

Email Policy



Mechanical Engineering Department

The instructor will be happy to answer questions related to course content via email. Complex technical questions should be addressed in tutorial, during office hours, or by appointment. Emails must come from official University email addresses. The instructor will not respond to outside email addresses.

Computer Usage:

Students are encouraged to use the Internet to search for various topics, including contents of similar courses offered elsewhere. MS Excel software is used for preparing projects. Students can reach the teaching material, solved problems, data sheets, past exam papers etc. on the allocated Web site.

Teaching Techniques:

Power point presentation and multimedia tools are used in classrooms; Examples and problems will be solved and illustrated on the classroom board; Tutorials are also organized to establish a closer contact with students.

Grading Policy:

Four quizzes, (each 3pt)	12pt	Attendance is compulsory and absenteeism of more than 30% of classes will cause grade "NA".
Home Works-I	3pt	
1 st term Exam	10pt	
Home Works-II	3pt	
2 nd term Exam	10pt	
Attendance	2pt	
Final Exam	60pt	
Total	100pt	

Exam Policy

- All exams will be Closed-Book, Closed-Notes. Bring a calculator, pencil, and eraser for the exams.
- No phones or electronic devices are allowed to use during the exams. Phones and electronic devices must be switched off and put away during the final exam.
- The final exam must be completed in order to complete the course.
- Four Quizzes 20-minute duration time, will be held at the end of the class period on the dates indicated on the weekly schedule.
- Sharing of items during the exams is prohibited (e.g. calculators, rulers, erasers, etc.) under any circumstances.

Instructor : Dr. Abdulhaqq A. Hamid + Mr. Sufyan A. Al-Najmawee

Room No. : 110 (First Floor)

Email ID : abdulhaqqhamid@uomosul.edu.iq

Last updated: October 17, 2022



Mechanical Workshop MEC 305

Academic Year	: 2021-2022 Fall Semester
Credit Hour	: (0-2-0) 1
Course web page	: https://classroom.google.com
	Class code : vetxtxu
Pre-requisites	: Manufacturing processes/1

Catalog Description:

This is to be conducted in the Mechanical Engineering Department's workshops by all Mechanical Engineering students who have completed a minimum of three semesters in the program. Students will perform various hand and machine tool operations under staff supervision. It includes introduction to engineering materials, and selected practices on laying-out and setting out a job, using measuring devices. At the end of the training students will be required to complete a report regarding their training.

Reference Book:

- Mikell P.Groover. "FUNDAMENTALS OF MODREN MANUFACTURING _ MATERIAL PROCESSES AND SYSTEM". John Wiley and Sous. 2002. (can be downloaded from the Course web page).
- B.H. Amsted, Philip F. Ostward and Myron L.' MANUFACTURING PROCESSES' Begman Jhon Willey Sons-Inc 2005.

Course Outcomes:

In MEC305, initially students will learn how to design and manufacturing materials. Upon successful completion of this course the student shall be able to:

- 1- Student will be able to choose machining processing to manufacture any component
- 2- Student will be able to estimate machining time for milling and drilling process.
- 3- Student will be able to understand finishing processes.
- 4- -Student should be able to understand to select proper Advanced Manufacturing process for welding.
- 5- -Student will be able to calculate forces during orthogonal metal cutting.
- 6- Student will be able to choose welding machine for welding metal.

Weekly Teaching Plan:

Week 1 Oct. 2021	Introduction to workshop technology occupational safety
Week 2 & 3	Turning and related operations
	First Quiz



Week 4&5	Drilling Operation
	Second Quiz
Week 6&7	Welding Processes
	Oxy- acetylene Welding
	Third Quiz
Week 8&9	Milling operations
	Forth Quiz
Week 10,11&12	Measurement tools and how to use them
	Filing Operation
	Fifth Quiz
Week 13	Mid Term Examination
Week 14	Final Examination

Students Behavior in Class

In all classes, to ensure a respectful environment that allows all students to learn effectively, please adhere to the following expectations.

- Be on time in class hall (Plan for the transport delay possibilities). If you are late, be quiet and find a seat quickly (minimize disturbances to both the instructor and other students). [SEP]
- Do not speak to your friends during the lectures. If you have a question about the material, please raise your hand to ask the instructor.
- Ensure that mobile devices are set to silent mode to avoid disrupting the class. Also, please do not use electronic devices to access games, Facebook, twitter or other non-related course material.
- If you feel that you affected by the behavior of other students, please let the instructor know your concerns so he can solve the problem. [SEP]
- Don't ask the instructor about the following:
 1. Exam question patterns
 2. Increase your grade or letter
 3. Postpone exam or extend the due dates (deadlines) for submission projects and homework.

Failure to meet behavioral expectations may results in a request to leave the lecture hall.

Copy and Paste Policy

In all classes, to ensure a respectful environment that allows all students to learn effectively, please adhere to the following expectations.

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Mechanical Engineering Department

- seat quickly (minimize disturbances to both the instructor and other students). [SEP]
- Do not speak to your friends during the lectures. If you have a question about the material, please raise your hand to ask the instructor.
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 - If you feel that you affected by the behavior of other students, please let the instructor know your concerns so he can solve the problem. [SEP]
 - Don't ask the instructor about the following:
 1. Exam question patterns
 2. Increase your grade or letter
 3. Postpone exam or extend the due dates (deadlines) for submission projects and homework.

Failure to meet behavioral expectations may result in a request to leave the lecture hall.

Email Policy

The instructor will be happy to answer questions related to course content via email. Complex technical questions should be addressed in tutorial, during office hours, or by appointment. Emails must come from official University email addresses. The instructor will not respond to outside email addresses.

Computer Usage:

Students are encouraged to use the Internet to search for various topics, including contents of similar courses offered elsewhere. MS Excel software is used for preparing projects. Students can reach the teaching material, solved problems, data sheets, past exam papers etc. on the allocated Web site.

Teaching Techniques:

Power point presentation and multimedia tools are used in classrooms; Examples and problems will be solved and illustrated on the classroom board; Tutorials are also organized to establish a closer contact with students.

Grading Policy:

Five quizzes, (each 5pt)	25pt	Attendance is compulsory and absenteeism of more than 30% of classes will cause grade "NA".
Reports and attendance	10pt	
Mid Semester Exam	15pt	
Final Exam	50pt	
Total	100pt	

Exam Policy

- All exams will be Closed-Book, Closed-Notes. Bring a calculator, pencil, and eraser for the exams.
- No phones or electronic devices are allowed to use during the exams. Phones and electronic devices must be switched off and put away during the final exam.



Mechanical Engineering Department

- The final exam must be completed in order to complete the course.
 - Five Quizzes will be held at the end of the class period on the dates indicated on the weekly schedule.
 - Sharing of items during the exams is prohibited (e.g. calculators, rulers, erasers, etc.) under any circumstances.
-

Instructor : Dr. Mohammed Najeeb Abdullah
Room No. : 309
Email ID :mohammed75nr@gmail.com

Co-Instructor : Qays Hazim Ismail
Room No. : 300
Email ID :qayshazim1970abc@gmail.com



Compressible Fluid Flow

ME315

Fall course	:	2022
Credit hour	:	(2-0-2) 3
Course web page	:	https://classroom.google.com
Class code :	:	rb2t7iw
Pre-requisites	:	Fluid I

Reference Books:

- ModernCompressibleFlow-3ed (Anderson).
- Fundamentals_of_Aerodynamics,Th(BookSee.org), [John_D._Anderson].

Catalog Description:

The third year under graduate course primarily intended for students mechanical engineering. There will be these parts:

- 1- Mach number calculation.
- 2- Calculate the properties of compressible flow.
- 3- Integral and Transcendental functions.

Emphasis on applications and calculations which under graduate students in engineering may encounter in their next courses.

Graduate outcomes (GOs) addressed by the course:

I	ii	iii	iv	v	Vi	vii
✓	✓	✓				

Course Outcomes:

Upon successful completion of this course, students will be able to

- 1) Calculate the Mach number of any objects.
- 2) Find the properties of the flow under different conditions.
- 3) Design the ducts and nozzles for all types of flow.



