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

Academic Program and Course Description Guide

2024

Academic Program Description Form

University Name: University of Mosul

Faculty/Institute: College of Engineering

Scientific Department: Mechanical Engineering Department

Academic or Professional Program Name: Bachelor / Mechanical Engineering

Final Certificate Name: Bachelor of Science in Mechanical Engineering

Academic System: Bologna process – semester – courses

Description Preparation Date: 10/7/2024

File Completion Date: 10/7/2024

Signature:

Head of Department Name:

Asst. Prof. Dr. Omar M. Hamdoon

Date: 10/7/2024

Signature:

Scientific Associate Name:

Asst. Prof. Dr. Ayman T. Hamid

Date:

The file is checked by: Abdulrahman Hani Taha

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

جامعة الموصل
مكتب العميد
كلية الهندسة

Approval of the Dean

1. Program Vision

The department is looking to be one of the leading departments in the field of mechanical engineering at the level of Iraq and the region through graduating engineers specializing in mechanical engineering following the latest approved scientific curricula and using the latest scientific teaching methods, such as modern laboratories and teaching methods.

2. Program Mission

1. Graduating qualified engineers with various mechanical engineering disciplines, which include the fundamentals of mechanical design, thermal capacity, different production methods, air conditioning, and refrigeration, to have the ability to be creative and innovative in various engineering fields and keep pace with scientific development.
2. Providing practical opportunities for students to learn about the principles and scientific facts of engineering along with the theoretical aspect by establishing modern laboratories and engineering workshops equipped with the latest types of equipment and laboratory supplies and organizing scientific trips to various institutions of the country.
3. Providing the best possibilities for building the leadership qualities of graduate students by teaching them outstanding teamwork, mobilizing student efforts to participate and contribute to student community service, and urging students to be creative and innovative to achieve the community's need for qualified mechanical engineers.
4. Holding seminars, scientific conferences, and training courses for the employees of all departments and the different industrial sectors to inform

them of the most prominent scientific and technological developments to enhance the efficiency and capacity of engineering staff in all sectors of the country.

3. Program Objectives

1. Preparing qualified scientifically and socially integrated engineers, developing their passion for work and scientific research, and the ability to think creatively and collaborative teamwork, in addition to practicing modern technologies and industrial applications.
2. Prepare engineers to develop and participate in scientific research and studies in the field of department specializations, especially in finding solutions to various issues facing economic and social development.
3. Communicating with the community and its institutions, providing engineering services, and being open to the community, encouraging the public and private sectors to consolidate a good relationship with the university through offering consultations and holding specialized training courses in various fields of mechanical engineering according to the requirements of the community.
4. Communicate with reputable international universities, exchange experiences and modern scientific information to develop theoretical and practical aspects, and urge researchers to apply for international funding and grant projects.
5. Supporting the Scientific Research Ethics Committee.
6. Urging researchers to apply for international grants and funding projects.

4. Program Accreditation

Not yet

5. Other external influences

Doesn't have

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
University Requirements	8	17	9.7 %	Basic course
	4	8	4.6 %	Elective course
College Requirements	11	23	13.1 %	Basic course
	0	0	0 %	Elective course
Department Requirements	35	83	47.4 %	Basic course
	20	44	25.1 %	Elective course
Summer Training	Exist			
Other				

* This can include notes on whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical	practical
2023 – 2024 / First level / Bologna Process	ME101	Engineering Mechanics-Statics I	3	
	ME102	Mathematics I	3	
	ME103	Manufacturing Processes I	3	3
	ME104	Engineering Drawing		3
	ME105	Physics for Engineers	3	
	UOM103	The Computer	2	1
	UOM101	Arabic Language	2	
	ME151	Engineering Mechanics-Statics II	3	
	ME152	Mathematics II	3	

	ME153	Physics of Metallurgy	3	
	ME154	Introduction to Electrical Engineering	3	2
	ME155	Energy and Sustainability	3	
	UOM102	English language I	2	
	UOM104	Democracy and Human Rights	2	
2023 -2024 / Second stage / Semester	ME202	Mathematics III	3	
	ME205	Fluid Mechanics I	2	
	ME208	Thermodynamics I	2	
	ME201	Mechanics- Engineering Dynamics I	2	
	ME207	Mechanics of Materials I	2	
	ME204	Mechanical Drawing		3
	ME206	Metallurgy	2	2
	ME203	Computer Aid Engineering Applications		2
	ME252	Mathematics IV	3	
	ME255	Fluid Mechanics II	2	
	ME258	Thermodynamics II	2	
	ME251	Engineering Mechanics- Dynamics II	2	
	ME257	Mechanics of Materials II	2	
	ME254	Computer Aided Mechanical Drawing	1	3
	ME253	English Language	2	
	ME259	Laboratory I		3
		Baath Party Crimes	2	
2023 -2024 / Second stage / Courses		English Language - intermediate	2	
	ENGC325	Engineering Management	2	
	MEC301	Engineering Analysis	3	
	MEC302	Conduction Heat Transfer	3	

	MEC303	Kinematic Analysis	2	
	MEC304	Electric Machines	2	
	MEC305	Mechanical Workshop		2
	MEC331	Compressible Fluid Flow	3	
	MEC332	Metallurgy	2	2
	UOMC104	Professional ethics	2	
	ENGE329	Public Safety	2	
	ENGE320	Numerical Analysis	2	
	MEC352	Convection and Heat Transfer Radiation	2	
	MEC353	Introduction to Machine Design	3	
	MEC354	Machines Dynamics	2	
	MEC355	Laboratory II		3
	MEC360	Turbomachinery	2	
	MEC361	Metallic Engineering Materials	2	
	MEC362	Introduction to Combustion	2	
	MEC363	Medium Manufacturing Processes	1	3
	MEC364	Solar Energy	2	
	MEC465	Introduction to Composite Materials	2	
2023 -2024 / Second stage / Courses	MEC401	Introduction to Vibrations	2	
	MEC402	Internal Combustion Engines	3	
	MEC403	Intermidate Machine Design	3	
	MEC404	Engineering Project I	2	
	MEC453	Air-conditioning	3	
	MEC421	Power Plant	3	
	MEC422	Renewable Energy II	2	
	MEC426	Flexibility	2	

	MEC425	Non-Metallic Engineering Materials	2	
		English Language - Upper mediate	3	
	MEC405	Control and Measurements		3
	MEC452	Laboratory III	3	
	MEC467	Intermidate Vibration	2	
	MEC454	Engineering Project II	2	
	MEC461	Pollution	3	
	MEC462	Refrigeration	3	
	MEC463	Computer Aided Thermal System Design	1	2
	MEC451	Design and Analysis of Control System	3	
	MEC466	Computer Aided Mechanical Design	1	2
	MEC465	Plasticity	2	

