كلية هندسة المواد/قسم هندسة المعادن

الوصف الاكاديمي

Description of Academic Program & Syllabus

Department of Metallurgical Engineering

College of Materials Engineering

Introduction

It is one of the basic and leading branches in applied and engineering sciences, concerned with the study of the composition of metals, their properties, and ways of benefiting from them in various industrial and technological fields. It includes knowledge of methods of extraction from ores, processing and manufacturing, in addition to developing and improving properties to suit the needs of daily life and modern technologies. Creating new alloys using a variety of methods, with wide applications including the medical, aerospace and aerospace industries, as well as advanced infrastructures and technologies.

University Name	**University of Babylon**
College	**College of Materials Engineering**
Academic Department	**Metallurgical Engineering**
Academic Program Name	**Bachelor of Metallurgical Engineering**
Final Degree Name	**Bachelor of Metallurgical Engineering**
Study System	**Polonia path (First stage & Second stage)** **Semester-base (Third stage &Fourth stage)**
Approved Program	**Curricula and Courses as per the Ministry**
Other External Influences	**Practical Training in factories and companies**
Date of Description Preparation	**9/2/2025**
Date of File Completion	**9/3/2025**

كلية هندسة المواد/قسم هندسة المعادن

الوصف الاكاديمي

Academic Program Description Form

University Name: University of Babylon
Faculty/Institute: Materials Engineering
Scientific Department: Metallurgical Engineering
Academic or Professional Program Name: BSC
Final Certificate Name: BSc. Metallurgical Engineering
Academic System: Bologna System
Description Preparation Date: 9/2/2025
File Completion Date: 9/3/2025

Signature:
Head of Department

Name:Hayder H. Jamal Aldeen

Date: 12/3/2025

Signature:
Scientific Associate

Name: Auda Jabbar Braihi

Date:12 /3/2025

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:

Raed Hussein Alwan
Signature:

Date:12 /3/2025

Approval of the Dean
Abdel Raheem K. Abed Ali

1. Program Vision
The program should be distinguished in preparing scientifically and technically qualified engineers who are able to keep pace with developments in metallurgical engineering with an emphasis on community service
2. Program Mission
To provide a comprehensive education that combines academic theory and practical application to provide students with the skills necessary to produce modern alloys using advanced casting and manufacturing methods
3.Program Objective
The objectives are divided into two main categories: 1.General Objects: a. Preparing engineering cards capable of working in factories, laboratories, and companies. b. Promoting scientific research and discussing matters related to engineering applications. C. Meeting the needs of the labor market through creative engineering skills. 2.Specific Objective: a. Developing engineering skills and innovation. b. Introduce students to metallurgical engineering and its importance. c. Instilling ethical and professional values in engineering work. d. Establishing cooperation with engineering institutions to promote and develop scientific expertise.
4. Program Accreditation:
There is a presentation to obtain accreditation
5.Other external Influences:
1-Visits to fieldwork 2-The experimental part 3-Scientific consulting 4-Lbraries and internet network 5-Podiums of social media 6-The need of work market

6. Program Structure				
Program Structure	**Number of courses**	**Credit hours**	**Percentage**	**Reviews**
College Requirements	**4**	**22**	**8%**	**-**
Department Requirements	**32**	**68**	**92%**	**-**
Summer training	**1**	**-**	**-**	**-**
Other	**-**	**-**	**-**	**-**

7. Academic Program Description for Metallurgical Engineering Department

First Stage & Second Stage according to Polonia Path				
First Stage				
Semester	**Code**	**Course Name**	**Credit Hours**	
			Th	**Pr**
Semester one	**UOBAB0201011**	**Engineering Materials Science**	4	
	UOBAB0201012	**Engineering Mechanics I**	3	
	UOBAB0201013	**Engineering Drawing**	3	
	UOBAB0201014	**Mathmetics**	4	
	UOBAB0201015	**Principles of Producyion Engineering**	4	
	UOBAB0201016	**English language**	2	
Total			**20**	

Semester two	UOBAB0201021	Extraction Metallurgy	6	
	UOBAB0201022	Engineering Mechanics II	3	
	UOBAB0201023	Computer Aided Engineering Drawing/ Auto CAD	2	
	UOBAB0201024	Computer Programming	3	
	UOBAB0201025	Freedom, Democracy and Human rights	2	
	UOBAB0201026	Elective-I	3	
Total			19	

Second Stage

Semester	Code	Course Name	Credit Hours	
			Th	Pr
Semester three	UOBAB0201031	Engineering Metallurgy I	3	2
	UOBAB0201032	Strength of materials	4	2
	UOBAB0201033	Computer Programming	2	
	UOBAB0201034	Nonmetallic Materials	2	2
	UOBAB0201035	Metallurgical Thermodynemic	2	2
	UOBAB0201036	Mathmetics	3	
Total			16	8
Semester four	UOBAB0201041	Engineering Metallurgy II	3	2
	UOBAB0201042	Elective-II	3	
	UOBAB0201043	Chemical Metallurgy II	4	2

	UOBAB0201044	Welding Technology	3	
	UOBAB0201045		2	
	UOBAB0201046	English language	4	
Total			19	4

8. Outcomes of the Progra

A. Knowledge		L-outcomes
1A	Knowledge the general concepts of engineering	Comprehensive understanding of all properties and characteristics of materials and especially of metals and new alloys
2A	Knowledge the basics of materials and types in general and minerals in particular	
3A	Studying and knowing the engineering of materials of all kinds and their field of application	
4A	Focusing on mineral materials and dealing with them in all their operations, from the mine to the final manufacturing	

B-Skills		L-outcomes
1B	Skill in reading and analyzing all engineering plans and designs	

2B	**Full knowledge of the properties and uses of materials and their selection for specific applications**	**Solving the problems, ability to design and develop, knowing selection of materials and analysis the failure**
3B	**Full knowledge of engineering materials and how they are extracted, manufactured and tested**	
4B	**Motivate students to reproduce and link information together by posing a question to other students**	

C. Values		**L-outcomes**
1C	**Graduates will understand the ethical and professional responsibilities associated with metallurgical engineering practice, including issues related to safety, sustainability, and social impact**	**Reinforcement professional ethics and social questionnaire**
2C	**Students will acquire teamwork and leadership skills, enabling them to work collaboratively in multidisciplinary teams, demonstrate effective leadership qualities, and contribute to the achievement of common goals**	
3C	**Participating in continuous learning, following the developments in metallurgical engineering in all professional life**	
4C	**Reinforcement values of transparency and integrity in dealing with engineering tests**	

9.Learning and Teaching Strategies	
A. Interactive Lectures: Using modern tools like PowerPoint **B. Group Discussions: Encouraging students to discuss engineering questions** **C. Practical Projects: Using digital platforms and tools for interactive learning** **D. Engineering Designing Programs: Training the students to use engineering programs as Ansys, AutoCAD for programming the engineering problems and find the optimum answers for them** **E. Projects for Engineering Research: Encouragement the students to produce scientific research about engineering applications and failure analysis** **F. Analysis Engineering Data: Training students to use a lot of data and finding the optimum method to summarization**	**A. Laboratories Assays: Training the students to use accurate methods for experimental work** **B. Exercises for Making Samples: Participating students in manufacturing alloys in different methods as casting, powder metallurgy** **C. Teamwork: Group of students are organized to discuss the latest engineering matters** **D. Seminars: Seminars are set between students and faculty members to exchange ideas and discuss engineering problems** **E. Field Training: Opportunities are provided to train students in laboratories, companies and government institutions to gain real experience** **F. Organize Specialized Workshops on modern applications of engineering alloys as bio applications**