Weekly Teaching Plan: October, 2022, to January, 2023

Week 1-2	Basic Definitions of Compressible Flow.
Week 3-4	Types of Compressible flow and Sound Velocity.
	Tutorial sheet No.1 Homework 1 Quiz
Week 5-7	One-Dimensional Isentropic Flow. Isentropic Flow in Nozzles and Diffuser.
	Tutorial sheet No.2 Homework 2 Quiz
Week 8	Normal Shock Wave. Normal Shock Wave in Nozzles and Diffuser.
	Tutorial sheet No.3 Homework 3 Quiz
Week 9	Adiabatic Flow in Constant-Area Duct with Friction-Derivation of Basic Equations.
Week 10	Fanno Flow in constant-Area Duct With Normal Shock Wave.
	Tutorial sheet No.4 Homework 4 Quiz
Week 11	Fanno Flow in constant-Area Duct Fed by a Convergent Nozzle.
	Tutorial sheet No.5 Homework 5 Quiz
Week 12-15	Fanno Flow in constant-Area Duct Fed by a Convergent-Divergent Nozzle. Compressible Flow in Constant-Area Duct with Heat Transfer-Derivation of Basic Equations.
Final Exam	

Grading Policy:

Home works	10 pts
Quizzes	30 pts
Final Exam	60pts
Total	100pts



Students' behavior in class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.

Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice.

Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book.
 - No mobile or programmable calculator is allowed.
 - Sharing items with other students in the exam is prohibited.
 - The final exam must be completed to complete the course.
-

Instructor: Dr. Omer S. Alabidalkreem

Room No.: 009.2

Email: omerphd18@uomosul.edu.iq



Metallurgy

ME332

Spring course	:	2023
Credit hour	:	(2-0-3)
Course web page	:	https://classroom.google.com/c/NTk1NzUyOTY3NjE2?cjc=bjjgt5m
Class code	:	bjjgt5m
Pre-requisites	:	Physical metallurgy I ME152

Reference Books:

- 1-“Fundamentals of material science and engineering”, William.d.callister, 4th ed., John weily &sons, 2012, U.S.A
- 2-"Engineering metallurgy", R.A.Higgins, part I, Sixth edition, London.
- 3-Modern physical metallurgy and material engineering, R.E.S and R.J.Bishop, Boston, Butterworth Heinman, Sixth edition, 1999.
- 4-Material science, R.S.Khurmi, R.S.Sedha, Ram Najar, New Delhi, 1987.
- 5-Materials and metallurgy”, G.B.S. Narang and V.K.Manchanda, Bajrangi press, New Delhi.
- 6-Introduction to physical metallurgy, Avner.
- 7-مبادئ هندسة المعادن والمواد، الجامعة التكنولوجية، د.حسين باقر رحمة الله، 1986.
- 8-المعادن اللاحديدية وسبائكها، دار دجلة للطباعة والنشر، أ.د.قحطان الخزرجي، الطبعة الاولى ، 2009.

Catalog Description:

This course explains iron-carbon thermal equilibrium diagram reactions, both kinds of equilibrium and non-equilibrium heat treatments for ferrous metals, steels' capacity for hardening, non-ferrous metals that have been heated Metal and alloy standard standards, Steel alloys, nonferrous alloys and their thermal equilibrium graphs, and corrosion concepts.



Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
✓	✓		✓	✓		

Course Outcomes:

Upon successful completion of this course, students will be able to:

- 1-Learn about iron carbon thermal equilibrium diagram which include reactions and phase transformations, properties of steels and cast irons with their industrial applications.
- 2-Learn about types of heat treatments of steels (equilibrium and non-equilibrium conditions) and its applications.
- 3-Learn about the hardenability of steels.
- 4-Learn about the Aluminum-Copper thermal equilibrium diagram with precipitation hardening for aluminum alloys and its applications.
- 5-Learn on the types, classifications and applications of alloy steels.
- 6-Learn on metals used in bearings (SbSn binary diagram).
- 7-Learn on the standard specifications of ferrous and nonferrous alloys.
- 8-Learn on principles of corrosion.

Weekly Teaching Plan: November 1, 2022, to March 1, 2023

Week 1-2	Review the Iron-Carbon thermal equilibrium diagram (reactions and phase transformations).
Week 3-4	Iron carbon equilibrium diagram (steels and its applications).

	Iron carbon equilibrium diagram (cast irons and its application) Homework 1 Quiz
Week 5-7	Heat treatment of steels (equilibrium h.t). Heat treatment of steels (non-equilibrium h.t). Heat treatment of steels (non-equilibrium h.t).
	Homework 2 Quiz
Week 8	Hardenability of steels.
	Homework 3 Quiz
Week 9	Aluminum-Copper thermal equilibrium diagram
	1st term Examination
Week 10	Precipitation hardening of aluminum alloys.
	Homework 4 Quiz
Week 11 -13	Alloy steels.
	Homework 5 Quiz
Week 14	Bearing metals (SbSn binary diagram).
	2 nd term Examination
Week 15	Standard specifications of steels (DIN specifications).
Week 16	Principles of corrosion.
Note: Also there is a practical lab. include different experiments in the field of metallurgy.	
Final Exam	

Grading Policy:

Home works	5pt	<p>Note: Attendance is compulsory, and absence from more than five lectures leads to a zero attendance mark.</p>
Quizzes	5pt	
Practical lab.	10pt	
1 st term Exam	15pt	
2 nd term Exam	15pt	
Final Exam	50pt	
Total	100pt	

Students' behavior in class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.

Course web page: classroom.google.com/c/NTk1NzUyOTY3NjE2?cjc=bjigt5m

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice.

Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
- No mobile or programmable calculator is allowed
- Sharing items with other students in the exam is prohibited
- The final exam must be completed to complete the course.

Instructor: Ahmed N. Rashid

Room No. :304, Mechanical Engineering Department (main building), 3rd floor

Email ID:ahmed.n.rashid@uomosul.edu.iq

Co instructor: Ghaidaa Ibrahim Alsarra

Room No. :115, Mechanical Engineering Department , first floor

Email ID: ghaidaa.alsarraj2019@uomosul.edu.iq



Assessment tools for ME332								
		ملاحظات	i	ii	iv	v	SUM	نسبة
Home works	5pt	ما المحصل التعليمي المستهدف تحقيقه من الواجب ؟						
HW1	1pt			1			1	70 %
HW2	1pt			1			1	80 %
HW3	1pt				1		1	80 %
HW4	1pt				1		1	80 %
HW5	1pt						1	70 %
							5 pt	3.8 pt
Quizzes	5pt	ما المحصل التعليمي المستهدف تحقيقه من الامتحان القصير ؟					1	
Q1	1pt			1			1	50 %
Q2	1pt			1			1	60 %
Q3	1pt				1	1	1	40 %
Q4	1pt					1	1	40 %
Q5	1pt					1		30 %
Lab.	10pt						5 pt	2.2 pt
1 st term Exam	15pt	ما المحصل	2	2	3	3	10 pt	5 pt
2 nd term Exam	15pt	التعليمي	4	2	4	5	15 pt	9 pt
Final Exam	50pt	المستهدف تحقيقه؟	10	15	20	15	60 pt	45 pt
Total	100pt		14	20	31	24	100pt	64 pt

اخلاقيات المهنة الهندسية

UOMC104

Spring course	:	2023
Credit Hour	:	2
Course web page	:	: https://classroom.google.com/u/0/c/NTk2NzcxNjA3ODE4
Class code	:	ogeafdh
Pre-requisites	:	مبادئ اخلاقيات المهنة الهندسية

Reference Book:

- مدونة اخلاقيات المهنة الهندسية اصدار وزارة الاعمار والاسكان والبلديات والاشغال العامة (2017)

Catalog Description:

هذا الكورس يتضمن ملخص لمدونة الاخلاقيات المهنة الهندسية التي اصدرتها وزارة الاعمار والاسكان العراقية والبلديات والاشغال العامة بالتنسيق مع وزارة التخطيط سنة 2017 والتي تضمنت عدة محاور منها :