8. Expected learning outcomes of the program

Knowledge	
A1– The ability to distinguish, identify, define, formulate, and solve engineering problems by applying the principles of engineering, science, and mathematics.	**A3**– The ability to communicate skillfully orally with a group of people and in writing with various administrative levels.
A2– The ability to produce engineering designs that meet the required needs within certain constraints and apply analysis and synthesis in the design process.	**A4**– Interpreting numerical data and applying mathematical methods to analyze problems.
Skills	
B1– Ability to establish and perform appropriate measurements and tests while ensuring quality, analyze and interpret results,	**B3**– Ability to work appropriately within teams, set goals, plan activities, meet deadlines, and manage risks.

and use engineering judgment to reach conclusions.	
B2– The ability to use standard tools and techniques to conduct and design practical experiments for mechanical and electromechanical systems and to analyze and interpret data correctly.	**B4**– The possibility of effectively using information technology and modern engineering applications to start scientific research projects in the future.
Ethics	
C1– Ability to recognize ethical and professional responsibilities in engineering issues and make informed judgments while considering the consequences worldwide in financial, environmental, and societal considerations.	**C3**– The ability to recognize the ongoing necessity of professional knowledge growth and how to find, evaluate, accumulate, and apply it correctly.
C2– Commitment to the foundations of professionalism, respect for privacy principles, and maintaining confidentiality related to communication skills and writing reports while being familiar with economic, legal, health, social, and security determinants.	**C4**– Applying modern engineering techniques, skills, tools, and intelligent control of mechanical systems.

9. Teaching and Learning Strategies	
Theoretical lectures.	Computer laboratories.
Discussion sessions.	Graduation projects.
Laboratory experiments.	Industrial training.

10. Evaluation methods	
Quizzes, mid-term, and final exams.	Practical exams and homework
Reports	Seminars.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/ Skills		The number of teaching staff	
	General	**Special**			**Staff**	**Lecturer**
Professor	Mech. Engineering	Thermal Power				1
Assist. Professor	Mech. Engineering	Thermal Power				8
Assist. Professor	Mech. Engineering	Production & Metallurgy				4
Lecturer	Mech. Engineering	Thermal Power				12
Lecturer	Mech. Engineering	Applied Mechanics				8
Lecturer	Mech. Engineering	Production & Metallurgy				7
Assist. Lecturer	Mech. Engineering	Thermal Power				4
Assist. Lecturer	Mech. Engineering	Applied Mechanics				1
Assist. Lecturer	Mech. Engineering	Production & Metallurgy				2
Assist. Lecturer	Elect. Engineering	Power & Machines				1
Assist. Lecturer	Administration & Economics	Administration				1

Professional Development	
Mentoring new faculty members	
Teaching methods workshops	Training courses
Continuing education workshops	Scientific seminars, workshops, and seminars
Professional development of faculty members	
A plan to develop the skills of the faculty in the Mechanical Engineering Department by involving the largest number of them in local and international conferences. Also, they should be encouraged to join education workshops, continuous scientific seminars, workshops, and seminars that are held inside and outside the university's corridors.	

12. **Acceptance Criterion**
Standard admission approved by Ministry of Higher Education and Scientific Research

13. **The most important sources of information about the program**
Electronic scientific resources are available online.
Textbooks and references are available in the Department Education office, Department Library, College Library, and University Library.

14. **Program Development Plan**
An improvement plan is prepared according to a proposed timetable to improve the educational program's outcomes. Working to improve and enhance the academic program's outcomes by improving faculty members' performance through intensive educational courses, continuing education courses, publishing research papers, and completing promotion procedures to a higher academic rank. With the help of the Quality Assurance Committee and the Department's Scientific Committee, a questionnaire is being prepared directed to several government and private sector institutions to ask about their opinions on the performance of the department's graduates, in addition to their proposals towards improving and enhancing the outcomes of the program. The results of the questionnaires are collected during the academic year. The relevant committees analyze and discuss the results to make recommendations and proposals. In addition, the program outcomes are reviewed annually by the faculty in the Mechanical

Engineering Department. Also, the results are analyzed to measure the extent to which the curriculum is compatible with the labor market requirements and to determine whether there is a need for change. Based on the results of the data analysis, the department headship is informed of the proposals and recommendations reached by the faculty.

Program Skills Outline

Year/ Level	Course Code	Course Name	Basic or optional	Required program Learning outcomes											
				Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First level 2024-2023	ENGC123	Engineering Drawing	Basic		✓										
	UOMC102	Computer	Basic	✓	✓			✓					✓		✓
	UOMC100	Arabic Language	Basic		✓								✓		
	ENGC121	Mathematics I	Basic	✓	✓			✓							
	ENGE133	Physics	Basic	✓	✓			✓							
	MEC102	Manufacturing Processes I	Basic	✓	✓						✓				
	MEC104	Introduction to Electrical Engineering	Basic	✓	✓										
	MEC101	Engineering Mechanics-Statics I	Basic	✓	✓			✓							
	UOMC101	English language for beginner	Basic		✓										
		Energy and Sustainability	Basic	✓					✓				✓		
	UOMC103	Democracy and Human Rights	Basic		✓								✓		
	ENGC122	Mathematics II	Basic	✓	✓			✓							
	MEC151	Engineering Mechanics-Statics II	Basic	✓	✓			✓							
	MEC153	Physics of Metallurgy	Basic	✓	✓			✓							
Second stage 2024-2023	MEC202	Mechanics of Materials I	Basic	✓	✓		✓								
		English Language	Basic		✓								✓		
	ENGE228	Mathematics III	Basic	✓	✓		✓								
	MEC201	Thermodynamics I	Basic	✓	✓		✓								

	MEC203	Fluid Mechanics I	**Basic**	✓	✓		✓								
	MEC204	Mechanical Drawing	**Basic**	✓	✓										
	MEC205	Physics for Engineers	**Basic**	✓			✓								
	MEC206	Mechanics- Engineering Dynamics I	**Basic**	✓	✓		✓								
		Baath Party Crimes	**Basic**		✓								✓		
	ENGE230	Mathematics IV	**Basic**	✓	✓		✓								
	MEC251	Thermodynamics II	**Basic**	✓	✓		✓								
	MEC252	Mechanics of Materials II	**Basic**	✓	✓		✓								
	MEC253	Fluid Mechanics II	**Basic**	✓	✓		✓								
	MEC254	Computer Aided Mechanical Drawing	**Basic**	✓								✓			
	MEC2 56	Mechanical Engineering Laboratory I	**Basic**	✓	✓		✓				✓				
	MEC260	Computer Aid Engineering Applications	**Basic**	✓			✓		✓			✓			
Third stage 2024-2023		English Language - intermediate	**Basic**		✓							✓			
	ENGC325	Engineering Management	**Basic**	✓								✓			
	MEC301	Engineering Analysis	**Basic**	✓	✓		✓								
	MEC302	Conduction Heat Transfer	**Basic**	✓	✓		✓								
	MEC303	Kinematic Analysis	**Basic**	✓	✓		✓								
	MEC304	Electric Machines	**Basic**	✓						✓					
	MEC305	Mechanical Workshop	**Basic**	✓						✓	✓				