10.Assesment Methods

A) Continuous Assessment: Class participation, periodic tests, presentations

B) Practical Assessment: Projects, hands-on workshops, laboratories experiments

C) Theoretical Assessment: Theoretical exams, writing reports

D)Feedback and Guidance: Providing students with ongoing constructive feedback

E) Final Exam: Includes a written exam and final graduation project

11.Teaching Faculty

S	Name	Academic Title	Specialization		Special Skills		No. Faculty	
			General	Special			Permanent	Temporary
1	Haydar Hassan Jaber Jamal Al Deen	Prof.	Met. Eng.	Corrosion Eng. & Biometals			√	
2	Haydar Abdulhassan Hussain Al-Ethari	Prof.	Mechanic Eng.	Cutting Metals			√	
3	Ahmed O.Al-Roubaiy	Prof.	Mat. Eng.	Met. Eng /Welding Eng.			√	
4	Jassim Mohammed Salman	Prof.	Mat. Eng.	Met.Eng./Casting &Light Metals			√	
5	Saad Hameed Al-Shafie	Prof.	Production Eng.	Advanced Metals Machining			√	
6	Haydar Abed Hassan Al-Juboori	Prof.	Industrial Eng.	Industrial Eng.			√	
7	Ali Hubi Haleem	Prof.	Met. Eng.	Corrosion Eng.			√	
8	Abdul Raheem Kadhim Abid Ali	Prof.	Mat. Eng.	Advanced Metallic Materials			√	

9	Ekbal mohammed saeed	Prof.	Met. Eng.	Met. Eng. /Intelligent Alloys			√	
10	Nawal Mohammed Dawood	Prof.	Mat. Eng.	Advanced Biometals			√	
11	Abdulsameea Jasim Abdulzehra Alkilabi	Prof.	Mat. Eng.	Met. Eng /Welding &Met. Eng.			√	
12	Zuheir Talib Khulief	Prof.	Mat. Eng.	Met. Eng.			√	
13	Nabaa Sattar Radhi	Prof.	Mat. Eng.	Met. Eng.			√	
14	Basem Mohysen Mohammed Zubaidy	Ass. Prof.	Mat. Eng.	Met. Eng.			√	
15	Zaineb Fadhil Kadhim	Ass. Prof.	Mat. Eng.	Met. Eng. /Thermodynamic			√	
16	Khalid M. Al-Janabi	Ass. Prof.	Met. Eng.	Met. Eng.			√	
17	Ayad Mohammed Nattah	Ass. Prof.	Mat. Eng.	Met. Eng.			√	
18	Baraa Hasan Hadi	Ass. Prof.	Mat. Eng.	Met. Eng.			√	
19	Nagham Yass Khudair	Lect.	Mechanic Eng.	Thermally			√	
20	Wafa Mahdi jodia	Lect.	Mechanic Eng.	Production Eng.			√	
21	Hussein Fawzy Mahdy	Lect.	Prod. Eng. &Metallurgy	Prod. Eng			√	
22	Muqdad Jaber	Lect.	Mat. Eng.	Met. Eng.			√	
23	Rula Sami Khudhair	Lect.	Computer Eng.	Artificial Intelligence& Robotics			√	

24	Zaineb Fouad hamza	Lect.	Mat. Eng.	Met. Eng.			√	
25	Ruaa Hatem Kadhim	Lect.	Mat. Eng.	Met. Eng.			√	
26	Shahad Ali Hammood	Lect.	Mat. Eng.	Met. Eng.			√	
27	Qabas Khalid Naji	Lect.	Mat. Eng.	Met. Eng.			√	
28	Osama Ihsan Ali	Lect.	Mat. Eng.	Met. Eng.			√	
29	Zainab Abidulellah	Lect.	Mat. Eng.	Met. Eng.			√	
30	Walaa Amer Mughir	Lect.	Mechanic Eng.	Applied Mechanics			√	
31	Khaldun Emad Fadhel Aldawoudi	Ass. Lect.	Mat. Eng.	Met. Eng.			√	
32	Kwther Yehya	Ass. Lect.	Mat. Eng.	Met. Eng.			√	
33	Manar Assaf	Ass. Lect.	Mat. Eng.	Met. Eng.			√	
34	Saleh Sabah AL-Turaihi	Ass. Lect.	Mat. Eng.	Met. Eng.			√	
35	Rafaah Ibrahim Jabaar	Ass. Lect.	Electric. Eng.	Power			√	
36	Aenas Laith Ali	Ass. Lect.	Mat. Eng.	Met. Eng.			√	

Met. Eng.=Metallurgical Engineering; Mat. Eng.=Materials Engineering, Prod. Eng.=Production Engineering, Prof.=Professor, Ass. Prof.=Assist Professor, Lect.=Lecturer, Ass. Lect.=Assist Lecturer

12.Faculty Development

Orientation of Junior Faculty Members

A-Guidance and counselling programs

B-Workshops and training on Curricula and assessments

C-Continuous development through conferences and e-learning **D- Adherence to the Ministry's instruction through education and periodic review** **E-Building a culture of cooperation and continuous assessment**
Developing Senior Faculty
A-Providing the necessary environment and resources to develop the skills of the faculty levels of quality in academic performance. **B-Participating in workshops, continuing education courses, and specialized training courses.** **C-Developing the skills of the faculty member in the field of students evaluation and relying on effective alternatives in this regard.** **D-Developing the skills of the faculty member in relying on modern technology and innovating new alternatives in learning and teaching.** **E- Raising the level of the faculty member's skill in the field of scientific and professional research,** **management and community service.** **F-Exchange the experiences between faculty members in the scientific department and other corresponding departments locally and globally.** **G-Developing the multiple administrative skills of the faculty members, such as working as a team or taking skills decision making in academic and administrative work.** **H-developing the skills of the faculty member to deal with challenges facing him in performing his job duties and academic by overcoming potential career difficulties.**
13.Acceptance Criteria
Ministry Central Acceptance

14. Sources of Feedback and Evaluation

*Ministry of Higher Education and Scientific Research

*Councils of Engineering Collages in Iraq

*Arabian and Foreign Colleges of Engineering Materials

15.Academic Program Development Plan

A-Updating the Curricula: Adding modern Curricula such as nanotechnology and bio applications as well as developing old materials to suit the requirements of the modern labor market.

B-Technology in Education: Combination of engineering programs as ANSYS, AutoCAD and E-learning platforms to enhance the technical skills of students.

C-Practical Training: Signing partnerships with engineering institutions to provide field training that enhances the practical experience of students.

D-Faculty Development: Organizing workshops and training programs for faculty members on the latest developments in metals and alloy applications and manufacturing methods.

E-Continuous Evaluation: Adopting a continuous evaluation system that includes practical projects, presentations, and practical tests to comprehensively assess student's skills.

F-Promoting Scientific Research: Encouraging students and faculty members to conduct research related to advanced manufacturing methods for alloys, metals and composite materials.

G-Follow up and Feedback: Establish a system to review the academic plan regularly based on the opinions of students and employers to ensure continuous

development.

مخطط مهارات البرنامج															
مخرجات التعلم المطلوبة من البرنامج															
Values				Skills				Knowledge				Core (C) or Option (O)	Course Name	Course Code	Year
C4	C3	C2	C1	B 4	B3	B2	B1	A4	A3	A2	A1				
√		√		√	√		√	√	√		√	C	Engineering Materials Science	UOBAB0201011	Semester one

√	√	√	√	√		√		√			√	C	Engineering Mechanics I	UOBAB0201012	
√	√		√		√	√	√		√	√	√	C	Engineering Drawing	UOBAB0201013	
√		√	√	√		√		√	√		√	C	Mathmetics	UOBAB0201014	
√			√	√	√		√	√		√	√	C	Principles of Producyion Engineering	UOBAB0201015	
√		√	√	√		√	√	√		√	√	C	English language	UOBAB1	
√	√		√	√		√			√		√	C	Arabic language	UOBAB2	

√			√	√		√	√		√		√	C	Extraction Metallurgy	UOBAB0201021	Semester two
√		√	√	√		√		√		√	√	C	Engineering Mechanics II	UOBAB0201022	
√	√	√		√			√	√		√	√	C	Computer Aided Engineering Drawing/ Auto CAD	UOBAB0201023	
√	√		√		√		√	√		√	√	C	Computer Programming	UOBAB0201024	
√		√		√		√		√	√		√	C	Freedom, Democracy	UOBAB0201025	

													and Human rights		
√	√	√	√	√		√	√		√	√	√	C	Elective-I	UOBAB0201026	
√	√		√		√		√	√		√	√	C	Freedom, Democracy and Human rights	UOBAB0201027	
√	√		√	√		√		√	√		√	C	Engineering Metallurgy I	UOBAB0201031	Semester three
√	√		√	√	√		√	√		√	√	C	Strength of materials I	UOBAB0201032	
√	√	√		√		√	√	√	√	√	√	C	Mathmetics	UOBAB0201033	