« مبادئ واسس اخلاقيات المهنة الهندسية
« كيفية التعامل مع اصحاب العمل
« كيفية التعامل مع الزملاء
« تطبيق قواعد التنمية المستدامة
« اهم التعاقدات التي يوقع عليها المهندس

Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	Vii
✓	✓		✓	✓		

Course Outcomes:

:

- بعد نهاية الكورس الدراسي سوف يكون الطالب قادرا على :
- 1- معرفة حقوق المهنة الهندسية واهم المعيير الاخلاقية التي تبني شخصية المهندس
 - 2- معرفة حقوق اصحاب العمل وكيفية التعامل معهم
 - 3- معرفة كيفية التعامل مع الزملاء ونظراء العمل
 - 4- معرفة كيفية تطبيق شروط التنمية المستدامة في العمل الهندسي
 - 5- معرفة اهم التعاقدات التي سوف يطلب منه التعاقد عليها في العمل الهندسي

Weekly Teaching Plan: February 26, 2023, to July 2, 2023

Week 1-2	المقدمة ,تمهيد, تعريف المفاهيم الاخلاقية
Week 3-4	مصادر واسباس اخلاقيات المهنة
	Quiz
Week 5	مبادئ و اخلاقيات المهنة الهندسية
Week 6	التزامات المهندس الاخلاقية تجاه اصحاب العمل
Week 7	التزامات المهندس الاخلاقية تجاه زملاء العمل والنظراء
	Quiz
Week 8	التزامات المهندس تجاه البيئة
Week 9	اهم التعاقدات التي سيتعاقد عليها المهندس ووثائق الشرف والتعهدات
Week 10	الامتحان الفصلي



Grading Policy:

Home works	5pt	Note: Attendance is compulsory, and absence from more than five lectures leads to a zero attendance mark.
Quizzes	5pt	
Attendance	5pt	
Participation	5pt	
1 st term Exam	10pt	
2 nd term Exam	15pt	
Final Exam	60pt	
Total	100pt	

Students' behavior in Class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.

Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.



Exams policy

- All exams will be closed book
 - No mobile or programmable calculator is allowed
 - Sharing items with other students in the exam is prohibited
 - The final exam must be completed to complete the course.
-

Instructor: Mr.Yaser Shuker Mahmood

Room No.: 308

Email: yaseralmola@uomosul.edu.iq





Numerical Analysis

ENGC320

Spring course	:	2023
Credit Hour	:	(2 – 0 – 0) 2
Course web page	:	https://classroom.google.com/c/NTk1MTgxNzA5OTcy
Classroom code:		g332zhs
Pre-requisites	:	Calculus I & Calculus II

Reference Books:

- Numerical Methods for Engineers: with Software and Programming Applications, Steven C. Chapra and Raymond P. Canale, 5th ed, McGraw Hill, Singapore, 2006
- Numerical Methods in Engineers with Matlab, Jaan Kiusalaas, Cambridge University Press Cambridge, 2005

Catalog Description:

The subjects covers different numerical topics including the concept and role of the numerical methods in solving engineering problems, defining errors and explaining sources of errors, numerical solution of equation by direct iterative methods (successive iteration method, Newton's method & secant method) and bracketing methods (bisection and false position method), Numerical solution of system of linear simultaneous equations by iterative methods (Gauss-Seidel & Jacobi method), Interpolation (1st, 2nd, 3rd & higher Newton's divided difference interpolation formula), Numerical Differentiation (Forward, Backward & Central for 1st, 2nd & higher derivative), Numerical Integration (Trapezoidal rule, Multiple Application Trapezoidal Rule, Simpson's rules 1/3 & 3/8, Multiple Application Simpson's rule), Solving of 1st order ordinary differential equations plus an introduction to finite difference, finite volume, finite element. Curve fitting: the concept of regression, least square regression, linear regression. Nonlinear regression (Exponential, Power, Growth, and polynomial models), linearization of the first three nonlinear models, Polynomial regression. Cubic spline Interpolation (Cheney and Kincaid Formula).



Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
√	√					

Course Outcomes:

Students who study the course entitled “Numerical Analysis ENGC320” will be able to

- 1- Numerically obtain the solution of equation by different iteration methods.
- 2- Choose the suitable method for the equation student want to solve.
- 3- Select the suitable initial guess value/s required by the specific method used to solve the equation which the student want to solve
- 4- Convert a given nxn system of linear algebraic equations in a form suitable for numerical solution.
- 5- Checking the condition for obtaining convergence to a solution before start solving by iteration.
- 6- Rearranging the equations to satisfy the condition for convergence if possible.
- 7- Set a 1st, 2nd and 3rd order or higher interpolation formula for a given set of x, y data pairs.
- 8- Integrate any given function or a table of x, y pairs numerically by different method with different accuracy.
- 9- Get the first, 2nd or higher order derivatives for a given function or a table of x, y pairs numerically by different formulae with different accuracy.
- 10- Solve initial value ordinary differential equations by different methods.
- 11- Learn an introduction to finite difference, finite volume, finite element.

Weekly Teaching Plan:

Week 1 Feb. 2023	<p>Introduction:</p> <p>Explaining the course outlines to the students, and introducing numerical methods</p> <p>Defining errors and explaining the sources of errors in numerical results with emphases on truncation and rounding off error. Stopping criterion for iterative method.</p>
Week 2&3	<p>Finding roots of nonlinear single equation:</p> <p>Bracketing methods: bisection and false position methods with examples on solving by these methods.</p> <p>Direct iteration methods: fixed iteration method (successive iteration method), Newton’s iteration method, secant method.</p> <p style="color: red;">(Tutorial sheet No.1) H.W1</p>
Week 4	Solving tutorial sheets 1. Discussing H.W.1

First Quiz



Week 5	<p>Solution of system of simultaneous linear equations:</p> <p>Guass- Seidel method and Jacobi's method. With worked examples on the application of these methods</p> <p>(Tutorial sheet No.2) H.W2</p>
Week 6	Solving sheet No. 2 & discussing H.W2
Second Quiz	
Week 7	<p>Interpolation:</p> <p>Newton's divided difference general interpolation formula of nth order with worked examples 1st, 2nd, 3rd and higher order interpolation.</p>
Week 8	<p>Numerical Integration</p> <p>Trapezoidal rule, Multiple Application Trapezoidal Rule, Simpson's rules 1/3, Multiple Application Simpson's rule & 3/8 Simpson's rule with worked examples of using all these methods</p> <p>(Tutorial sheet No.3) H.W3</p>
Third Quiz	
Week 9	<p>Solving of 1st order ordinary differential equations</p> <p>Euler's method, Improved Euler's (Heun's method), 4th order Rung-Kutta method, with worked examples.</p> <p>(Tutorial sheet No.4) + Solving sheet No. 4 H.W4</p>
Semi-Final Exam	
Week 11&12	<p>Numerical differentiation</p> <p>1st, 2nd evaluation of derivative of a given function or table of x & y pairs by forward, backward and central Newton's divided difference formulae. With worked examples.</p> <p>Introduction to finite difference, finite volume, finite element.</p> <p>(Tutorial sheet No.5) + Solving sheet No. 5 H.W5</p>
Fourth Quiz	
Week 13&14	<p>Curve fitting: the concept of regression, least square regression, linear regression.</p> <p>Nonlinear regression (Exponential, Power, Growth, and polynomial models), linearization of the first three nonlinear models, Polynomial regression.</p> <p>Cubic spline Interpolation (Cheney and Kincaid Formula).</p> <p>(Tutorial sheet No.6) + Solving sheet No. 6 H.W6</p>
Final Exam	



Students Behavior in Class

In all classes, to ensure a respectful environment that allows all students to learn effectively, please adhere to the following expectations.

- Student must be in class room on time and should bring all subject notes, all tables provided by the teacher.
- Student are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be on off mode, no permission can be given by the lecturer to the student to receive mobile calls.
- Students should avoid copy and paste homework, if so, all student done that would get zero degrees.
- Students are encouraged to use internet, Google classroom, you tube, looking for similar topics which may help them to get more knowledge.
- Don't ask the instructor about the following:
 1. Exam question patterns
 2. Increase your grade or letter
 3. Postpone exam or extend the due dates (deadlines) for submission homework.