	MEC331	Fluids Flow by Pressure	**Basic**	✓	✓		✓								
	MEC332	Metallurgy	**Basic**	✓			✓								
	UOMC104	Professional ethics	**Basic**			✓						✓			
	ENGE329	Public Safety	**Basic**			✓						✓			
	ENGE320	Numerical Analysis	**Basic**	✓			✓	✓	✓			✓			
	MEC352	Convection and Heat Transfer Radiation	**Basic**	✓	✓		✓								
	MEC353	Introduction to Machine Design	**Basic**	✓	✓		✓	✓							
	MEC354	Machines Dynamics	**Basic**	✓	✓		✓								
	MEC355	Mechanical Engineering Laboratory II	**Basic**	✓							✓				
	MEC360	Turbomachinery	**Basic**	✓	✓		✓			✓					
	MEC361	Metallic Engineering Materials	**Basic**	✓	✓		✓								
	MEC362	Introduction to Combustion	**Basic**	✓	✓		✓			✓					
	MEC363	Intermediate Manufacturing Processes	**Basic**	✓						✓					
	MEC364	Solar Energy	**Basic**	✓						✓					
	MEC465	Introduction to Composite Materials	**Basic**	✓	✓										
Forth stage 2024-2023	MEC401	Introduction to Vibrations	**Basic**	✓	✓			✓						✓	
	MEC402	Internal Combustion Engines	**Basic**	✓	✓		✓			✓					
	MEC403	Machine Element Design	**Basic**	✓	✓		✓	✓							
	MEC404	Engineering Project I	**Basic**	✓	✓									✓	

	MEC405	Control and measurements	**Basic**	✓	✓		✓			✓		✓			
	MEC421	Power Plants	**Basic**	✓	✓		✓			✓					
	MEC425	Non Metallic Engineering Materials	**Basic**	✓	✓		✓								
	MEC422	Renewable Energy II	**Basic**	✓						✓					
	MEC423	Elasticity	**Basic**	✓	✓		✓								
		English Language -Upper mediate	**Basic**		✓										
	MEC451	Design and Analysis of Control System	**Basic**	✓				✓						✓	
	MEC452	Mechanical Engineering Laboratory III	**Basic**	✓							✓			✓	
	MEC453	Air-conditioning	**Basic**	✓	✓		✓								
	MEC454	Engineering Project II	**Basic**	✓	✓										
	MEC460	Pollution	**Basic**	✓									✓		
	MEC465	Plasticity	**Basic**	✓	✓		✓								
	MEC461	Refrigeration	**Basic**	✓	✓		✓								
	MEC464	Computer Aided Mechanical Design	**Basic**	✓	✓		✓	✓	✓						
	MEC463	Computer Aided Thermal System Design	**Basic**	✓				✓							
	MEC467	Intermediate Vibration	**Basic**	✓	✓		✓								

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Some of selected syllabuses

1. اسم المقرر :
سكون 1 الميكانيك الهندسي –
2. رمز المقرر:
ME101
3. الفصل / السنة:
الخريفي / 2023
4. تاريخ إعداد هذا الوصف:
2024 /04 /15
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
60 ساعة / 4 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
ghaidaa.alsarraj2019@uomosul.edu.iq م.غيداء إبراهيم حسين
8. اهداف المقرر
• To develop the capacity of first-year students to predict the effects of forces, moments, and couples on bodies. • To develop problem-solving skills and an understanding of forces analysis by applying the equilibrium principle. • To understand and draw the free body diagram to analyze forces. • Analysis forces and finding their resultant forces for two- and three-dimensional systems. • Applying the equilibrium principle to simple trusses and frames. • Understand the friction phenomena and the friction force in machine parts.
9. استراتيجيات التعليم والتعلم
▪ محاضرات ▪ واجبات منزلية ▪ تقارير ▪ الامتحانات ▪ المشاركات
10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعليم	طريقة التقييم
1	2	المعرفة (أ1 ، أ2)	Introduction to statics + Vector operations (addition, product)	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Cartesian force and position vectors.		
3	2		Force system in 2D		
4	2		Force system in 2D + Recitation 1		
5	2		Addition of a system of coplanar Force		
6	2	المهارات (ب1)	Moment, couples, and resultant of forces + Recitation 2		
7	2		Moment, couples, and resultant of forces + Recitation		
8	2		Moment of a Force about a Specified Axis		
9	2		Force system in 3D		
1	2		Rectangular components of forces in 3D + Recitation 3		
1	2	القيم (ج3، ج 4)	Resultant of forces in 3D + Recitation 4		
1	2		System Isolation and the Free-Body Diagram (FBD)		
1	2		Equilibrium in 2D + Recitation 4 + Midterm exam		
1	2		Equations and Conditions of Equilibrium + Recitation 5		
1	2		Course review		

11. تقييم المقرر

Home works	12 pt	Seminar	5 pt
Quizzes	18 pt	1st term Exam	10 pt
Report	5 pt	Final Exam	50 pt

12. مصادر التعلم والتدريس

Meriam, James L., and L. Glenn Kraige, "Engineering mechanics: statics", John Wiley & Sons, 2012.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Hibbeler, RC, "Engineering Mechanics Statics", 14th edition, 2016.	المراجع الرئيسة (المصادر)

المراجع الإلكترونية ، مواقع الانترنت	

1. اسم المقرر :
الرياضيات 2
2.رمز المقرر :
ENGC122
3. الفصل / السنة:
الربيعي / 2024
4. تاريخ إعداد هذا الوصف:
2024 /04 /14
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
60 ساعة / 4 وحدات
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م. د. عمر صلاح الدين ذنون omerphd18@uomosul.edu.iq
8. اهداف المقرر
• Write clear mathematical arguments including effective use of physical equations. • Develop a solid understanding of the fundamental principles of physics, including: ➢ a firm conceptual grasp of the central principles of physics, ➢ an ability to work with the concepts mathematically, and ➢ a functional understanding of how these ideas play out in the real world. • Use graphs and diagrams to convey results. • Decide on strategies to be used and assumptions that need to be made. • Use both algebraic and geometric approaches in problem-solving. • Develop a flexible and creative problem-solving ability. • Develop an integrated understanding of the both the definite and finite integral. • Integrate all the types of equations those be able to integrate such as transcendental equations (logarithm and hyperbolic), linear, non-linear, and rational equations.

- Find the dimensions such as length, area, and volume for any shapes by utilizing integrate.
- Develop their ability to communicate ideas of science.

9. استراتيجيات التعليم والتعلم

▪ محاضرات ▪ واجبات منزلية ▪ تقارير	▪ الامتحانات ▪ المشاركات

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (1أ ، 2أ)	Understand how to estimate the Area between curves.	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Explain the Indefinite Integrals and the Substitution Method.		
3	2		Understand the Volumes calculation Using Cross-Sections.		
4	2		Understand the Volumes calculation Using Cylindrical Shells.		
5	2		Explain Arc Length calculation.		
6	2	المهارات (ب1)	Understand the Areas of Surfaces of Revolution.		
7	2		Explain The Logarithm Defined as an Integral.		
8	2		Using Basic Integration Formulas.		
9	2				
1	2		Understand Integration by Parts.		
1	2	القيم (ج 3)			
1	2		Explain the Trigonometric Integrals and substitutions.		
1	2				
1	2		Understand the Integration of Rational Functions by Partial Fractions.		