√	√	√	√	√		√	√	√	√	√	√	C	Nonmetallic Materials	UOBAB0201034	
√		√		√		√	√		√	√	√	C	Metallurgical Thermodyne mic	UOBAB0201035	
√		√	√	√		√		√		√	√	C	Computer Programming	UOBAB0201036	
√	√	√		√		√	√	√		√	√	C	Engineering Metallurgy II	UOBAB0201041	Semester four
	√		√		√		√	√		√		E	Elective-II	UOBAB0201042	

√		√	√	√	√		√	√		√	√	C	Chemical Metallurgy II	UOBAB0201043	
√	√	√		√		√		√	√	√	√	C	Welding Technology	UOBAB0201044	
√				√		√	√		√	√	√			UOBAB0201045	
√	√		√	√		√	√	√		√	√	C	English language	UOBAB0201046	

Course Description Form

1. Course Name:
Engineering Material Science
2. Course Code:
UOBAB0201011
3. Semester / Year:
semester
4. Description Preparation Date:
3/9/2024
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
63
7. Course administrator's name (mention all, if more than one name)
Name: Khalid M.Abed ..... Email: Mat.khalid mutashar@uobabylon.edu
8. Course Objectives

Course Objectives	This course aims to teach the student the types of materials involved in the construction and installation of engineering equipment used in industry. This course also studies the mechanical properties of engineering materials and how they differ according to the nature and composition of the material. It includes introducing the student to the crystalline structure of metallic elements and the extent of its impact on the mechanical properties of metal in addition to other properties. Introducing the student to ceramic, polymeric and composite materials, the mechanical behavior of engineering materials and their examination process

9. Teaching and Learning Strategies

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

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Introduction to engineering materials - definition of engineering materials - types - specifications - classification of engineering materials -	Direct lecture	Give abrupt questions to the students The classical discussion
2	4		Atomic Structure and the Periodic Table - types of bonds in engineering materials	Direct lecture	Give abrupt questions to the students The classical discussion
3	4		Crystalline – Non Crystalline and amorphous materials - Types of crystalline structure of materials	Direct lecture	Give abrupt questions to the students The classical discussion
4	4		Unit cell - The Crystals forms (- B.C.C) (F.C.C-H.C.P)- Miller Indices	Direct lecture	Give abrupt questions to the students The classical discussion
5	4		Mechanical properties of materials (stress-strain) -stress-strain curve)- ductility-failure	Direct lecture	Give abrupt questions to the students The classical discussion
6	4		Behavior Of Material Under Mechanical Loads	Direct lecture	Give abrupt questions to the students The classical discussion
7	4		Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit	Direct lecture	Give abrupt questions to the students The classical discussion

8	4		Thermal properties of materials (thermal expansion - thermal conductivity) Magnetic properties of materials - chemical properties of materials	Direct lecture	Give abrupt questions to the students The classical discussion
9	4		Iron - its most important ores - extraction - blast furnace -Carbon steel - its most important types - properties – uses -Alloy steel - the most important types - properties - uses	Direct lecture	Give abrupt questions to the students The classical discussion
10	4		- Non-ferrous metals (copper and its alloys - aluminum and its alloys - nickel and its alloys - - Cutting Tool Materials	Direct lecture	Give abrupt questions to the students The classical discussion
11	4		Ceramic materials - their properties, types and uses Glass -their types - industry - uses -	Direct lecture	Give abrupt questions to the students The classical discussion
12	4		Polymers - their properties, types and uses	Direct lecture	Give abrupt questions to the students The classical discussion
13	4		Composite materials - their properties, types and uses	Direct lecture	Give abrupt questions to the students The classical discussion
14	4		Powder metallurgy (methods of obtaining mineral powders - mechanical methods - physical and chemical methods - physical, mechanical and chemical properties of powders)	Direct lecture	Give abrupt questions to the students The classical discussion
15	4		Preparatory week before the final Exam	Direct lecture	Give abrupt questions to the students The classical discussion

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports .....etc

12. Learning and Teaching resources

Required textbooks (curricular books, if any) Main references (sources)	• Engineering Materials An Introduction to their Properties and Applications. M.F.Ashby and D.R.H.Jones Translated by Dr.J.T.AL-Haidary -"Materials science and engineering, an introduction " by Callister "Selection and use of engineering materials " by Charles&Cran
Main references (sources)	
Recommended books and references (scientific journals, reports,…)	
Electronic References, Websites	Google

Course Description Form

1. Course Name:
Engineering Mechanics I
2. Course Code:
UoBAB0201012
3. Semester / Year:
semester
4. Description Preparation Date:
6/9/2024
5. Available Attendance Forms:
weekly .....
6. Number of Credit Hours (Total) / Number of Units (Total)
63 .....
7. Course administrator's name (mention all, if more than one name)
Name: Basem Mohysen Al-Zubaidy Email: Mat.basem.mahsn@uobabylon.edu.iq
8. Course Objectives

Course Objectives	1. Introduction to Engineering Mechanics: Provide an overview of the fundamental principles and concepts of engineering mechanics. 2. Introduction to Statics: Understanding the fundamental concepts and principles of statics, including the definition of static equilibrium, forces, moments, and their vector representations. 3. Force Vectors: Developing the ability to analyze forces acting on particles and rigid bodies in two and three dimensions, including the resolution of forces into their components. 4. Equilibrium of Particles: Understanding the conditions for equilibrium of particles and applying them to solve problems involving forces acting on particles at rest. 5. Equilibrium of Rigid Bodies: Extending the concept of

	equilibrium to rigid bodies and analyzing the forces and moments acting on them. 6. Friction: Understanding the basic principles of friction and its effects on the equilibrium of objects and surfaces. Study the effects of friction on bodies in motion and at rest. Cover topics such as static and kinetic friction, coefficient of friction, and the analysis of frictional forces in engineering systems. 7. Center of Gravity and Centroids: Determining the center of gravity and centroids of various objects and using them to analyze equilibrium and stability. Applications and Problem Solving: Applying the concepts and principles of statics to solve engineering problems related to metallurgical engineering, such as analyzing the stability of structures, calculating forces in materials, and determining the equilibrium conditions of mechanical systems.
9. Teaching and Learning Strategies	
Strategy	1. Lectures: The professor will conduct lectures to deliver the fundamental concepts, principles, and theories of engineering mechanics - statics. They will explain the key topics, equations, and calculations, providing examples and illustrations to enhance understanding. 2. Interactive Discussions: In addition to lectures, there may be interactive discussions where students can ask questions, clarify doubts, and engage in group discussions. These sessions encourage active participation and foster a deeper understanding of the subject matter. 3. Problem-Solving Sessions: Engineering mechanics - statics heavily relies on problem-solving skills. To enhance students' ability to apply theoretical concepts to practical problems, problem-solving sessions may be conducted. Students can solve numerical problems, analyze real-world scenarios, and learn to apply appropriate statics principles to find solutions. 4. Laboratory Sessions: Depending on the availability of resources, laboratory sessions may be organized to provide hands-on experience with statics principles. Students may conduct experiments, use instruments to measure forces and moments, and analyze data to validate theoretical concepts learned in lectures. 5. Visual Aids and Simulations: Visual aids such as charts, diagrams, and videos may be used to illustrate concepts, demonstrate physical phenomena, and enhance understanding. Computer simulations and virtual experiments can also be employed to provide students with a realistic and interactive learning experience. 6. Assignments and Homework: Regular assignments and homework are typically given to students to practice and reinforce their understanding of the subject. These assignments may include numerical problems, theoretical questions, or analysis of real-world scenarios. 7. Tutorials and Office Hours: Professors or teaching assistants may offer tutorial sessions or office hours where students can seek additional help, ask questions, and receive individualized guidance on specific topics or problems. 8. Assessments: Periodic assessments such as quizzes, mid-term exams, and a final exam are conducted to evaluate students' comprehension of the subject. These assessments may include both theoretical and problem-solving components.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Fundamental concepts& principles, System of units	Direct lecture	Give abrupt questions to the students The classical discussion
2	3		Forces in a plane: Resultant of two forces, Resultant of several concurrent forces	Direct lecture	Give abrupt questions to the students The classical discussion
3	3		Resolution of a force, Addition of forces, Equilibrium of a particle	Direct lecture	Give abrupt questions to the students The classical discussion
4	3		Newton’s first law of a motion, Free body diagram	Direct lecture	Give abrupt questions to the students The classical discussion
5	3		Forces in space: Rectangular component of a force in space, Addition of forces in space, Equilibrium of a particle in space	Direct lecture	Give abrupt questions to the students The classical discussion
6	3		Principle of transmissibility, Moment of a force, Varignon’s theorem	Direct lecture	Give abrupt questions to the students The classical discussion
7	3		Moment of a couple, Equivalent couples, Addition of couples	Direct lecture	Give abrupt questions to the students The classical discussion
8	3		Equivalent systems of coplanar forces	Direct lecture	Give abrupt questions to the students The classical discussion
9	3		Equilibrium of rigid body in two dimensions	Direct lecture	Give abrupt questions to the students The classical discussion