Copy and Paste Policy

Students should avoid copying and pasting jobs for their home works and/or any other assignments. However, sharing mark policy will be subjected, If the instructor notice any coping evidences, in this case, each student mark = (Work Mark / No. of coping students).

Email Policy

The instructor will be happy to answer questions related to course content via email. Complex technical questions should be addressed in tutorial, during office hours, or by appointment. Emails must come from official University email addresses. The instructor will not respond to outside email addresses.

Teaching Techniques:

Power point presentation and multimedia tools are used in classrooms; Examples and problems will be solved and illustrated on the classroom board;

Tutorials are also organized to establish a closer contact with students.



Grading Policy:

Four quizzes	15 pt	Attendance is compulsory and absenteeism of more than 30% of classes will cause grade "NA".
Six Home works	5 pt	
Semi-final Exam	20 pt	
Final Exam	60 pt	
Total	100 pt	

Exam's policy

- All exams will be closed book
- All tables and schedules must be brought by students
- No mobile or programmable calculator are allowed
- Sharing items with other students in exam are prohibited
- The final exam must be completed in order to complete the course.
- Four Quizzes 40-minute duration time, will be held at the end of the class period on the dates indicated on the weekly schedule.

Instructor : Dr. Mahmoud Usamah Jasim (Lecturer)
Room No. : 219 (Mechanical Engineering Department)
E-mail ID : mahmood14@uomosul.edu.iq
Mobile : -----
Last updated : February 2023

Co-Instructor: Dr. Ali Ghazi Muhammed Kamil (Lecturer)
Room No. : 214 (Mechanical Engineering Department)
E-mail ID : align@uomosul.edu.iq
Mobile : -----
Last updated : February 2023



CONVECTION HEAT TRANSFER

MEC352

Spring course	:	2023
Credit hour	:	(2-0-0) 2
Course web page	:	https://classroom.google.com
Class code :	:	
Pre-requisites	:	Convection Heat Transfer

Reference Books:

- Heat transfer , tenth edition(2010) , J.P. Holman , McGRAW hill international edition
- Fundamental of HEAT and MASS transfer, Seventh Edition, Theodore L. Bergman, Adrienne S, Lavine, Frank P. Incropera, David P. Dewitt John Wiley & Sons, 2011

Catalog Description:

This course is an introduction to the principal concepts and methods of heat transfer. Enable the student to know theoretical and practical concepts of the physics materials properties and heat effect on it and to know theoretical and practical concepts of the convection and Radiation heat transfer. Also to know the heat transfer from the fluid to the wall surface

The objectives of this integrated subject are to develop the fundamental principles and laws of heat transfer and to explore the implications of these principles for system behavior; to formulate the models necessary to study, analyze and design heat transfer systems through the application of these principles; to develop the problem-solving skills essential to good engineering practice of heat transfer in real-world applications

- Principle of convection, laminar and turbulent boundary layer
- Forced convection over flat plate
- Laminar and Turbulent flow in pipe
- Flow across cylinder, flow across Tube Bundles
- Natural convection over surfaces
- Heat exchangers types, overall heat transfer coefficient, the log mean temperature difference method, The performance analysis of heat exchangers
- Radiation heat transfer , radiation properties, black body radiation

The credit hour equals one unit, and one theoretical hour equals two or three practical hours



Graduate outcomes (GOs) addressed by the course:

I	ii	iii	iv	V
✓	✓	✓	✓	✓

Course Outcomes:

Upon successful completion of this course, students will be able to

- 1) The advantage of developing the students ability to understand conduction heat transfer object (i)
- 2) Know the types of energy and practice applications (ii)
- 3) Know the theoretical and practical concepts of the convection and Radiation heat transfer (iii)
- 4) Know the heat transfer from the fluid to the wall surface
- 5) How can be calculate the heat lost and gain from or by the system.(iii,iv)
- 6) How can be analyzing the performance of heat exchangers and design consideration (iii.v)



Weekly Teaching Plan: February 26, 2023, to July 2, 2023

Week 1-2	Principle of convection, laminar and turbulent boundary layer.		
Week 3-4	Laminar and forced convection over flat plate		
	Solved problems chapter No.5	Homework 1	Quiz
Week 5-7	Laminar and Turbulent flow in pipe, Flow across cylinder, flow across Tube Bundles		
	Solved problems chapter No.6	Homework 2,3	Quiz
Week 8-9	Natural convection over surfaces		
	Solved problems chapter No.7	Homework 4	Quiz
Week 10-11	Natural convection from horizontal and vertical cylinder		
	Solved problems chapter No.7	Homework 5	Quiz
Week 12	1st term Examination		
Week 13-14	Heat exchangers, types of heat exchangers , overall heat transfer coefficient, fouling factor, the log mean temperature difference method.		
	Solved problems chapter No.10	Homework 6	Quiz
Week 15 -16	Radiation properties , radiation shape factors , radiation shields , heat transfer between two bodies.		
	Solved problems chapter No.8	Homework 7	Quiz
Week 17	2 nd term Examination		
Final Exam			

Grading Policy:

Home works	5pt	<p>Note: Attendance is compulsory, and absence from more than five lectures leads to a zero attendance mark.</p>
Quizzes	5pt	
Attendance and Participation	5pt	
1 st term Exam	10pt	
2 nd term Exam	15pt	
Final Exam	60pt	
Total	100pt	



Students' behavior in class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.

Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice.

Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
 - No mobile or programmable calculator is allowed
 - Sharing items with other students in the exam is prohibited
 - The final exam must be completed to complete the course.
-

Instructor: Ass. Professor Dr. Adnan M. A. Al – Saffawi

Room No.: 110

Email: [adnansaffawi @uomosul.edu.iq](mailto:adnansaffawi@uomosul.edu.iq)



الملحقات

<u>Graduate Outcomes</u>	<u>محصلات الخريجين : يرجى قراءة ملف البوربوينت</u>	<u>1</u>
<u>Course learning outcomes</u>	<u>الاهداف التعليمية للمقرر الدراسي : يرجى قراءة ملف البوربوينت</u>	<u>2</u>
	<u>طريقة توزيع الدرجات : يرجى قراءة ملف البوربوينت والمثال التالي (تقييم مباشر)</u>	<u>3</u>
	<u>عمل استبيان للطلاب لمعرفة مدى تحقق محصلات الخريجين الموضوعه (تقييم غير مباشر)</u>	<u>4</u>
	<u>الحافظة : تحتوي جميع الملفات المتعلقة بالمقرر جاهزة للتدقيق</u>	<u>5</u>

- المطلوب يحدد الاستاذ عدد المخرجات التي ممكن تحقيقها خلال الفصل الدراسي على الاقل 2 من المخرجات باستثناء مشروع التخرج والذي يجب ان يحقق جميع المخرجات ان امكن.
- الاهداف التعليمية المتوقع من الطالب الحصول عليها بعد اجتيازه للمقرر بنجاح يتم صياغتها حسب تصنيف بلوم بما يتوافق مع محصلات الخريجين التي تم اختيارها
- اضافة لما ذكر اعلاه يتم اتباع نفس الاجراء وتحديد المخرجات المتوقع تحقيقها في كل امتحان او واجب بيتي او امتحان قصير كما موضح في المثال التالي. وكذلك عمل احصائية لبيان مدى المخرجات المتحققة اعتماداً على نسبة النجاح لكل عمل (واجب , امتحان , الخ).