11. تقييم المقرر

Home works	10 pts	1st term Exam	10 pts

Quizzes	20 pts	2nd term Exam	10 pts
Attendance	+5 pts	Final Exam	50 pts

12. مصادر التعلم والتدريس

Calculus and Analytic Geometry by George B. Thomas, any edition.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Calculus and Analytic Geometry by George B. Thomas, any edition.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
الميكانيك الهندسي –ستكون 2
2.رمز المقرر:
ME151
3. الفصل / السنة:
الربيعي / 2024
4. تاريخ إعداد هذا الوصف:
2024 /04 /15
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
60 ساعة / 4 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م.غيداء إبراهيم حسين ghaidaa.alsarraj2019@uomosul.edu.iq
8. اهداف المقرر
• To develop the capacity of first-year students to predict the effects of forces, moments, and couples on bodies. • To develop problem-solving skills and an understanding of forces analysis by applying the equilibrium principle. • To understand and draw the free body diagram to analyze forces. • Analysis forces and finding their resultant forces for two- and three-dimensional systems. • Applying the equilibrium principle to simple trusses and frames. • Understand the friction phenomena and the friction force in machine parts.
9. استراتيجيات التعليم والتعلم
▪ محاضرات ▪ واجبات منزلية ▪ تقارير ▪ الامتحانات ▪ المشاركات
10. بنية المقرر

الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (أ1 ، أ2)	Introduction trusses and method to solve.	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Joint Method.		
3	2		Section Method.		
4	2		Frames and machines + Recitation 1		
5	2		Application of Frames and machines.		
6	2	المهارات (ب1)	Introduced the distribution force.		
7	2		Treats centroid, and mass center.		
8	2		Treats centroid, and mass center + Recitation 2		
9	2		Introduced Friction		
1	2		Phenomenon of dry friction		
1	2	القيم (ج3، ج 4)	Phenomenon of dry friction + Recitation 3		
1	2		Machine application		
1	2		Moment of inertia + Recitation 4 + Midterm exam		
1	2		Moment and products of inertia of area + Recitation 5		
1	2		Course review		

11. تقييم المقرر

Homework	10 pt	Seminar	3 pt
Quizzes	25 pt	1st term Exam	10 pt
Report	2 pt	Final Exam	50 pt

12. مصادر التعلم والتدريس

Meriam, James L., and L. Glenn Kraige, "Engineering mechanics: statics", John Wiley & Sons, 2012.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Hibbeler, RC, "Engineering Mechanics Statics", 14th edition, 2016.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
فيزياء المعادن
2.رمز المقرر:
MEC153
3. الفصل / السنة:
الربيعي / 2024
4. تاريخ إعداد هذا الوصف:
2024 /04 /08
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
وحدة605 ساعة /
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
أ.م. عواد هلوش خضر Awad1956@uomosul.edu.iq م.احمد سعدون عبد العزيز Ahmed.saadoon@uomosul.edu.iq
8. اهداف المقرر
• To develop the capacity of first-level students to recognize types of metals, their properties, and applications. • To understanding the analysis of metals properties and to enrich students' knowledge and develop their skills in the principle of metals and alloys. • To understand the macro- and micro examination of metals and alloys. • Analysis of the phase diagrams of alloying systems and understanding their effect on mechanical properties of metals. • Learning about the heat treatment of steels and their applications.
9. استراتيجيات التعليم والتعلم
▪ محاضرات ▪ واجبات بيتية ▪ تقارير ▪ الامتحانات ▪ المشاركات
10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	المعرفة (أ1 ، أ2)	Introduction to Materials and Properties.	نظري – عملي	الامتحانات اليومية والشهرية ونهاية السنة. الواجبات البيتية المشاركات
2	4		Mechanical properties such s strength, ductility, toughness, and hardness.		
3	4		Atomic structure, atomic bonding in materials. Miller indices.		
4	4		Solidification of metals and alloys.		
5	4		Cooling curves, types, and constructions.		
6	4	المهارات (ب1)	Phase diagram for alloy systems.		
7	4		Thermal equilibrium diagrams (solid solution type).		
8	4		Thermal equilibrium diagrams (combination type).		
9	4		Thermal equilibrium diagrams (simple eutectic type)		
10	4		Iron-Carbon system (steels).		
11	4	القيم (ج 3)	Iron-Carbon system (relation between carbon content, microstructure and mechanical properties)		
12	4				
13	4		Iron-Carbon system (cast iron		
14	4		Heat treatment of steel (I)		
15	4		Course review		

11. تقييم المقرر

Homework	5 pt	Term Exam	20 pt
Lab	15 pt	Final exam	50pt
Quizzes	10 pt		

12.

"Fundamentals of material science and engineering", William.d.callister, 4th ed., John weily & sons, 2012, U.S.A	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Engineering metallurgy", R. A. Higgins, part I, 6th ed, London.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
ميكانيك موائع 1
2. رمز المقرر:
ME205
3. الفصل / السنة:
الخريفي / 2023
4. تاريخ إعداد هذا الوصف:
2024 /04 /08
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
30 ساعة / 2 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
tahatahamir1000@uomosul.edu.iq ا.م.د طه احمد عبدالله
8. اهداف المقرر
• Classify the fluid properties (compressibility, elasticity, viscosity, surface tension, capillarity). • Measure pressure by all types of manometers. • Calculate the forces on the immersed bodies and surfaces. • Analyze the fluid when subjected to Rotation & linear acceleration. • Apply Conservation of mass, continuity equation, Equations of motions- Euler's, Bernoulli's, and work-energy equations. • Apply Impulse - Momentum principles and applications.
9. استراتيجيات التعليم والتعلم

▪ محاضرات	▪ الامتحانات
▪ واجبات منزلية	▪ المشاركات

▪ تقارير	

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (أ1 ، أ4)	An introduction to the fundamental of fluid mechanics, basic concepts and applications	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Compressibility and elasticity		
3	2		viscosity		
4	2		Viscosity- tutorial		
5	2		surface tension, capillarity, vapor pressure		
6	2	المهارات (ب1 ، ب2)	Pressure applications and measurements		
7	2		Forces on immersed bodies - plane surfaces		
8	2		Forces on immersed bodies - plane surfaces - tutorial		
9	2		Forces on immersed bodies - curved surfaces		
1	2		Forces on immersed bodies - curved surfaces - tutorial		
1	2	القيم (ج3 ، ج4)	Introduction to fluid motion – basic concepts, Conservation of mass		
1	2		Equations of motions- Euler's and Bernoulli's		
1	2		Work-Energy Equations		
1	2		Work-Energy Equations - tutorial		
1	2		Course review		