10	3		Equilibrium of a two-force and of a three-force bodies	Direct lecture	Give abrupt questions to the students The classical discussion
11	3		Friction: the laws of dray friction; coefficient of friction, Angles of friction;	Direct lecture	Give abrupt questions to the students The classical discussion
12	3		Wedges, Square-threaded screw, Belt friction;	Direct lecture	Give abrupt questions to the students The classical discussion
13	3		Centroids of areas and lines, centers of gravity of a two-dimensional body	Direct lecture	Give abrupt questions to the students The classical discussion
14	3		Determination of centroids by integration	Direct lecture	Give abrupt questions to the students The classical discussion
15	3		Distributed loads on beams	Direct lecture	Give abrupt questions to the students The classical discussion

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports .....etc

12. Learning and Teaching resources

Required textbooks (curricular books, if any) Main references (sources)	• Vector Mechanics for Engineers Statics and Dynamics 10th c2013-Ferdinand P. Beer et.al., McGraw-Hill Education
Main references (sources)	
Recommended books and references (scientific journals, reports,…)	•Engineering Mechanics, Volume I, Statics, J.L. Meriam et.al., John Wiley and Sons, Inc.
Electronic References, Websites	https://www.coursera.org/learn/engineering-mechanics-statics

Course Description Form

1. Course Name:	
Engineering Drawing	
2. Course Code:	
UOBAB0201013	
3. Semester / Year:	
semester	
4. Description Preparation Date:	
3/9/2024	
5. Available Attendance Forms:	
weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
63	
7. Course administrator's name (mention all, if more than one name)	
Name: Abdulsameea Jasim Alkilabi ..... Email: mat.abualsamaa.jasim@uobabylon.edu.iq	
8. Course Objectives	
Course Objectives	Drawing is said to be the language of engineers. All material objects have a shape and form, which can be represented by a combination of known geometrical figures. A thorough grounding in drawing to represent these objects on a plane is considered very essential The aims of the module are: (1) to develop a knowledge of manual generated engineering drawing. (2) to create a variety of technical.
9. Teaching and Learning Strategies	
Strategy	1. Set up the drawing environment with the correct units in order to start producing drawings. 2. Drawing types: differences between general arrangement, assembly and detail drawings. 3. Layout: paper sizes, borders, title block, parts list. 4. Projection systems: first and third angle projection, projection symbols. 5. Lines and linework: line types and applications, thickness, leader lines and arrow heads. 6. Lettering and symbols: style, height, direction and location. Common symbols and

	abbreviations. 7. Fits and tolerances: fits and tolerances for holes and shafts. 8. Views: partial sections and rules associated with hatching. 9. Principles of dimensioning: projection and dimension lines, dimensioning methods, tolerance dimensions.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Introduction to Engineering Drawing • Overview of engineering drawing principles and importance. Link between engineering drawing and other subjects of study. • Introduction to different drawing instruments and their uses. Basic Tools- classification and brief description. • Care and maintenance of drawing material. • Necessity of dimensioning. Principles and method of dimensioning and dimensioning practice. Making of Centre Line, Section Line, Dimensioning Lines, etc.	Direct lecture	Give abrupt questions to the students The classical discussion
2	3		• Basic drawing techniques (lines, lettering, dimensioning). Types of lines, Selection of line thickness. Selection of Pencils. • Drawing sheets, different sheet sizes and standard layouts.	Direct lecture	Give abrupt questions to the students The classical discussion
3	3		Geometric Construction • Construction of common geometric shapes (circles, polygons, ellipses) • Tangents, intersections, and perpendiculars • Use of construction techniques in engineering drawing Concept of Drawing and concept of conic section and its simple properties.	Direct lecture	Give abrupt questions to the students The classical discussion
4	3		Concept of ellipse and its construction by various methods. Drawing of tangent and normal on ellipse. Concept of parabola and its construction by various methods.	Direct lecture	Give abrupt questions to the students The classical discussion

			Concept of hyperbola and its construction by various methods.		
5	3		Orthographic Projections • Introduction to orthographic projection system • Multiview projections: first angle and third angle projections	Direct lecture	Give abrupt questions to the students The classical discussion
6	3		• Principles of orthographic projection. Orthographic projection of simple objects.	Direct lecture	Give abrupt questions to the students The classical discussion
7	3		Projection of points on horizontal, vertical and auxiliary planes and its implication. Projection of lines on different planes, Length of line and its true inclination with different planes and its traces. Concept of orthographic projection of planes.	Direct lecture	Give abrupt questions to the students The classical discussion
8	3		Sectional Views • Introduction to sectional views • Types of sectional views (full section, half section, offset section)	Direct lecture	Give abrupt questions to the students The classical discussion
9	3		Sectioning techniques and conventions Concept of sectioning and drawing section lines, Need for drawing sectional views.	Direct lecture	Give abrupt questions to the students The classical discussion
10	3		Section of simple geometrical solids-cases involving different types of cutting planes. Conventional representation of materials.	Direct lecture	Give abrupt questions to the students The classical discussion
11	3		Auxiliary Views • Introduction to auxiliary views • Creating auxiliary views from given orthographic projections • Use of auxiliary views to represent inclined surfaces and true shapes	Direct lecture	Give abrupt questions to the students The classical discussion
12	3		Dimensioning and Tolerancing • Introduction to dimensioning principles • Different types of dimensions (linear, angular, radial) • Tolerances and geometric dimensioning and tolerancing (GD&T)	Direct lecture	Give abrupt questions to the students The classical discussion

13	3		Introduction to pictorial drawing. Brief description of different types of pictorial drawing viz Isometric, oblique and perspective and their applications. Concept of Isometric views. Isomeric Projection and Isometric Scale.	Direct lecture	Give abrupt questions to the students The classical discussion
14	3		• Introduction to isometric and oblique projections Isometric Projection of simple solids, frustum of solids, truncated solids and sets of simple solids. Concept of oblique and perspective views. Simple drawing of oblique views.	Direct lecture	Give abrupt questions to the students The classical discussion
15	3		• Construction of isometric and oblique drawings • Use of isometric and oblique drawings to visualize objects in 3D	Direct lecture	Give abrupt questions to the students The classical discussion

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports .....etc

12. Learning and Teaching resources

Required textbooks (curricular books, if any) Main references (sources)	• كراس الرسم الهندسي-عبد الرسول عبد الحسين
Main references (sources)	
Recommended books and references (scientific journals, reports,…)	• كتاب الرسم الهندسي-عبد الرسول عبد الحسين
Electronic References, Websites	

Course Description Form

1. Course Name:
Mathmetics
2. Course Code:
UOBAB0201014
3. Semester / Year:

semester
4. Description Preparation Date:
3/9/2024
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
45
7. Course administrator's name (mention all, if more than one name)
Name: Zaineb Fadhil Kadhim Email: mat.zainab.fadhil@uobabylon.edu.iq

8. Course Objectives	
Course Objectives	•Knowing the vectors ,dot product and cross product, knowledge the partial derivatives and applications. Studying the polar coordinates and double integrals And triple integrals . Calculating the area, volume and moment. Knowing the cylindrical and spherical coordinates. How can solving the differential equations and knowing sequences , arithmetic and geometric series.
9. Teaching and Learning Strategies	
Strategy	1- The lecture method 2- The discussion method