Assessment tools for ME414								
		ملاحظات	i	ii	iv	v	SUM	نسبة النجاح
Home works	5pt	ما المحصل التعليمي المستهدف تحقيقه من الواجب ؟						
HW1	1pt			1			1	70 %
HW2	1pt			1			1	80 %
HW3	1pt				1		1	80 %
HW4	1pt				1		1	80 %
HW5	1pt						1	70 %
							5 pt	3.8 pt
Quizzes	5pt	ما المحصل التعليمي المستهدف تحقيقه من الامتحان القصير ؟					1	
Q1	1pt		1				1	50 %
Q2	1pt		1				1	60 %
Q3	1pt			1	1		1	40 %
Q4	1pt				1		1	40 %
Q5	1pt				1		1	30 %
							5 pt	2.2 pt
1 st term Exam	10pt	ما المحصل التعليمي المستهدف تحقيقه؟	2	2	3	3	10 pt	5 pt
2 nd term Exam	15pt		4	2	4	5	15 pt	9 pt
Final Exam	60pt		10	15	20	15	60 pt	45 pt
Participation+ Attendance	5 pt						5 pt	5 pt
Total	100pt		14	20	31	24	100pt	64 pt

University of Mosul

Mechanical Engineering Department





Advanced Machine Design

MEC520

Academic Year	:	2023 Spring semester
Credit Hour	:	(2-0-0) 2
Course web page	:	https://classroom.google.com Class code: xhqlevi

Catalog Description:

This course provides the basic principles of advanced machine design. The course is a key requirement for all mechanical engineering students. Students will learn and practice the theory of analytical and applied designs..

Reference Book:

Shigley's Mechanical Engineering Design.

Course Outcomes:

Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
✓	✓		✓	✓		

Upon successful completion of this course, students will be able to

- 1- Understand and solve design problems (iv, v).
- 2- Have the ability to read and understand existing analytical design theory (i).
- 3- Analysis and solving problems using different method of solution (ii).

Weekly Teaching Plan: Februray to Juney, 2023

Week 1-3	Introduction design of a gear mesh (Worm and Bevel) for wear resistance and strength,
Week 4-5	<i>Fracture mechanics and Failures Resulting</i>



	<i>from Static Loading</i>
Week 6	1 st Exam
Week 7-9	<i>Fatigue Failures Resulting from Variable Loading</i>
Week 10-13	<i>Power Transmission Case Study</i>
Week 14	HWs
Final Exam	

Students Behavior in Class

In all classes, to ensure a respectful environment that allows all students to learn effectively, please adhere to the following expectations.

- Students must be in the class room on time and should bring all subject notes, all tables provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be on-off mode, no permission can be given by the lecturer to the student to receive mobile calls.
- Students should avoid copy and paste homework, if so, all students have done that would get zero score.
- Students are encouraged to use the internet , google, and tube , looking for similar topics that may help them get more knowledge.

Copy and Paste Policy

Students should avoid copy and paste for their homeworks and assignments. If the instructor notices any coping, both students will loose their mark.

Grading Policy:



Mechanical Engineering Department

Home works	10pt
1 st term Exam	10pt
2 nd term Exam	10pt
Final Exam	70pt
Total	100pt

Class:

Wed. 10:30-12:30, Mechanical Engineering Building, Hall 14

Course web page: <https://classroom.google.com>

Google classroom: for a specific or personal questions, please contact me by email.

Please, check Google classroom at least weekly for updates and answers to your questions.

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The information contained in this syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
- No mobile or programmable calculator are allowed
- Sharing items with other students in Exam are prohibited
- The final Exam must be completed in order to complete the course.

Instructor: Dr. Alaa Dahham Younis (Assistant Professor).

Room No. : 217

Email ID : alaayonis@uomosul.edu.iq

Co-Instructor : Dr. Ziad Shakeeb Al Sarraf (Lecturer).

Room No. : 313

Mobile : 07714086462

E-mial : ziadalsarraf@uomosul.e



DYNAMICS OF MACHINERY

MEC354

Spring course	:	2023
Credit hour	:	(2-0-0) 4
Course web page	:	https://classroom.google.com
	:	Class Title: Dynamics of Machinery (2022-2023)
Class code :		Class code : wfai2z5
Pre-requisites	:	Kinematic Analysis

Reference Books:

Course Text Books:

- Mechanics of Machines, (Elementary and Examples), by: J. Hannah and R. C. Stephens, all editions, 1984, 2017,
- Mechanics of Machines, (Advanced and Examples), by: J. Hannah and R. C. Stephens, all editions, 1984, 2017,
- Mechanics of Machines, by Cleghorn, W. L., Oxford University Press, First, and Second Editions, 2005, 2009, 2015.
- Theory of Machines, by: R. S. Khurmi and J. K. Gupta, First-Edition 2010.
- Theory of Machines, by: S. S. Ratan, Tata McGraw Hill.
- Theory of Machines, by: P. L. Ballaney, Khanna Publishers, India- Delhi.

Course Reference Books :

- Theory of Machines, by Robert L. Norton, all editions.
- Design of Machinery, by Robert L. Norton, all editions.
- Theory of Machines and Mechanisms, by John, J. U., Gordon R.P., and Joseph E. Shigley, Oxford University Press, Fifth Edition, 2017.
- Theory of Machines, by R. K. Bansal.



- Theory of Machines, by W. G. Green, Bluckie and Sons Limited.
- Or any related books.

Catalog Description:

This course is intended to cover the essential theories and techniques of kinetics and dynamics analysis of machines and mechanisms. An Introduction to theory of machines, definitions, basic concepts, simple mechanisms and machines. Balancing of rotating masses: introduction, Static balance, dynamic balance, balancing of rotating masses in same plane, balancing of rotating masses in different planes, Graphical Method, Analytical Method, Dynamic Forces in Bearings. Balancing of reciprocating masses: introduction, reciprocating Masses, Methods for solving problems. Friction and wear: introduction to wear and friction (Tribology), Types of wear and Friction, Applications of friction in engineering. Clutches systems: introduction, principle of Clutch, Types of Clutches, positive and Friction Clutches, Types of Friction Clutches: Plate or Disc Friction Clutches, (Single and Multi-Disc Clutches, Cone or Conical Friction Clutches, Centrifugal Friction Clutches. Brakes systems: Introduction, Types of Brakes, Application of Brakes in Machines, Method of Analysis. Belts, ropes, and chain drives: Introduction, Definition and Applications, Types, Flat, Rope and V-Belts Drives, Force Analysis, power transmitted, Efficiency, Slips. Gyroscopes: gyroscopes application: ships, airplanes, etc. Gyroscope motion, Gyroscope couple analysis. Turning moment diagrams and flywheels: introduction and definitions, Crank effort diagrams, Fluctuation of speed, Fluctuation of energy. Governors: Introduction, Types of Governors, Dead Weight Governors and Spring loaded governors: Watt governor, Porter governor, Hartnell governor, Proell governor, Complete forces analysis, Controlling force and stability, Sensitivity and insensitivity of governors. Tooth gears: introduction, Types of Gears, Applications, Force analysis in spur gear.

Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
✓	✓		✓	✓		

Course Outcomes:

The course contributes to the following student outcomes:

1. Students shall gain clear knowledge about dynamics of mechanisms and machines.
2. Students shall demonstrate the basic understanding of the balancing of different types of machinery's.



3. Students shall demonstrate complete knowledge about wear and friction and their engineering applications: in belt drives, clutches and brakes. Also, complete analysis of static and dynamic forces.
4. Students have an ability to analysis and design the mechanical governors for a machine.
5. Students shall demonstrate knowledge about crank effort and flywheel. Students shall learn a complete analysis and determination of forces, masses required, etc.
6. Students shall demonstrate knowledge about gyroscope motion and couple and their applications.
7. Students shall demonstrate complete knowledge about gears and gears trains, types, and method of analysis.
8. Students shall demonstrate knowledge about universal joints, types, and method of analysis.