11. تقييم المقرر

Home works	5 pt	1st term Exam	10 pt
Quizzes	5 pt	2nd term Exam	10 pt
Attendance	5 pt	Final Exam	60 pt
Participation	5 pt		

12. مصادر التعلم والتدريس

Elementary Fluid Mechanics Vennard and Street. 6thedition, 1982.	ب المقررة المطلوبة (المنهجية أن وجدت

المراجع الرئيسة (المصادر)	Fluid Mechanics 5th edition Frank M. White. 1999.
المراجع الإلكترونية ، مواقع الانترنت	

1. اسم المقرر :
تطبيقات هندسية بمساعدة الحاسوب
2. رمز المقرر :
MEC260
3. الفصل / السنة:
الخريفي / 2023
4. تاريخ إعداد هذا الوصف:
2024 /04 /08
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
30 ساعة / 2 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م. م ايمان محمدعلي سليمان emanmali@uomosul.edu.iq
8. اهداف المقرر
The objective of this course is to enable students to build a code with the help of available subprogram library and material properties database to solve applied engineering problems such as: • Thermodynamics cycles (Cranot cycles, Rankine cycles, refrigeration cycles, otto cycles, diesel cycles, etc) • Solid mechanics, strength of material, deflection, moment of inertia. • Solve linear system of equations

- Solve nonlinear system of equations
- Table integration
- Solve parametric problems.

9. استراتيجيات التعليم والتعلم

▪ محاضرات ▪ واجبات منزلية ▪ تقارير	▪ الامتحانات ▪ المشاركات

10. بنية المقرر

الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طرق التعلم	طريقة التقييم
1	2	المعرفة (1أ ، 4أ)	Menue bar & toolbar	عملي	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Equations Formatting Rules		
3	2		Solution of single equation, solution of linear system of equations.		
4	2		Functions: Math functions, thermodynamic & physical properties of fluids & solids. Unit system. Convert function.		
5	2		Parametric table. One dimensional array, two dimensional array.		
6	2	المهارات (ب2)	Examples.		
7	2		EES Procedures		
8	2		EES Functions		
9	2				
1	2				
1	2	القيم (ج 1)	Single-Line If Then Else Statements		
1	2				
1	2		Multiple-Line If Then Else Statements		
1	2		GoTo Statements, Repeat Until Statements. Examples.		
1	2		Course review		

11. تقييم المقرر

Home works	2.5 pt	term Exam	25 pt
Quizzes	2.5 pt	Month Exam	20 pt
		Final Exam	50 pt

12. مصادر التعلم والتدريس	
	الكتب المقررة المطلوبة المنهجية أن وجدت)
EES : Engineering Equation Solver, for Microsoft Windows Operating Systems, Commercial and Professional Versions. Copyright 1992-2018 by S.A. Klein	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
مقاومة مواد 1
2.رمز المقرر :
MEC207
3. الفصل / السنة:
الخريفي / 2023
4. تاريخ إعداد هذا الوصف:
2024 /04 /08
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
30 ساعة / 2 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م عمر عبد الرحمن محمد omar. mohammed@uomosul.edu.iq
8. اهداف المقرر
Mechanics of materials (Strength of Materials) is a branch of applied mechanics that deals with the behaviour of solid bodies subjected to various types of loading and give

the ability to calculate stresses, strains, shear stresses, shear strains, deformations, ... etc of objects under external loadings, as well as give the ability to increase the knowledge of strength of materials on engineering design and their applications.

9. استراتيجيات التعليم والتعلم

▪ محاضرات ▪ واجبات منزلية ▪ تقارير	▪ الامتحانات ▪ المشاركات

10. بنية المقرر

الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (1أ ، 2أ)	Introduction- Strength of Materials.	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Simple Stresses and Strains. Thermal Stresses.		
3	2		Shear stress and shear strain; Allowable Working Stress.		
4	2		; Compound bar subjected to external load; Equivalent or combined modulus.		
5	2		Compound bar subjected to temperature change; Problems.		
6	2	المهارات (1ب)	Shearing Force and Bending Moment Diagrams		
7	2		Point of Contraflexure; Relationship between S.F. and B.M. and intensity of loading.		
8	2		Limitations of the simple bending theory; Problems.		
9	2				
1	2		Bending and shearing stresses.		
1	2	القيم (ج 3)			
1	2				
1	2		Introduction; Simple torsion theory.		
1	2		Composite shafts -parallel connection; Power transmitted by shafts; Problems.		

		1st Term Examination		2	1

11. تقييم المقرر			
Homework	5 pt	1st term Examz	20 pt
Quizzes	10 pt		
Attendance	5 pt	Final Exam	60 pt

12. مصادر التعلم والتدريس	
E. J. Hearn. "Mechanics of Materials.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
R. C. Hibbeler. "Strength of Materials.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
التحليل الحركي
2.رمز المقرر:
MEC303
3. الفصل / السنة:
الربيعي / 2024
4. تاريخ إعداد هذا الوصف:
2024 /04 /14
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
30 ساعة / 2 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م. د. عبدالحق عبدالقادر حامد abdulhaqqhamid@uomosul.edu.iq
8. اهداف المقرر
• Students shall gain clear knowledge about mechanisms and machines. • Students shall demonstrate the ability to draw the kinematic diagrams of actual mechanisms and determine, visualize their mobility. • 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 . • 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).
9. استراتيجيات التعليم والتعلم
▪ محاضرات ▪ واجبات منزلية ▪ تقارير ▪ الامتحانات ▪ المشاركات
10. بنية المقرر

الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (1^{1} ، 2^{1})	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.	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		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.		
3	2		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.		
4	2		Continued..... Analytical or algebraic Methods for determination of accelerations),		
5	2				
6	2	المهارات	Tooth gears: introduction, Types of Gears, Applications, Force		

		analysis in spur gears, solved examples.	(ب1)		
		Second Examination		2	7
		Solved examples and tutorial sheet #3.		2	8
				2	9
		Tooth gears: introduction, Types of Gears, Applications, Force analysis in spur gears, solved examples.		2	1
				2	1
				2	1
		Cams: Introduction, types of cam and follower mechanisms, Types of desired motion, method of analysis and designing of cams profiles.	القيم (ج 2)	2	1
		Examination		2	1
		Course review		2	1

11. تقييم المقرر

Home works	5 pt	1st term Exam	10 pt
Quizzes	10 pt	2nd term Exam	10 pt
Attendance	5 pt	Final Exam	60 pt