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	6	Knowing vectors	Knowing vectors and their quantities and directions	Direct lecture	Give abrupt questions to the students The classical discussion
3-4	6	Vectors product	Dot product and cross product	Direct lecture	Give abrupt questions to the students The classical discussion

5-6	6	Polar coordinates	Transformation from polar coordinates to Cartesian coordinates and vice versa	Direct lecture	Give abrupt questions to the students The classical discussion
7-8	6	Representation of polar coordinates	Drawing the polar functions	Direct lecture	Give abrupt questions to the students The classical discussion
9-10	6	Partial derivatives	How can calculate the slope and the chain rule	Direct lecture	Give abrupt questions to the students The classical discussion
11-12	6	Directional derivatives	Calculate the gradient and directional derivatives of function for more than one variable	Direct lecture	Give abrupt questions to the students The classical discussion
13-14-15	9	Applications of derivatives	Find the critical point and local maxima and local minima	Direct lecture	Give abrupt questions to the students The classical discussion

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports ..... etc

12. Learning and Teaching resources

Required textbooks (curricular books, if any) Main references (sources)	1- principal texts 2-methodical books 3-other additional sources
Main references (sources)	Mathematics (Thomas)
Recommended books and references (scientific journals, reports,…)	Elementary differential equations(William F.Trench),
Electronic References, Websites	Google, Google Scholar

Course Description Form

1. Course Name:

Principle of production engineering
2. Course Code:
UOBAB0201015
3. Semester / Year:
semester
4. Description Preparation Date:
7/9/2024
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
30
7. Course administrator's name (mention all, if more than one name)
Name: Wafa Mahdi Jodia Email: Mat.wafa.m@uobabylon.edu.iq

8. Course Objectives

Course Objectives	Introducing the student to the principles of production engineering. This course describes the principles and basics of some of the manufacturing processes for metals, which include some of the manual and mechanical operations and some issues related to these processes in addition to some of the formation processes and their laws.It also includes some traditional and unconventional casting and welding methods and the associated defects and methods of treatment. This course includes the practical aspect, as some of these processes are applied in the engineering workshops of the college.

9. Teaching and Learning Strategies

Strategy	1- Using the display screen 2- Discussion 3- Student groups 4- Experiential education 5- Interactive education

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1-3	9	Learn about plumbing methods, how to prepare the model, prepare the mold, and cast the metal	Introduction to manufacturing processes and classification of each method	Direct lecture to students	surprise exams
4+5	6	Inspection of the product and detection of defects by combination and non-coalition methods	Examination of defects and knowledge of their types and methods of detection	Direct lecture to students	surprise exams
6-8	9	Learn about the welding process and its types	Learn about traditional and non-traditional welding types	Direct lecture to students	surprise exams
9+10	6	Learn about manual operations	Defining each operating tool, its features and where to use it	Direct lecture to students	surprise exams
11-13	9	Learn about mechanical operations and some of the machines for each process	The use of some laws of the main movements of lathe operation	Direct lecture to students	surprise exams
14+15	6	Identify the formation processes and the advantages and disadvantages of each method	Discussing some of the laws of rolling and drawing of metals	Direct lecture to students	surprise exams final examination

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports ..... etc

12. Learning and Teaching resources

Required textbooks (curricular books, if any) Main references (sources)	1. Principles of Production Operations
Main references (sources)	1.Operation of engineering materials 2.introduction to basic manufacturing processes and workshop technology
Recommended books and references (scientific journals, reports,…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
English language
2. Course Code:
UOBAB0201016
3. Semester / Year:
semester
4. Description Preparation Date:
3/5/2024
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
60
7. Course administrator's name (mention all, if more than one name)
Name: Zaineb Fadhil Kadhim Email: mat.zainab.fadhil@uobabylon.edu.iq ....
8. Course Objectives

Course Objectives	Knowing all tense in the English language, knowing the difference between the present perfect simple and the present perfect continuous. Knowing the main verbs and auxiliary verbs. Knowing the modal auxiliary verbs and using them in request, permission, refusal
9. Teaching and Learning Strategies	
Strategy	1- Using the display screen 2- Discussion 3- Student groups 4- Experimental education 5- Interactive education
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	4	Knowing the English tenses	Introduction and classification of tenses	Direct lecture	Give abrupt questions to the students The classical discussion
3-4	4	The main verbs and auxiliary verbs	how can use the main and auxiliary verbs	Direct lecture	Give abrupt questions to the students The classical discussion
5-6	4	Using the present perfect	Solving exercises about the difference between present perfect and continues	Direct lecture	Give abrupt questions to the students The classical discussion
7-8	4	Using Narrative tenses	Exercise about present simple and present perfect	Direct lecture	Give abrupt questions to the students The classical discussion
9-10	4	Using the simple past and continuous past	Exercises about the simple past and past perfect	Direct lecture	Give abrupt questions to the students The classical discussion
11-12	4	How can make questions	Negative question and Tail questions	Direct lecture	Give abrupt questions to the students The classical discussion
13-14-15	6	Using the future tenses	Exercises about the tenses in future	Direct lecture	Give abrupt questions to the students The classical discussion

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports ..... etc

12. Learning and Teaching resources

Required textbooks (curricular books, if any) Main references (sources)	
Main references (sources)	New headway plus(Liz and John Soars)-Oxford
Recommended books and references (scientific journals, reports,…)	New headway plus (Liz and John Soars)Work Book

Electronic References, Websites	Google, Google Scholar

Course Description Form

1. Course Name:
Extraction Metallurgy
2. Course Code:
UOBAB0201021
3. Semester / Year:
semester
4. Description Preparation Date:
3/9/2024
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
45 .....
7. Course administrator's name (mention all, if more than one name)
Name: Sundus Abbas Jasim Email: mat.sundus.abbas@uobabylon.edu.iq
8. Course Objectives

Course Objectives	Introduce students to everything related to the principles of metal extraction, general methods of extraction, general methods of purification, extracting metals from their oxide sources, extracting metals from sulfide ores, extracting metals from halides, and methods for extracting precious metals.

9. Teaching and Learning Strategies

Strategy	3- The lecture method 4- The discussion method

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation

		Outcomes			method
1	2	Understanding the principles of extraction	Principles of extraction	Direct lecture	Give abrupt questions to the students The classical discussion
2	2	Understanding the principles of extraction	Principles of extraction	Direct lecture	Give abrupt questions to the students The classical discussion
3	2	Familiarity with the general methods of extraction	General methods of extraction	Direct lecture	Give abrupt questions to the students The classical discussion
4	2	Familiarity with the general methods of extraction	General methods of extraction	Direct lecture	Give abrupt questions to the students The classical discussion
5	2	Familiarity with the General methods of refining	General methods of refining	Direct lecture	Give abrupt questions to the students The classical discussion
6	2	Familiarity with the General methods of refining	Extraction of metals from oxide sources	Direct lecture	Give abrupt questions to the students The classical discussion
7	2	Student understanding of Extraction of metals from oxide sources	Extraction of metals from oxide sources	Direct lecture	Give abrupt questions to the students The classical discussion
8	2	Student understanding of Extraction of metals from oxide sources	Extraction of metals from oxide sources	Direct lecture	Give abrupt questions to the students The classical discussion
9	2	The student is familiar Extraction of metals from sulphide ores	Extraction of metals from sulphide ores	Direct lecture	Give abrupt questions to the students The classical discussion
10	2	The student is familiar Extraction of metals from sulphide ores	Extraction of metals from sulphide ores	Direct lecture	Give abrupt questions to the students The classical discussion

11	2	Understanding students of Extraction of metals from halides	Extraction of metals from halides	Direct lecture	Give abrupt questions to the students The classical discussion
12	2	Understanding students of Extraction of metals from halides	Extraction of metals from halides	Direct lecture	Give abrupt questions to the students The classical discussion
13	2	The student is familiar with Extraction of precious metals	Extraction of precious metals	Direct lecture	Give abrupt questions to the students The classical discussion
14	2	The student is familiar with Extraction of precious metals	Extraction of precious metals	Direct lecture	Give abrupt questions to the students The classical discussion
15	2	A review to warn the paragraphs that were explained in the previous lectures	Extraction review	Direct lecture	Give abrupt questions to the students The classical discussion