Weekly Teaching Plan: February 26, 2023, to July 2, 2023

Week 1-2	Introduction to Mechanics of Machinery:		
	<ul style="list-style-type: none"> ❖ Introduction to theory of machines, definitions, basic concepts, simple mechanisms and machines. ❖ Fast review on Engineering Mechanics : displacement, velocity and acceleration, relative motion, circular motion, torque and angular motion, simple harmonic motion. 		
Week 3-4	Gyroscope motion and couple		
	Gyroscopes: gyroscopes application: ships, airplanes, etc. Gyroscope motion, Gyroscope couple analysis. Solved examples and tutorial sheet #1 + Quiz #1		
Week 5-7	Mechanical Governors: Introduction, Types of Governors, Dead Weight Governors and Spring loaded governors: Watt governor, Porter governor, Hartnell governor, Proell governor, Complete forces analysis, Controlling force and stability, Sensitivity and insensitivity of governors.		
	Tutorial sheet No#2	Homework #2	Quiz#2

Week 8-9	Balancing of Machinery:		
	<ul style="list-style-type: none"> ❖ Balancing of Rotating masses: introduction, Static Balance, Dynamic Balance, Balancing of rotating masses in same plane, Balancing of rotating masses in different planes, Graphical Method, Analytical Method, Dynamic Forces in Bearings, ❖ Balancing of reciprocating masses: introduction, reciprocating Masses, Methods for solving problems, 		
	Tutorial sheet No#3	Homework# 3	Quiz#3
1 st term Examination			
Week 10-11	Introduction to wear and friction (Tribology)		
	Friction and wear: introduction to wear and friction (Tribology), Types of wear and Friction, Applications of friction in engineering. Clutches systems: introduction, principle of Clutch, Types of Clutches, positive and Friction Clutches, Types of Friction Clutches: Plate or Disc Friction Clutches, (Single and Multi-disc Clutches, Cone or Conical Friction Clutches, Centrifugal Friction Clutches, Solved Examples, tutorial sheet #6.		
	Tutorial sheet No#4	Homework #4	Quiz#4
Week 11	Brakes systems: Introduction, Types of Brakes, Application of Brakes in Machines, Method of Analysis, Solved Examples.		
	Tutorial sheet No#5	Homework #5	Quiz#5
Week 12 -13	Belts, ropes, and chain drives: Introduction, Definition and Applications, Types, Flat, Rope and V-Belts Drives, Force Analysis, power transmitted, Efficiency, Slips, Solved Examples.		
	Tutorial sheet No#6	Homework #6	Quiz#6
Week 14	Turning moment diagrams and flywheels: introduction and definitions, Crank effort diagrams, Fluctuation of speed, Fluctuation of energy, Solved examples.		
	2 nd term Examination		
Week 16	Tooth gears: introduction, Types of Gears, Applications, Force analysis in spur gears, solved examples.		
	Universal joints: Complete Analysis		



Final Examination	

Grading Policy:

Home works	5pt	Note: Attendance is compulsory, and absence from more than three lectures leads to a zero attendance mark.
Quizzes	5pt	
Attendance	3pt	
Participation	5pt	
1 st term Exam	12pt	
2 nd term Exam	15pt	
Final Exam	60pt	
Total	100pt	

Students' behavior in class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.



Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice.

Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
 - No mobile or programmable calculator is allowed
 - Sharing items with other students in the exam is prohibited
 - The final exam must be completed to complete the course.
-

Instructor: Dr. Abdulhaqq A. Hamid

Room No.: 109

Email: abdulhaqqhamid@uomosul.edu.iq



صياغة وصف للمقرر الذي سيكلف به التدريسي في الفصل الربيعي باللغة الانكليزية ويتم المصادقة عليه من قبل اللجنة العلمية في القسم

Laboratories (Third Class)

MEC 355

1. تفاصيل المقرر

Spring course	:	2023
Credit hour	:	(0-3-0) 3
Course web page	:	https://classroom.google.com
Class code:	:	
Pre-requisites	:	Student must be in contact with the courses of applied mechanics, heat transfer, fluid mechanics, internal combustion engines.

Reference Book:

- **Data sheets for the experiments.** (can be downloaded from the Course web page).

Catalog Description:

2. وصف عام المقرر

In this course it will be carry out the following experiments

- 1- Centrifugal Force Measurement Experiment.
- 2- Dynamic Balancing Experiment.
- 3- Centrifugal Pump Performance Experiment.
- 4- Forced Convection from a Cylinder in Cross Flow Experiment.
- 5- The Conduction Analogue Experiment.
- 6- Gyroscopic Effect Experiment.
- 7- Heat Pump Experiment.

Students are highly encouraged to maintain a separate lab notebook for recording any observations, results, or comments while performing the experiments. You will also find it helpful to carry a USB drive to download data, or a camera to record images. To ensure that there are no injuries or accidents, lab safety training is mandatory. Lab attire includes close-toed shoes; no shorts or loose clothing / hair. Follow common sense in the lab-running around, jumping, etc. can be potentially dangerous. Each lab module requires a lab report, in which the students complete the lab write-up questions within the module reader, due at the beginning of the laboratory session for the subsequent lab module. Late submission of reports / assignments will lead to a 10% decrease in points per day.



Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
✓	✓		✓	✓		
	✓		✓	✓		

4. الاهداف التعليمية للمقرر الدراسي , تتطابق مع محصلات الخريجين التي تم اختيارها اعلاه. يرجى الاطلاع على الملحق

Course Outcomes:

Students who study laboratories will be able to

- 1- The laboratory is not a contest whose object is to get the "right answer." The purpose is to learn how to gain knowledge by looking at reality, not an attempt to make reality conform to preconceptions. The important thing is to learn how to be observant, to really see what happens, and to deal with this information with the strictest integrity. And to understand, or learn to understand, the meaning of what happens.
- 2- provide an experimental foundation for the theoretical concepts introduced in the lectures. It is important that students have an opportunity to verify some of the ideas for themselves.
- 3- To familiarize students with experimental apparatus, the scientific method, so that they will have some idea of the inductive process by which the ideas were originated. To teach how to make careful experimental observations and how to think about and draw conclusions from such data.
- 4- To learn how to write a technical report which communicates scientific information in a clear and concise manner.

5. جدول بمفردات المنهج والاسابيع المخصصة لكل موضوع



Weekly Teaching Plan: February 26, 2023, to July 2, 2023

Week 1	An introduction
Week 2	Dividing Students into Groups
Week 3-4	Applied Mechanics Laboratory
	Centrifugal Force Measurement Experiment
Week 5	Applied Mechanics Laboratory
	Dynamic Balancing Experiment
Week 6-7	Fluid Mechanics Laboratory
	Pelton Turbine Experiment
Week 7-8	Applied Mechanics Laboratory
	Gyroscopic Effect Experiment
Week 9-10	Heat Transfer Laboratory
	Forced Convection from a Cylinder in Cross Flow Experiment
Week 11-12	Heat Transfer Laboratory
	The Conduction Analogue Experiment
Week 13-14-15	Heat Transfer Laboratory
	Centrifugal pump performance Experiment
	Re-Conducting a Part of the Experiments for the Licensed Students
Final Exam	

6. وصف طريقة توزيع الدرجات على اعمال الطلبة

Grading Policy:

Attendance (for each experiment 1.875pt)	15pt	Note: Attendance is compulsory, and absence from more than five lectures leads to a zero-attendance mark.
8 experiment report (each one of 1.875 pt)	15pt	
1st term exam	30pt	
Final exam	40pt	
Total	100 pt	



Students' behavior in class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.

Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice.

Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
 - No mobile or programmable calculator is allowed
 - Sharing items with other students in the exam is prohibited
 - The final exam must be completed to complete the course.
-

Instructor: Dr. Taha Ahmed

Room No.: 105

Email: tahatahamir100@uomosul.edu



Co- instructor:

- 1. Dr. Anour Mohamed**
- 2. Dr. Muyeser Idres**
- 3. Dr. Muhanad Kamel**
- 4. Dr. Ali Azam**
- 5. Raid Ahmed**
- 6. Omer Abdulrahman**
- 7. Suha Hashim**





INTRODUCTION TO COMBUSTION

1. تفاصيل المقرر

MEC362

Spring course	:	2023
Credit hour	:	(2-0-0) 2
Course web page	:	https://classroom.google.com
Class code :	:	
Pre-requisites	:	MEC251 Thermodynamics II

Reference Books:

- **Internal Combustion Engines: Applied Thermosciences**, Allan T. Kirkpatrick, John Wiley & Sons Ltd. 4th edition, 2021.
- **Principles of combustion**, Kenneth Kuan-yun Kuo, John Wiley & Sons, Inc. 2nd edition, 2005.
- **Engineering Fundamental of the Internal Combustion Engines**, Willard Pulkrabek, Prentice Hall. 1997.
- **Internal Combustion Engines Fundamentals**, John .B. Heywood, John Wiley & Sons, Inc. 1989.
- **Fuels and combustion**, Sharma, S.P., and Chander Mohan, Tata McGraw-Hill Publishing Co., Ltd , New Delhi 1987.