12. مصادر التعلم والتدريس

Theory of Machines, by: R. S. Khurmi and J. K. Gupta, First-Edition 2010, and 2021	ب المقررة المطلوبة (المنهجية أن وجدت (
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.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
الورشة الميكانيكية
2.رمز المقرر:
MEC305
3. الفصل / السنة:
الخريفي / 2023
4. تاريخ إعداد هذا الوصف:
14/ 04/ 2024
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
وحدة301 ساعة /
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م. د. محمد نجيب عبدالله moh_77@uomosul.edu.iq م. قيس حازم اسماعيل qayshazim1970abc@uomosul.edu.iq م محمد شعلان عبد فتحي moabcmo@ gmail.com
8. اهداف المقرر
• Choose machining processing to manufacture any component • Estimate machining time for milling and drilling process. • Understand finishing processes. • Choose welding machine for welding metal.
9. استراتيجيات التعليم والتعلم

▪ محاضرات ▪ واجبات منزلية ▪ تقارير	▪ الامتحانات ▪ المشاركات

10. بنية المقرر

الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم

• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات	عملي	Introduction to workshop technology occupational safety Turning and related operations	المعرفة (2أ)	2	1
				2	2
				2	3
		Drilling Operation		2	4
				2	5
		Welding Processes	المهارات 2(ب 1. (ب	2	6
		Oxy- acetylene Welding		2	7
		Milling operations		2	8
				2	9
		Measurement tools and how to use them		2	1
		Filing Operation	القيم 4(ج	2	1
		Scraping machines		2	1
				2	1
		Mid semester Exam		2	1
		Course review		2	1

11. تقييم المقرر

Classwork	15 pt	1st term Exam	25 pt
Quizzes	10 pt	Final Exam	50 pt

12. مصادر التعلم والتدريس

	الكتب المقررة المطلوبة (المنهجية أن وجدت)
B.H. Amsted, Philip F. Ostward and Myron L.' MANUFACTURING PROCESSES' Begman Jhon Willey Sons-Inc 2005.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
جريان الموائع المنضغطة
2.رمز المقرر:
MEC331
3. الفصل / السنة:
الربيعي / 2024
4. تاريخ إعداد هذا الوصف:
2024 /04 /14
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
45 ساعة / 3 وحدات
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م. د. عمر صلاح الدين ذنون omerphd18@uomosul.edu.iq
8. اهداف المقرر
• Basic Definitions of Compressible Flow. • Introduction to Aerodynamics. • Governing equations for Inviscid Flow Compressible Flow and AirFoil. • Review of Vector Relations. • Models of the Fluid Control Volumes and Fluid Elements. • An Application of the Momentum Equation: Drag of a two Dimensional Body. • Path Lines, Stream Lines, and Streak Lines of Flow. • Angular Velocity, Vorticity, and Strain. • Relationship Between the Stream Function and Velocity Potential. • Some Aspects of Supersonic Flow: Shock Waves. • Speed of Sound. • Adiabatic Flow in Constant-Area Duct with Friction-Derivation of Basic • Fanno Flow in constant-Area Duct with Normal Shock Wave. • Rayligh Flow in constant-Area Duct with Normal Shock Wave.
9. استراتيجيات التعليم والتعلم
▪ محاضرات ▪ واجبات منزلية ▪ تقارير ▪ الامتحانات ▪ المشاركات

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (أ1 ، أ2)	Basic Definitions of Compressible Flow.	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Introduction to Aerodynamics.		
3	2		Governing equations for Inviscid Flow Compressible Flow.		
4	2		AirFoil.		
5	2		Review of Vector Relations.		
6	2	المهارات (ب1)	Models of the Fluid Control Volumes and Fluid Elements		
7	2		An Application of the Momentum Equation: Drag of a two Dimensional Body.		
8	2		Path Lines, Stream Lines, and Streak Lines of Flow.		
9	2		Angular Velocity, Vorticity, and Strain.		
1	2		Relationship Between the Stream Function and Velocity Potential.		
1	2	القيم (ج 3)	Some Aspects of Supersonic Flow: Shock Waves.		
1	2		Speed of Sound. Adiabatic Flow in Constant-Area Duct with Friction-Derivation of Basic Equations.		
1	2		Fanno Flow in constant-Area Duct with Normal Shock Wave.		
1	2		Rayligh Flow in constant-Area Duct with Normal Shock Wave.		

11. تقييم المقرر

Homeworks	10 pts	1st term Exam	10 pts
Quizzes	10 pts	2nd term Exam	10 pts
Attendance	5 pts	Final Exam	60 pts

12. مصادر التعلم والتدريس

Modern Compressible Flow-3ed (Anderson).	الكتب المقررة المطلوبة (المنهجية)
Fundamentals of Aerodynamics, Th(BookSee.org), [John D. Anderson].	المراجع الرئيسة (المصادر)

المراجع الإلكترونية ، مواقع الانترنت	

1. اسم المقرر :
ديناميك المكائن
2. رمز المقرر :
MEC354
3. الفصل / السنة:
الربيعي / 2024
4. تاريخ إعداد هذا الوصف:
2024 /04 /14
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
30 ساعة / 2 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م. د. عبدالحق عبدالقادر حامد abdulhaqqhamid@uomosul.edu.iq
8. اهداف المقرر
The course contributes to the following student outcomes: • Students shall gain clear knowledge about dynamics of mechanisms and machines. • Students shall demonstrate the basic understanding of the balancing of different types of machinery's. • 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. • Students have an ability to analysis and design the mechanical governors for a machine. • Students shall demonstrate knowledge about crank effort and flywheel. Students shall learn a complete analysis and determination of forces, masses required, etc. • Students shall demonstrate knowledge about gyroscope motion and couple and their applications. • Students shall demonstrate complete knowledge about gears and gears trains, types, and method of analysis. • Students shall demonstrate knowledge about universal joints, types, and method of analysis.
9. استراتيجيات التعليم والتعلم

▪ محاضرات ▪ واجبات منزلية ▪ تقارير	▪ الامتحانات ▪ المشاركات

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (1أ ، 2أ)	Introduction to theory of machines, definitions, basic concepts, simple mechanisms and machines.	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Fast review on Engineering Mechanics : displacement, velocity and acceleration, relative motion, circular motion, torque and angular motion, simple harmonic motion.		
3	2		Gyroscopes: gyroscopes application: ships, airplanes, etc. Gyroscope motion, Gyroscope couple analysis.		
4	2		Solved examples and tutorial sheet #1 + Quiz #1		
5	2		Mechanical Governors: Introduction, Types of Governors, Dead Weight Governors and Spring loaded governors: Watt governor, Porter governor		
6	2	المهارات (ب1)	Hartnell governor, Proell governor, Complete forces analysis, Controlling force and stability, Sensitivity and insensitivity of governors.		
7	2		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.			
		Balancing of Machinery: 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,		2	8
				2	9
		Balancing of reciprocating masses: introduction, reciprocating Masses, Methods for solving problems,		2	1
				2	1
				2	1
		Belts, ropes, and chain drives: Introduction, Definition and Applications, Types, Flat, Rope and V-Belts Drives, Force Analysis, power transmitted, Efficiency, Slips	القيم (ج 2)	2	1
		Turning moment diagrams and flywheels: introduction and definitions, Crank effort diagrams, Fluctuation of speed, Fluctuation of energy,		2	1
		Course review		2	1