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports ..... etc

12. Learning and Teaching resources

Required textbooks (curricular books, if any) Main references (sources)	Extraction of nonferrous metals, H.S. Ray, R.Sridhar and K.P. Abraham Affiliated East West Press Pvt Ltd., New Delhi (2007).
Main references (sources)	1. H.S. Ray and A. Ghosh, Principles of extractive metallurgy,Wiley Eastern Ltd., New Delhi (1991) REFERENCE BOOKS: 1. W.H. Dennis, Extractive Metallurgy, Philosophical Library,New York (1965) 2. F. Habashi, Principles of Extractive Metallurgy, Vol.1, Gordon and Breach, New York (1969). 3. T. Rosenqvist, Principles of Extractive Metallurgy, McGraw Hill, New York (1983). 4. J.L. Bray, Nonferrous production metallurgy, Wiley, NewYork(1954).
Recommended books and references (scientific journals, reports,…)	

Electronic References, Websites	Google, Google Scholar

Course Description Form

1. Course Name:
Human rights and Freedom & Democracy
2. Course Code:
UOBAB0201025
3. Semester / Year:
semester
4. Description Preparation Date:
3/5/2024
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
63 ***** *****
7. Course administrator's name (mention all, if more than one name)
Name: Mustafa Akeel Hammed Email: Mat.mustafa.akeel@uobabylon.edu.iq
8. Course Objectives

Course Objectives	1. تعليم الطلاب والطالبات مبادئ حقوق الانسان والديمقراطية 2. التنمية القانونية والفكرية من مبادئ حقوق الانسان والديمقراطية 3. التعرف على الحقوق والحريات التي نصوص الدستور العراقي النافذ لسنة 2005. 4. صقل الموهبة الفكرية والقانونية للطلبة 5. التعرف على المبادئ العامة لحقوق الانسان والديمقراطية وتطورها.

9. Teaching and Learning Strategies

Strategy	طرائق التعليم والتعلم • العصف الذهني • التكليف بالواجبات الدراسية الخاصة بالمادة طرائق التقييم 1.أسئلة واجوبة 2.امتحانات شهرية 3.اعداد الامتحانات المفاجئة المسماة بـGuizes 4.الإجابة على الأسئلة 5.الامتحانات الشفهية والشهرية 6.القاء المحاضرة

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		الأنسان حقوق في أساسية مفاهيم	القاء	واجوبة أسئلة
2	2		الانسان لحقوق التاريخي التطور	القاء	واجوبة أسئلة
3	2		الانسان لحقوق القانونية المصادر	القاء	واجوبة أسئلة
4	2		للإنسان والشخصية المدنية الحقوق	القاء	واجوبة أسئلة
5	2		للإنسان السياسية الحقوق	القاء- DATA SHOW	واجوبة أسئلة
6	2		للإنسان والاجتماعية الاقتصادية الحقوق	القاء	Guizes
7	2		والفكرية الثقافية والحريات الحقوق	القاء	Guizes

8	2		الانسان حقوق حماية ضمانات	القاء	Guizes
9	2		التاريخي وتطورها الديمقراطية مفهوم	القاء- DATA SHOW	واجوبة أسئلة
10	2		الديمقراطية اشكال		واجوبة أسئلة
11	2		وشروط الديمقراطي النظام عناصر أو اركان نجاحه	القاء- DATA SHOW	واجوبة أسئلة
12	2		الديمقراطي النظام تقييم	القاء- DATA SHOW	واجوبة أسئلة
13	2		الحرية مفهوم	القاء- DATA SHOW	Guizes
14	2		العامة السلطات قبل من العامة الحريات تنظيم	القاء- DATA SHOW	Guizes
15	2		الحريات أنواع	القاء- DATA SHOW	واجوبة أسئلة

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports .....etc

12. Learning and Teaching resources

Required textbooks (curricular books, if any) Main references (sources)	ا.د عمار عباس الحسيني: حقوق الانسان ا.د حميد حنون : مبادئ حقوق الانسان أ.م فيل شلال عباس : حقوق الانسان والديمقراطية والحرية صبري سعيد : الديمقراطية

Main references (sources)	محاضرات أساتذة القانون حول حقوق الانسان والديمقراطية
Recommended books and references (scientific journals, reports,…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Computer Aided Engineering Drawing/ Auto CAD
2. Course Code:
UOBAB0201023 .....
3. Semester / Year:
semester
4. Description Preparation Date:
3/9/2024
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
63
7. Course administrator's name (mention all, if more than one name)
Name: Haydar H. Jaber Email: Mat.hayder.hassan.j@uobabylon.edu.iq
8. Course Objectives

Course Objectives	1. Learn sketching and taking field dimensions. 2.Take data and transform it into graphic drawings. 3. Learn basic engineering drawing formats. 4. Learn basic AutoCad skills. 5. Learn who draw 2D drawings in AutoCad. 6. Learn who draw 3D drawings in AutoCad.

9. Teaching and Learning Strategies

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

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Introduction to AutoCAD	Direct lecture	Give abrupt questions to the students The classical discussion
2	3		Starting with Sketching	Direct lecture	Give abrupt questions to the students The classical discussion
3	3		Working with Drawing Aids	Direct lecture	Give abrupt questions to the students The classical discussion
4	3		Editing Sketched Objects	Direct lecture	Give abrupt questions to the students The classical discussion
5	3		Layers, Working with Layers, Layer Tools	Direct lecture	Give abrupt questions to the students The classical discussion
6	3		Editing Sketched Objects II	Direct lecture	Give abrupt questions to the students The classical discussion

7	3		Creating Text and Tables	Direct lecture	Give abrupt questions to the students The classical discussion
8	3		Dimensioning and Detailing Your Drawings	Direct lecture	Give abrupt questions to the students The classical discussion
9	3		Editing Dimensions	Direct lecture	Give abrupt questions to the students The classical discussion
10	3		Dimension Styles	Direct lecture	Give abrupt questions to the students The classical discussion
11	3		Adding Constraints to Sketches	Direct lecture	Give abrupt questions to the students The classical discussion
12	3		Hatching Drawings	Direct lecture	Give abrupt questions to the students The classical discussion
13	3		Plotting Drawings In AutoCAD	Direct lecture	Give abrupt questions to the students The classical discussion
14	3		Template Drawings	Direct lecture	Give abrupt questions to the students The classical discussion
15	3		Working with Blocks	Direct lecture	Give abrupt questions to the students The classical discussion

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as dailypreparation, daily oral, monthly, or written exams, reports .....etc

12. Learning and Teaching resources	
Required textbooks (curricular books, if any) Main references (sources)	•AutoCAD program
Main references (sources)	
Recommended books and references (scientific journals, reports,…)	
Electronic References, Websites	

Course Description Form .....

1. Course Name:
Strength of Materials I .....
2. Course Code:
MeMtSm221313(3,2)
3. Semester / Year:
4. Description Preparation Date:
07/09/2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total):
72
7. Course administrator's name (mention all, if more than one name)

Name:Prof. Dr. Haydar Al-Ethari
Email: Dr.eng.alethari@uobabylon.edu.iq

8. Course Objectives

Course Objectives	The syllabus of the course is aimed not only at giving the students the ability to solve the problems of the strength of materials but to prepare them to deal with and understand other subjects related to this subject such as: design and selection of engineering materials, forming processes, mechanical metallurgy, mechanical behavior of materials, stress analyses and so on.