Catalog Description:

2. وصف عام للمقرر

An introduction to internal combustion engines (I.C.Es), types of I.C.Es, Mixture of ideal gases and properties, combustion definition and types (complete, incomplete and stoichiometric combustion), calculation of air-fuel ratio from combustion equations, exhaust gases (volumetric and gravimetric analysis, wet and dry analysis), Fuel types (gaseous, liquid and solid fuel), 1st law of thermodynamic applied to combustion processes for calculation the amount heat released during combustion, adiabatic flame temperature calculation, 2nd law of thermodynamic applied to combustion processes, dissociation and chemical equilibrium, description of combustion phenomena in both spark ignition engine and compression ignition engines, type of flames, pre-mixed flame, diffusion flame, Measurement of burning velocity "various method", Flame stability, Deflagration, Detonation, Rankine-Hugoniot curve, Radiation by flame. energy, and equivalent methods are used for fully solved examples, emphasizing real-world applications. Also, the stability of systems and vibration-measuring instruments are described.



3. محصلات الخريجين المستهدفة في المقرر.

Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
✓	✓		✓	✓		

4. الاهداف التعليمية للمقرر الدراسي , تتطابق مع محصلات الخريجين التي تم اختيارها اعلاه

Course Outcomes:

Students who study internal combustion engines will be able to

- 1) Introduce the combustion "definitions and types" (i).
- 2) Calculate the stoichiometric air-fuel ratio from combustion equations (ii).
- 3) Write the actual combustion equation, calculate air-fuel ratio, Equivalence ratio, analysis of combustion products (i,iv).
- 4) Analyze the fuel-air cycle and make a comparison with actual cycle (iv,v).
- 5) Calculate the heat of reaction due to combustion (ii).
- 6) Gain clear knowledge about fuel types, gaseous, liquid and solid fuel (ii,v).
- 7) Demonstrate complete knowledge about 1st law of thermodynamic applied to combustion processes (i,iv).
- 8) Analyze Pre-mixed flame, diffusion flame, Measurement of burning velocity (ii,v).
- 9) Demonstrate complete knowledge about 2nd law of thermodynamic applied to combustion processes (ii).
- 10) Analyze Deflagration, Detonation, Rankine-Hugoniot curve, Radiation by flame (i,ii).
- 11) Define Abnormal combustion, Knock, surface ignition (i,iv).

5. جدول بمفردات المنهج والاسابيع المخصصة لكل موضوع

Weekly Teaching Plan: February 26, 2023, to July 2, 2023

Week 1 February 2023	Introduction to internal combustion engines
Week 2&3	Mixture of ideal gases, Energy properties of ideal mixture such as U, H and S in addition to specific heats and molecular weight and other properties (Tutorial sheet No.1) H.W 1 First Quiz
Week 4&5	Combustion, definition, types, calculation of air-fuel ratio, equivalence ratio, exhaust gaseous analysis molar (volumetric) analysis, mass (gravimetric) analysis, wet and dry analysis. (Tutorial sheet No.2)
	H.W 2 Second Quiz
Week 6	Application of the first law of thermodynamic to combustion process in closed and

	open systems, calculation of heat transfer due to combustion processes, enthalpy of combustion at 25 °C " ΔH_o ", Internal energy of combustion at 25 °C, ΔU_o
Week 7&8	Solving problems for estimating the heat released from combustion of hydrocarbon fuel. Calorific value of fuel, heating value (tabulated), adiabatic flame temperature estimation.
Week 9	(Tutorial sheet No.3) H.W 3
Third Quiz	
Week 10&11	The second law of thermodynamic of thermodynamics applied to combustion processes, dissociation, equilibrium constant, Gibbs function, entropy calculation. (Tutorial sheet No.4) H.W 4
Fourth Quiz	
Mid-Term Exam	
Week 12&13	description of combustion phenomena in both spark ignition engine and compression ignition engines, type of flames, pre-mixed flame, diffusion flame, Measurement of burning velocity "various method", Flame stability, Deflagration, Detonation, Rankine-Hugoniot curve, Radiation by flame. (Tutorial sheet No.5)
Week 14	Define normal and abnormal combustion, Knock and surface ignition.
Final Exam	

6. وصف طريقة توزيع الدرجات على اعمال الطلبة

Grading Policy:

Home works	4pt	Note: Attendance is compulsory, and absence from more than five lectures leads to a zero-attendance mark.
Quizzes	6pt	
Attendance	4pt	
Participation	6pt	
Mid-Term Exam	20pt	
Final Exam	60pt	
Total	100pt	

Students' behavior in class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.



Mechanical Engineering Department

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.
- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be off-mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

The student's work is canceled if the instructor notices any actions of copying and pasting.

Classroom:

Time: TBD.

Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice.

Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
 - No mobile or programmable calculator is allowed
 - Sharing items with other students in the exam is prohibited
 - The final exam must be completed to complete the course.
-

Instructor: Dr. Ahmed Fouad Al-Neama

Room No.: 410

Email: ahmedfalneama@uomosul.edu.iq



Assessment tools for MEC362								
		ملاحظات	i	ii	iv	v	SUM	نسبة
Home works	4pt	ما المحصل التعليمي المستهدف تحقيقه من الواجب ؟						
HW1	1pt			1			1	75 %
HW2	1pt			1			1	80 %
HW3	1pt				1		1	80 %
HW4	1pt				1		1	80 %
							4 pt	3.5 pt
Quizzes	6pt	ما المحصل التعليمي المستهدف تحقيقه من الامتحان القصير ؟						
Q1	1.5pt			1			1.5	50 %
Q2	1.5pt			1			1.5	60 %
Q3	1.5pt				1	1	1.5	40 %
Q4	1.5pt					1	1.5	40 %
							6 pt	3.2 pt
Mid-Term Exam	20pt	ما المحصل	4	4	6	6	20 pt	12 pt
Participation+ Attendance	10 pt	التعليمي المستهدف					10 pt	10 pt
Final Exam	60pt	تحقيقه؟	10	15	20	15	60 pt	45 pt
Total	100pt		14	20	31	24	100pt	71 pt



Solar Energy

MEC364

Spring course	:	2023
Credit Hour	:	(2 – 0 – 0) 2
Course web page	:	https://classroom.google.com/c/NTk1MjkxMTkw
Classroom code:		ffhn7da
Pre-requisites	:	Heat Transfer by Conduction MEC302

Reference Books:

- Solar engineering of thermal process, Duffie John A. & Beckman Williams A., WILEY, 4th ed., 2013
- Solar energy engineering: processes and systems. Kalogirou Soteris A., Elsevier Inc., 1st ed, 2009.

Catalog Description:

The purpose of this course is to give undergraduate students the basic principles and applications of solar energy systems and processes. The material presented in this course covers a large variety of technologies for the conversion of solar energy to provide hot water, air heating, and electricity generation. Topics included in this course are divided into four chapters as:

Chapter One:

The sun; relative relation between the sun and earth (solar angles); calculation of shaded area on a given surface; solar spectrum and solar constant, solar radiation; solar radiation received by a tilted surface; measuring solar radiation.

Chapter Two: Thermal applications of solar energy.

Solar collectors, classification, working principle of each class, optical and thermal analysis of flat plate solar collector; solar water heating systems; solar air heating systems; optical and thermal analysis of concentrating parabolic trough solar collector.

Chapter Three: Solar photovoltaics

Photovoltaic cell and arrays, PV- power generating system.



Chapter Four: Solar thermal Power Plants.

Describing Solar thermal power plants of parabolic trough collectors, central receiving, dish type collectors. Describing integrated combined power generating plant.

Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
√	√					

Course Outcomes:

Students who study the course entitled “Solar Energy Mec302” will be able to

- 1- Define the sun and solar radiation;
- 2- Define solar angles defining the direction of incoming solar radiation.
- 3- Perform the calculation required to determine the direction of sun’s ray at any given location, date and time.
- 4- Know the solar radiation spectrum and its main divisions and percentage of energy included in each division,
- 5- Define the beam and diffused solar radiation.
- 6- Calculate the solar radiation intensity received on a tilted surface.
- 7- Classify the applications of solar energy
- 8- Classify solar collectors and the working principle of each class.
- 9- Do the optical and energy analysis of flat plate solar collector.
- 10- Do the optical and energy analysis of parabolic trough solar collector.
- 11- Classify and describe the solar water heating systems.
- 12- Classify and describe the solar air heating systems
- 13- Understand the working principle of photovoltaic solar cell (PV cell)
- 14- Understand the PV arrays and modules.
- 15- Calculate the generated electricity of a small scale PV system.
- 16- Classify the solar thermal power generation plants.
- 17- Understand the working principle of each class of solar power generating plant.

Weekly Teaching Plan:

Week 1 Feb. 2023	The sun; relative relation between the sun and earth (solar angles), solving examples (Tutorial sheet No.1) H.W1
Week 2	Calculation of shaded area on a given surface. Solving examples (Tutorial sheet No.2) H.W2
Week 3	Solving tutorial sheets 1 & 2.



First Quiz

Week 4	Solar spectrum and solar constant, solar radiation; solar radiation received by a tilted surface; measuring solar radiation. (Tutorial sheet No.3) H.W3
Week 5	Solving sheet No. 3

Second Quiz

Week 6&7	Solar collectors, classification, working principle of each class, optical and thermal analysis of flat plate solar collector, worked examples, (Tutorial sheet No.4) H.W4
Week 8	Solving sheet No. 4.

Third Quiz

Week 9	Optical and thermal analysis of concentrating parabolic trough solar collector, solving related examples. (Tutorial sheet No.5) H.W5
Week 10	Solving sheet No. 5

Semi-Final Exam

Week 12	Describing Solar water heating systems & solar air heating systems.
Week 13	Photovoltaic cell and arrays, PV- power generating system.. (Tutorial sheet No.6) H.W 6
Week 14	Describing Solar thermal power plants of parabolic trough collectors, central receiving, dish type collectors.

Fourth Quiz

Week 15	Describing Integrated Combined power generation plant.
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Final Exam



Students Behavior in Class

In all classes, to ensure a respectful environment that allows all students to learn effectively, please adhere to the following expectations.

- Student must be in class room on time and should bring all subject notes, all tables provided by the teacher.
- Student are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be on off mode, no permission can be given by the lecturer to the student to receive mobile calls.
- Students should avoid copy and paste homework, if so, all student done that would get zero degrees.
- Students are encouraged to use internet, Google classroom, you tube, looking for similar topics which may help them to get more knowledge.
- Don't ask the instructor about the following:
 1. Exam question patterns
 2. Increase your grade or letter
 3. Postpone exam or extend the due dates (deadlines) for submission homework.

Copy and Paste Policy

Students should avoid copying and pasting jobs for their home works and/or any other assignments. However, sharing mark policy will be subjected, If the instructor notice any coping evidences, in this case, each student mark = (Work Mark / No. of coping students).

Email Policy

The instructor will be happy to answer questions related to course content via email. Complex technical questions should be addressed in tutorial, during office hours, or by appointment. Emails must come from official University email addresses. The instructor will not respond to outside email addresses.

Teaching Techniques:

Power point presentation and multimedia tools are used in classrooms; Examples and problems will be solved and illustrated on the classroom board; Tutorials are also organized to establish a closer contact with students.



Grading Policy:

Four quizzes	15 pt	Attendance is compulsory and absenteeism of more than 30% of classes will cause grade "NA".
Six Home works	5 pt	
Semi-final Exam	20 pt	
Final Exam	60 pt	
Total	100 pt	

Exam's policy

- All exams will be closed book
- All tables and schedules must be brought by students
- No mobile or programmable calculator are allowed
- Sharing items with other students in exam are prohibited
- The final exam must be completed in order to complete the course.
- Four Quizzes 40-minute duration time, will be held at the end of the class period on the dates indicated on the weekly schedule.

Instructor : Dr. Mahmoud Usamah Jasim (Lecturer)
Room No. : 219 (Mechanical Engineering Department)
E-mail ID : mahmood14@uomosul.edu.iq
Mobile : -----
Last updated : February 2023.

Introduction to composite materials

ME465

Spring course	:	2023
Credit Hour	:	(2-0-0) 2
Course web page	:	https://classroom.google.com
Class code :	:	
Pre-requisites	:	Metallurgy

Catalog Description:

The course covers topics intended to introduce various aspects of composite materials. The design and mechanical behavior of composite materials will be presented. The course will cover many topics, such as reinforcement and matrix materials, manufacturing methods, composite applications, etc.

Reference Book:

- Mechanics of Composite materials, Jones, Robert m., 1999, Taylor & Francis Group, LLC, USA.
- Introduction to Composite Materials Design, Ever J., Barbero, 2018, Taylor & Francis Group, LLC, USA.
- Other textbooks

Graduate outcomes (GOs) addressed by the course:

i	ii	iii	iv	v	vi	vii
✓	✓			✓		

Course Outcomes: g

Upon successful completion of this course, students will be able to

- 1) Understand the concept of composite materials.
- 2) Recognize the classification of composite materials.
- 3) Different Methods of the manufacturin process of composite materials.

- 4) Understand the mechanical behavior of the matrix under the reinforcement phase.
- 5) Illustrate the effect of the interface phase between the matrix and reinforcement fibers.
- 6) Understand the wettability and its impact on the performance of composite materials.

Weekly Teaching Plan: February 26, 2023, to July 2, 2023

Week 1-2	Briefly review the principles of composite materials. Introduction, basic definitions and characteristics, and concepts of composite materials.
Week 3	Classifications of Composite Materials
	Homework 1 1 st Quiz
Week 4-5	Methods of Fabrication of Composite Materials.
Week 6	Composite Response to Mechanical and Thermal Stresses
Week 7-8	Wettability and Interfacial Bonding.
	Homework 2 2 nd Quiz
Week 9	Stiffness and Strength of Unidirectional Composites
Week 10	Failure Criteria of Composite Materials. Part one
Week 11	Advances in composites materials
	1 st term Examination s
Week 12	Properties Estimation of Different Composite Materials
Week 13	Strengthening Mechanisms of Composite Materials
Final Exam	

Students' behavior in Class

Please adhere to the following expectations to ensure a respectful environment that allows all students to learn effectively in all classes.

- Students must be in the classroom on time and bring all subject notes and lectures provided by the teacher.

- Students are not allowed to talk to other students during the lecture. All speech should be directed to the lecturer.
- Students' mobile must be on off mode, and the lecturer cannot permit the student to receive mobile calls.
- Students should avoid copying and pasting homework; if so, all students who have done that would get zero scores.
- Students are encouraged to use internet resources to enrich their knowledge about vibration topics.

Copy and Paste Policy

When the instructor notices any actions of copying and pasting, the student's work will be canceled.

Grading Policy:

Home works	5 pt	Note: Attendance is compulsory, and absenteeism of more than five lectures will cause no attendance mark.
Quizzes	5 pt	
Attendance	5 pt	
Participation	5 pt	
1 st term Exam	20 pt	
Final Exam	60pt	
Total	100pt	

Classroom:

Wednesday 6:00-8:00 pm, Mechanical engineering department, Hall 2023

Course web page: <https://classroom.google.com>

Google Classroom: If you have questions, please do not hesitate to contact the instructor.

Please, check Google classroom regularly for any updates.

The information contained in this syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Exams policy

- All exams will be closed book
 - **The term exam will hold at the department**
 - No mobile or programmable calculators are allowed
 - Sharing items with other students in exams is prohibited
 - The final exam must be completed in order to complete the course.
-

Instructor: Dr. Omar Jumaah

Room No.: 314

Email: omarjumaah@uomosul.edu.iq