11. تقييم المقرر

Homework	5 pt	1st term Exam	10 pt
Quizzes	10 pt	2nd term Exam	10 pt
Attendance	5 pt	Final Exam	60 pt

12. مصادر التعلم والتدريس

Theory of Machines, by: R. S. Khurmi and J. K. Gupta, First-Edition 2010, and 2021	الكتب المقررة المطلوبة (المنهجية)
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.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
عمليات التصنيع المتوسطة
2. رمز المقرر:
MEC363
3. الفصل / السنة:
الربيعي / 2024
4. تاريخ إعداد هذا الوصف:
14/ 04/ 2024
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
60 ساعة / 2 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م. عامر يحيى محمد lamer.aljerjees@uomosul.edu.iq م. د. محمد نجيب عبدالله moh_77@uomosul.edu.iq م. قيس حازم اسماعيل qayshazim1970abc@uomosul.edu.iq
8. اهداف المقرر
• Understand various advanced manufacturing metal forming processes • Design of die for metal forming for any forming processes. • Choose machining processing to manufacture any component • Understand to select proper Advanced Manufacturing process for welding and forging • Explain principle and applications of advanced machining
9. استراتيجيات التعليم والتعلم
▪ محاضرات ▪ واجبات منزلية ▪ تقارير ▪ الامتحانات ▪ المشاركات
10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (2أ)	Metal Forming, Introduction, Material behavior, Flow stress. Forming temp.	نظري + عملي	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Rolling Operation, Analysis of Flat Rolling, Neutral point,		
3	2		Extrusion Process, Direct and indirect extrusion, analysis of Extrusion, impact extrusion		
4	2				
5	2		1st term Exam		
6	2	المهارات (2ب1. (ب	Forging, Open –Die Forging, close –Die Forging		
7	2		Wires and Bars Drawing Analysis of wire drawing, bars drawing		
8	2		Powder Metallurgy Techniques, Characteristics of metal powders, property of Engineering powders, production of metal powders.		
9	2		+ 2nd term Exam		
1	2		Advance Welding Processes, Submerged Arc Welding ,Plasma Arc Welding, Thermite welding, Friction welding		
1	2	القيم (ج 3)			
1	2				
1	2		Numerical Control(NC), Analysis of NC Positioning Systems, NC Part Programming .Application of NC)		
1	2		Non-traditional Machining Processes, Electric Discharge Machining(EDM), Wire Cut , Electrochemical Machining Processes, Ultrasonic Machining		

11. تقييم المقرر

Quizzes	10 pt	2nd term Exam	15 pt
1st term Exam	15 pt	Attendance	5 pt
Reports	5 pt	Final Exam	50 pt

12. مصادر التعلم والتدريس

الكتب المقررة المطلوبة (المنهجية أن وجدت)	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.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
مكائن كهربائية
2.رمز المقرر:
ME304
3.الفصل / السنة:
الخريفي / 2023
4.تاريخ إعداد هذا الوصف:
2024 /04 /08
5.أشكال الحضور المتاحة:
حضوري في القاعات الدراسية
6.عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
30 ساعة / 2 وحدة
7.اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
م. م. معن حسين عباس maanhussein1991@uomosul.edu.iq
8.اهداف المقرر
• To provide a thorough basis for electrical machines study. To introduce students to the main parameters and properties of electric and magnetic fields at low frequencies. To introduce students to the concept of magnetic circuits and the operational principles and characteristics of transformers. • To introduce students to the basics of electrical machine construction and the structure and operational principles of DC machines. To introduce students to the basics of electrical machine construction and the structure and operational principles of induction machines. • To introduce students to the basics of electrical machine construction and the structure and operational principles of synchronous machines. • Decide on strategies to be used and assumptions that need to be made. • Develop a flexible and creative problem-solving ability. Develop their ability to communicate ideas of science. Develop an expertise in experimental methodologies.
9. استراتيجيات التعليم والتعلم
▪ محاضرات ▪ الامتحانات ▪ واجبات منزلية ▪ المشاركات

▪ تقارير	

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعليم	طريقة التقييم
1	2	المعرفة (أ1، أ4)	Electrical machine (magnetic field, faraday & Lenzes laws)	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		D.C machines and DC generators main principles.		
3	2		D.C motors principles, types and speed control methods.		
4	2		A.C machines / Electrical transformers & their test methods		
5	2		Equivalent circuit of single-phase transformers		
6	2	المهارات (ب1)	3 –phase transformers and Automatic voltage regulator		
7	2		Induction machines & generators.		
8	2		Single phase induction motor Three phase induction motor and Starter circuit connection to start 3-phase induction motor		
9	2				
1	2		Delta –star staring connection of 3 – phase induction and Reversal of rotation direction of 3-phase. Speed control methods		
1	2	القيم (ج1، ج3)			
1	2		synchronous motor and the starting methods		
1	2		Synchronous generator principles		
1	2		Synchronous generators synchronization terms		

11. تقييم المقرر

Homeworks	5 pt	1st term Exam	12 pt
Quizzes	8 pt	2nd term Exam	12 pt
Attendance	3 pt	Final Exam	60 pt

12. مصادر التعلم والتدريس

الكتب المقررة المطلوبة (المنهجية)	I J Nagrath and D P Kothari, "Electric Machines", McGraw Hill Education, 1st Edition, 2010

J B Guptha "Theory and performance of Electrical machiines", S.K.Kataria & Sons Publishers 14th Edition, 2009	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :
تصميم مكائن متوسط
2.رمز المقرر:
ME411
3. الفصل / السنة:
وربيعي / 2024-2023 الخريفي
4. تاريخ إعداد هذا الوصف:
2024 /04 /08
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
وحدة3 ساعة / 45
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
أ.م.د. علاء دحام يونس alaayonis@uomosul.edu.iq
8. اهداف المقرر
• Classify Clutch, Brakes, Gears, and another various machine elements. • Calculate the necessary forces, stresses and power flow in a machine. • Design of power screw, study the design aspects of the systems using power screw like hand press or screw jack or Car jack. • Develop and draw a 3d models of a machine member, develop a stress analysis using a FEA method available in INVENTOR computer program. • Use Microsoft EXCEL to automate the design calculations for Clutches brakes and gears.
9. استراتيجيات التعليم والتعلم
▪ محاضرات ▪ واجبات منزلية ▪ تقارير ▪ الامتحانات ▪ المشاركات
10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (1أ ، 2أ) المهارات (1ب) القيم (3 ج)	Introduction to Machine Design	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Types of clutch, How clutch work, Components of clutch Design of Clutches		
3	2				
4	2				
5	2		Types of brake, How brake s are work, The components of brake, Design of Brakes		
6	2				
7	2				
8	2				
9	2				
1	2		Design of Gears by using Leuis equation.		
1	2				
1	2				
1	2		Design of Gears by using AGMA procedures .		
1	2				
1	2				