9. Teaching and Learning Strategies

Strategy	The main strategy that will be adopted in introducing this unit is to work on increasing students' knowledge of everything related to the strength of materials and to encourage students to participate in the discussion, while improving and expanding their critical thinking skills at the same time. This will be achieved through classes and interactive tutorials and by looking at the types of simple experiments that include some sampling activities that are related to the items of the subject and the manner must be interested to the students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1		Simple Stress, Analysis of internal force, Normal stress,			
Week 2		Shearing Stress, Bearing Stress			
Week 3		Thin-Walled cylinder			
Week 4		Simple Strain, Stress-strain diagram, Hooke's law			
Week 5		Poisson's ratio			
Week 6		statically indeterminate member			
Week 7		Thermal stresses			

Week 8		Torsion, Derivation of torsion formula			
Week 9		longitudinal shearing stress			
Week 10		Helical compression springs.			
Week 11		Beams, Shearing force diagram			
Week 12		Bending moment diagram			
Week 13		Stresses in beams, Location of the Neutral axis			
Week 14		Bending stress in the beams			
Week 15		Economic sections			
Week 16		Preparatory week before the final Exam			

11. Course Evaluation

Quizzes 10% (10), Assignments 10% (10), Projects / Lab. 10% (10), Report 10% (10), Midterm Exam 10% (10), Final Exam 50% (50),

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Ferdinand L.S., Andrew P., 1980, Strength of Materials, 3rd edition, Harper& Row, Publishers, New York.
Main references (sources)	
Recommended books and references (scientific journals, reports….)	1- Haydar Al-Ethari, 2022, Strength of materials, 1st edition, Dar Al-Sadiq cultural foundation, Hilla, Babylon, Iraq. 2- Hearn E.j., 1977, Mechanics of Materials, Vol.1&2., Pergamon Press, London. 3- James M.G., Timoshenko S.P., 1994, Mechanics of Materials, 3rd edition, Chapman&Hall. 4-Hibbeler R. C.,1997, Mechanics of Materials, Prentice Hall Inc., New Jersey.
Electronic References, websites	https://www.youtube.com/channel/UCuDw1wG1MD6DRdLVrKxzDgA

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Course Description Form

1. Course Name:
Fluid Mechanics
2. Course Code:
MeMtFm222525(2,0)

3. Semester / Year:
Semester
4. Description Preparation Date:
15/9/2024
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total):
30
7. Course administrator's name (mention all, if more than one name)
Name: Hayder kraidi Rashid Email: mat.hayder.k@uobabylon.edu.iq
8. Course Objectives

Course Objectives	Introducing the student to the basic principles of fluid mechanics with its various applications. Where viscosity and its units are studied and how to measure them. Then study fluids in a state of rest and how they affect different engineering applications in order to study the buoyancy force and factors affecting the stability of floating bodies. Also study and derive the laws of fluid flow with different engineering applications. flow, which are stratigraphic and turbulent flow with appropriate engine also includes dimensional analysis
9. Teaching and Learning Strategies	
Strategy	Cognitive goals . A1- Building integrated projects related fluid properties like viscosity application l and fluid flow behavior in many engineering applications . A2 - How to deal with engineering problems related with fluid flow and how to design integrated projects to solve such problems. A3-Study the boundary layer induced by fluid flow (internal and external flow) equation which is the first step to understand the heat transfer. Teaching and Learning Methods 1- Using the display screen 2- Discussion 3- Student groups 4- Experiential education 5- Interactive education

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	6	Principles and equations	The Concept of A Fluid (Newtonian And Non-Newtonian Fluid) Viscosity, Units of Viscosity, Dynamic	Direct lecture to Equilibrium of A Fluid Element Hydrostatic Pressure students	surprise exams

			Viscosity, Kinematic Viscosity Viscosity Measurements Equilibrium of A Fluid Element Hydrostatic Pressure		
4-5	5	Deals with theories and drive relations with many engineering examples	Equations of Motion and Potential Flow Conservation of Mass, Conservation of Momentum, Conservation of Energy, Differential Relations for Fluid Motion, Analysis of Rate of Deformation	Direct lecture to students	surprise exams
6-8	6	Using Many charts and theories related with fluid flow	The Concept of Laminar Fluid Flow The Concept of Turbulent Fluid Flow	Direct lecture to students	surprise exams
9-10	4	Using Moody chart and friction factor equations with tables of pipes connection types	Hydraulics of Pipe Systems, Basic Computations, Fluid Friction, Pipe Design and Pipe Materials	Direct lecture to students	surprise exams
11-13	6	Study the relations and drive the boundary layer equations	Similitude: Dimensional Analysis and Data Correlation And Boundary layer	Direct lecture to students	surprise exams
14-15	4	Theories and procedures	Non-Newtonian Fluids Classification of Non-Newtonian Fluids Apparent Viscosity Constitutive Equations Rheological Property Measurements Fully Developed Laminar Pressure Drops for Non-Newtonian Fluids Fully Developed Turbulent Flow Pressure Drops	Direct lecture to students	surprise exams final examination

11. Course Evaluation

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Any modern source about the course can be used
Recommended books and references (scientific journals, reports….)	Basic texts * Kreith, F.; Berger, S.A.; et. al. “Fluid Mechanics” Mechanical Engineering Handbook Ed. Frank Kreith Boca Raton: CRC Press LLC, 1999

	Verbeeten,Wilco M.H. " Computational Polymer Melt Rheology" Technische Universiteit Eindhoven, 2001. Ron darby "Chemical Engineering Fluid Mechanics", second edition, Marcel Dekker, Inc. 2001. Bruce E. Larock,Roland W.Jeppson, Gary Z. Watters,"Hydraulics of Pipeline systems" CRC Press LLC, 2000. M. Doi and S. F. Edwards "The Theory of Polymer Dynamics" 1994
Electronic References, websites	

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Course Description Form

1. Course Name:
Chemical Metallurgy II
2. Course Code:
MeMtCm222323(3,2)
3. Semester / Year:
Semester
4. Description Preparation Date:
3/09/2024

5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total):
125
7. Course administrator's name (mention all, if more than one name)
Name:Baraa Hassan hadi alkhaqani Email: Mat.baraa.hassan@uobabylon.eq.iq

8. Course Objectives

Course Objectives	1. Introducing the student to thermodynamics and its first and second laws. 2. Identify the most important thermodynamic properties such as entropy, enthalpy, free energy, and heat capacity. 3. Knowledge of the reaction kinetics and the degree and order of the reaction. 4. Acquisition of the skill of recognizing the voltages of standard electrodes. 5. Learn about surface tension, adsorption, diffusion, and catalysis.

9. Teaching and Learning Strategies

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

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1		Electrochemistry			
Week 2		Introduction ,electrolytes ,conduction in electrolytes			
Week 3		Types of electrolytes			
Week 4		The thermodynamics of the reaction at an electrode galvanic cell			

		,junction potential between toe electrolytes			
Week 5		The measurement of cell EMF and electrode potential ,reduction and oxidation potentials			
Week 6		Concentration cell			
Week 7		Mid-term Exam			
Week 8		Polarization			
Week 9		Interfacial phenomena introduction, surface energy and surface tension			
Week 10		Interfacial energy of other gas /liquid interfaces			
Week 11		Adsorption ,nucleation			
Week 12		Corrosion and types			
Week 13		The rusting of iron			
Week 14		Factors affecting corrosion			
Week 15		The prevention of corrosion			
Week 16		Preparatory week before the final Exam			

11. Course Evaluation

Quizzes 10% (10), Assignments 10% (10), Lab 10% (10), Report 10% (10), Midterm Exam 10% (10), Final Exam 50% (50),

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	"Chemical metallurgy", practice and principles,Kumar Chiranjib Gupta, Weinheim,Wiley Vch,2003.
Main references (sources)	
Recommended books and references (scientific journals, reports….)	"Chemistry for Engineers",Ambasta B.K., New Delhi ,Laxmi Publications Pvt.Ltd., 2009.
Electronic References, websites	https://web.vscht.cz/~vun/metallurgy.pdf

Course Description Form

1. Course Name:	
Mathematics	
2. Course Code:	
Me MtMa221717(4,0)	
3. Semester / Year:	
Year	
4. Description Preparation Date:	
15/9/2024	
5. Available Attendance Forms:	
Weekly	
6. Number of Credit Hours (Total) / Number of Units (Total):	
90	
7. Course administrator's name (mention all, if more than one name)	
Name: Hussein Fawzy Mahdy ..... Email: mat.hrbermany@uobabylon.edu.iq	
8. Course Objectives	
Course Objectives	Knowing the vectors ,dot product and cross product, knowledge the applications. Studying the polar coordinates and double integrals And triple integrals . Calculating the area, volume and moment. Knowing the cylindrical and spherical coordinates. How can solving knowing sequences , arithmetic and geometric series.
9. Teaching and Learning Strategies	

Strategy	1- Using the display screen 2- Discussion 3- Student groups 4- Experimental education 5- Interactive education