11. تقييم المقرر

Homeworks	5 pt	1st term Exam	10 pt
Quizzes	10 pt	2nd term Exam	10 pt
Attendance	5 pt	Final Exam	60 pt

12. مصادر التعلم والتدريس

Shigley's Mechanical Engineering Design.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Mechanical Design, Peter Childs, second edition, 2004.	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت

1. اسم المقرر :	
تلوث	
2. رمز المقرر:	
ME460	
3. الفصل / السنة:	
الخريفي / 2023	
4. تاريخ إعداد هذا الوصف:	
2024 /04 /08	
5. أشكال الحضور المتاحة:	
حضوري في القاعات الدراسية والحضور الالكتروني	
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):	
45 ساعة / 3 وحدة	
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)	
أ.م. د. محمد صالح محمد	moh62sam@uomosul.edu.iq
8. اهداف المقرر	
The course is designed to provide students with a • broad understanding of air pollution science and management, including environmental engineering principles, risk assessment, and ethical considerations. • The course covers the sources and types of air pollutants, their effects on human health and the environment, and regulatory frameworks for air pollution control. In addition, the course focuses on material balance for pollution concentration, air pollution measurement and modeling, control technologies, and emerging issues in air pollution. Through examples of calculations, case studies, and group projects, students will develop practical skills for addressing air pollution challenges in various industries and contexts. Overall, this course aims to equip students with the knowledge and tools needed to make a positive impact on air quality and public health..	
9. استراتيجيات التعليم والتعلم	
▪ محاضرات ▪ واجبات منزلية	▪ الامتحانات ▪ المشاركات

▪ تقارير	

10. بنية المقرر

الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	المعرفة (1أ) المهارات (ب1،ب3) القيم (ج 1، ج2)	Introduction to Pollution Sources and types of pollutants Effects of pollution on human health and the environment Regulatory frameworks for pollution control	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	2		Introduction to Environmental Engineering, Environmental Ethics, Environmental Risk Assessment		
3	2				
4	2		Material Balance for Pollution\ Concentration Mass balance equations and calculations Application to air pollution sources and control measures Tutorial sheet No.1 Homework 1 Quiz		
5	2				
6	2		Air Pollution Measurement Monitoring techniques and equipment Sampling and analysis of air pollutants Quality assurance and quality control		
7	2				
8	2		Air Pollution Modeling Overview of air pollution modeling Types of models and their applications Case studies in air pollution modeling		
9	2				
10	2		Air Pollution Control Technologie Overview of air pollution control technologies		
11	2				
12	2		Indoor Air Quality Sources and types of indoor air pollutants		
13	2				
14	2		Effects on human health and comfort		

		Course review		2	15

تقييم المقرر .11			
Homeworks	5 pt	1st term Exam	10 pt
Quizzes	10 pt	2nd term Exam	10 pt
Attendance	5 pt	Final Exam	60 pt

12. مصادر التعلم والتدريس	
	الكتب المقررة المطلوبة (المنهجية)
Introduction to environmental engineering and science, 3rd edt, Gilbert M. Masters Wendell P. Ela, PEARSON Air Pollution, M.N. RAW, H.V. Tata McGraw-Hill	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الأنترنت

1. اسم المقرر :
محطات قدرة
2. رمز المقرر:
MEC421
3. الفصل / السنة:
الخريفي / 2023
4. تاريخ إعداد هذا الوصف:
2024 /04 /08
5. أشكال الحضور المتاحة:
حضوري في القاعات الدراسية والحضور الالكتروني
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
45 ساعة / 3 وحدة
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
أ.م. د. محمد صالح محمد moh62sam@uomosul.edu.iq
8. اهداف المقرر
• Power Plant: The aim of this module is to provide fourth-year mechanical engineering students with a comprehensive understanding of power plant operations. Students will learn about steam power plants, including steam turbines and regenerative methods, as well as cogeneration techniques for enhancing the Rankine cycle. They will also gain knowledge about boilers, condensers, and combined power plants. • Renewable Energy: The aim of this module is to introduce students to various renewable energy sources and technologies. Students will explore hydroelectric power plants, wind turbine power plants, and solar energy systems. They will gain an understanding of the working principles, components, and operation of these renewable energy systems. • Pollution: The aim of this module is to raise awareness about pollution and its environmental impact. Students will learn about different types and classifications of pollution, as well as the ethical considerations surrounding environmental protection. They will also examine material balance sources and their contribution to pollution. Furthermore, the module will cover air pollution, including its sources, effects, and control measures. • Critical Thinking and Problem-Solving Skills: Throughout the module, students will develop critical thinking and problem-solving skills. They will be encouraged to

analyze and evaluate different power plant systems, renewable energy technologies, and pollution control measures. The aim is to enhance their ability to apply theoretical knowledge to real-world situations and propose sustainable solutions.

- By achieving these aims, the module aims to provide students with a solid foundation in power plant operations, renewable energy technologies, and pollution control. It aims to equip them with the necessary knowledge and skills to contribute to the development and implementation of sustainable energy solutions in the field of mechanical engineering.

9. استراتيجيات التعليم والتعلم

▪ محاضرات ▪ واجبات منزلية ▪ تقارير	▪ الامتحانات ▪ المشاركات

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3	المعرفة (1أ ، ب2) المهارات (1، ب1) القيم (ج 3)	Introduction to power plant Introduction Definition, Power Plant Classification, Energy and environment, World's population and world energy consumption, World economic	نظري	• الامتحانات اليومية والشهرية ونهاية السنة. • الواجبات المنزلية • المشاركات
2	3				
3	3		Vapor Power Plant Cycles : Rankine Cycle (R.C.) Review, Deviation of Actual Vapor Power Cycle from Ideal Cycle (Real R. C.), Methods Can be Used to Increase Rankine Cycle Efficiency, Reheat.		
4	3				
5	3		Regenerative Rankine Cycle.		
6	3		Tutorial sheet No.1 Homework 1 Quiz		
7	3		Binary R.C Introduction to binary cycle		
8	3		Combined gas turbine Cycle Tutorial sheet No.2 Homework 2 Quiz)		
9	3				
10	3		Combined gas turbine Cycle		

				3	11
		Condenser: Introduction to condenser, Types of condensers and description of condenser components		3	12
				3	13
		Hydroelectric power plant The main elements of hydroelectric power plant, Hydraulic turbine, Turbine selection.		3	14
		Course review		3	15

11. تقييم المقرر

Homeworks	5 pt	1st term Exam	10 pt
Quizzes	10 pt	2nd term Exam	10 pt
Attendance	5 pt	Final Exam	60 pt

12. مصادر التعلم والتدريس

	ب المقررة المطلوبة (المنهجية أن وجدت (
• YUNUS A. Cengel & Michael A. Boles. "Thermodynamics-an-engineering-approach-5th-edition • By R K Rajput "Thermal Engineering 8 Ed (1) • A.K. Raja " Power Plant Engineering" , New AGE	المراجع الرئيسة (المصادر)
	المراجع الإلكترونية ، مواقع الانترنت