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	6	Knowing vectors	Knowing vectors and their quantities and directions	Direct lecture	Give abrupt questions to the students the classical discussion
3-4	6	Vectors product	Dot product and cross product	Direct lecture	Give abrupt questions to the students the classical discussion
5-6	6	Polar coordinates	Transformation from polar coordinates to Cartesian coordinates and vice versa	Direct lecture	Give abrupt questions to the students the classical discussion
7-8	6	Representation of polar coordinates	Drawing the polar functions	Direct lecture	Give abrupt questions to the students the classical discussion
9-10	6	Partial derivatives	How can calculate the slope and the chain rule	Direct lecture	Give abrupt questions to the students the classical discussion
11-12	6	Directional derivatives	Calculate the gradient and directional derivatives of function for more than one variable	Direct lecture	Give abrupt questions to the students the classical discussion
13-14-15	9	Applications of derivatives	Find the critical point and local maxima and local minima	Direct lecture	Give abrupt questions to the students the classical discussion

16-17-18	9	Double integrals	Solving double integrals	Direct lecture	Give abrupt questions to the students the classical discussion
19-20	6	Calculate the area	Calculate the area of rectangle regions and non-rectangle region	Direct lecture	Give abrupt questions to the students the classical discussion
21-22	6	Find the volume	Calculate the volume	Direct lecture	Give abrupt questions to the students the classical discussion
23-24	6	Triples integral	Knowing the triple integrals and applications for calculate the moment of inertia	Direct lecture	Give abrupt questions to the students the classical discussion
25-26	6	Cylindrical and spherical coordinates	Solving triple integration by using cylindrical and spherical coordinates	Direct lecture	Give abrupt questions to the students the classical discussion
27-28	6	Differential equations	Different methods to solve differential equations	Direct lecture	Give abrupt questions to the students the classical discussion
29-30	6	Sequences and series	The difference between the sequence and series	Direct lecture	Give abrupt questions to the students the classical discussion

11. Course Evaluation

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1-principal texts 2-methodical books 3-other additional sources
Main references (sources)	Mathematics (Thomas)

Recommended books and references (scientific journals, reports….)	Elementary differential equations(William F.Trench),
Electronic References, websites	Google, Google Scholar

Course Description Form

1. Course Name:
Programming in Visual Basic
2. Course Code:
Me MtPr222828(2,2)
3. Semester / Year:
2024/2025
4. Description Preparation Date:
17/4/2024
5. Available Attendance Forms:

Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
125 Hours
7. Course administrator's name (mention all, if more than one name)
Name: Rula Sami Khudair Email: mat.rula.sami@uobabylon.edu.iq
8. Course Objectives

Course Objectives	1. To develop students skills in the software of computer through training on the visual languages. 2. Understand how to deal with the scientific and engineering problems, and how convert these problems into programs. 3. This course deals with the Integrated Developing Environment of the visual basic programming language. 4. Teach the students how to build an integrated project to solve any scientific and engineering problems . 5. Discuss and explain all tools in the IDE of the language. 6. Understand the methods, tools and functions of the data input and output. 7. Develop skills of the student to improve their projects to adaptive it with any change in the problem. 8. Teaching new skills in other technical language as MATLAB technical and simulation language.

9. Teaching and Learning Strategies

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

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	4	1. The students will know all concepts and aspects of the visual programming languages. 2. Explain and discuss main the elements of the language environment. 3. Understand all tools in the tool box and how used it to build and modify any project to solve any problem . 4. Discuss and describe main stages for create new project. 5. Applying number of examples about the tools in the IDE of the language. 6. Solve some examples and problems	Introduction – visual languages structures and concepts	Theoretical + practical	Quizzes Assignments Projects / Lab. Report Midterm Exam Final Exam
Week 2	4		Main elements of the integrated development environment of visual basic programming language		
Week 3	4		Create new project		

Week 4	4	with the conditional statements. 7. Discuss the repetition statements especially "FOR---NEXT" statement. 8. Training to solve some sequences and engineering series using For---Next statement. 9. Study and understand the vectors (one dimension arrays) and two-dimension arrays (matrices). 10. Discuss how apply and solve arithmetic operations between matrices . 11. New skills in the MATLAB technical and simulation language	Studying tools in tool-box part1		
Week 5	4		Studying tools in tool-box part2		
Week 6	4		Conditional statement and decision making statement		
Week 7	4		Conditional repetition and non-condition repetition statements		
Week 8	4		Solve scientific and engineering problems as sequences and series using repetition statements.		

Week 9	4		One-Dimension arrays (vectors), Control Arrays		
Week 10	4		Multi-Dimension arrays (Matrices), Two-Dimension Arrays		
Week 11	4		Square Matrices, and main operations within and between the square matrices		
Week 12	4		Input and output methods, tools, and functions		
Week 13	4		String operations		

Week 14	4		Menus building and the graphs in Visual Basic		
Week 15	4		Review MATLAB technical and simulation language		
Week 16	4		Preparatory week before the final Exam		

11. Course Evaluation

Quizzes 10% (10), Assignments 10% (10), Projects / Lab. 15 % (15), Report 5% (5), Midterm Exam 10 % (10), Final Exam 50% (50)

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
English	
2. Course Code:	
Me MtE221818(2,0)	
3. Semester / Year:	
semester	
4. Description Preparation Date:	
20/9/2024	
5. Available Attendance Forms:	
weekly	
6. Number of Credit Hours (Total) / Number of Units (Total):	
60	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr . Ayad Mohammed Nattah ..... Email: ayad.natah@uobabylon.edu.iq	
8. Course Objectives	
Course Objectives	Knowing all tense in the English language, knowing the difference between the present perfect simple and the present perfect continuous. Knowing the main verbs and auxiliary verbs. Knowing the modal auxiliary verbs and using them in request, permission, refusal.
9. Teaching and Learning Strategies	

Strategy	1-Using the display screen 2-Discussion 3-Student groups 4-Experimental education 5-Interactive education

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	4	Knowing the English tenses	Introduction and classification of tenses	Direct lecture	Give abrupt questions to the students The classical discussion
3-4	4	The main verbs and auxiliary verbs	how can use the main and auxiliary verbs	Direct lecture	Give abrupt questions to the students The classical discussion
5-6	4	Using the present perfect	Solving exercises about the difference between present perfect and continues	Direct lecture	Give abrupt questions to the students The classical discussion
7-8	4	Using Narrative tenses	Exercise about present simple and present perfect	Direct lecture	Give abrupt questions to the students The classical discussion
9-10	4	Using the simple past and continuous past	Exercises about the simple past and past perfect	Direct lecture	Give abrupt questions to the students The classical discussion
11-12	4	How can make questions	Negative question and Tail questions	Direct lecture	Give abrupt questions to the students The classical discussion
13-14-15	6	Using the future tenses	Exercises about the tenses in future	Direct lecture	Give abrupt questions to the students The classical

					discussion
16-17-18	6	Expressing the quantity	Classification the count and uncounted nouns	Direct lecture	Give abrupt questions to the students The classical discussion
19-20	4	Using modal auxiliary verbs	Using auxiliary verbs in different sentences	Direct lecture	Give abrupt questions to the students The classical discussion
21-22	4	The relative sentences	The defining relative sentences and non defining relative sentences	Direct lecture	Give abrupt questions to the students The classical discussion
23-24	4	Expressing the habits	Knowing the good habits and bad habits	Direct lecture	Give abrupt questions to the students The classical discussion
25-26	4	Using if	Three condition in using if	Direct lecture	Give abrupt questions to the students The classical discussion
27-28	4	adjectives	Using the adjectives	Direct lecture	Give abrupt questions to the students The classical discussion
29-30	4	Adverbs and prepositions	The uses of adverbs and prepositions	Direct lecture	Give abrupt questions to the students The classical discussion

11. Course Evaluation

1.The classical discussion during the lecture
2.Make quizzes
3.(oral, monthly and final) examinations to assess the level of students intelligence

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1- principal texts 2-methodical books 3-other additional sources
Main references (sources)	New headway plus(Liz and John Soars)-Oxford
Recommended books and references (scientific journals, reports….)	New headway plus (Liz and John Soars)Work Book
Electronic References, websites	Google, Google Scholar