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

2026

Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: Petroleum Process Engineering

Scientific Department: Petroleum and Gas Refining Engineering

Academic or Professional Program Name: Undergraduate - Bachelor of Science in Petroleum and Gas Refining Engineering

Final Certificate Name: Bachelor of Science in Petroleum and Gas Refining Engineering

Academic System: Annual

Description Preparation Date: 8/ 3 /2026

File Completion Date: 8 / 3 / 2026

Signature:

Head of Department name:

Asst. Prof. Qahtan Adnan Mahmood

Date: 11 / 3 / 2026

Signature:

Scientific Associate name:

lect. Hamad Khudhair Mohammed

Date: 11 / 3 / 2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Lect. Adnan Ibrahim Ahmed

Date: 11 / 03 / 2026

Signature:

Asst. Prof. Ghassan H. Abdullah

Date: 11 / 3 / 2026

Approval of the Dean

1. Program Vision
Improving the department's educational level using the most recent ways.
2. Program Mission
Providing community service by developing the Petroleum sector in the governorate and across the nation.
3. Program Objectives
1- Providing students with the fundamentals of scientific knowledge in the field of Petroleum and gas refining engineering, as well as developing their professional skills in the areas of analytical and creative thinking through the use of information technologies, data analysis, and modern experimental methods in problem formulation and solution. 2- Preparing well-qualified engineers to enhance petroleum process engineering operations and handle dealings with them in all aspects of life, particularly in the petroleum industry. 3- Conducting academic research to stay up with the world scientific process, as well as applied research to turn engineering knowledge and ideas into practical reality by solving the country's challenges in all domains. 4- Contributing to the country's reconstruction in the petroleum and petrochemical industries sectors by providing engineering consultations, preparing economic feasibility studies, project designs, and technical services. 5- Implementing scientific sobriety as a characteristic of this department in line with international rules and standards.
4. Program Accreditation
N. A.
5. Other external influences

(Only different state institutions provide summer internship for third-year students.)

6 Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	7	18	11%	/
College Requirements	9	32	20%	/
College Requirements	22	112	69%	/
Summer internship	1	/	/	/
Others	/	/	/	/

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Four years	BSc-PGR	Bachelor of Science in Petroleum and Gas Refining Engineering	176	56

8. Expected learning outcomes of the program

Knowledge

A1- Broad education to understand the impact of engineering solutions globally and economically.

A2: The ability to collaborate in interdisciplinary teams.

A3- The ability of applying cognitive sciences such as mathematics, as well as applied and pure sciences.

A4- The ability to use modern methods, skills, and engineering tools in the petroleum and petrochemical sectors.

A5- The ability to build petroleum and petrochemical facilities that satisfy the necessary requirements while remaining within realistic cost limits.

A6- The ability to develop and perform experiments, analyze data, and translate them practically.

Skills

B1- Developing and enhancing the student's ability to utilize design programs in their area of specialty.

B2- Developing and improving the student's ability to cope with new technology relevant to the course terminology.

B3- Improving the student's ability to face challenges and dilemmas and find acceptable answers to them.

B4- Developing and improving the student's ability to apply academic knowledge in real-world situations.

Ethics

C1- The ability to make decisions.
C2- Student-driven innovation methods.
C3: The student's ability to think.
C4- Collecting the necessary data to complete a certain subject.
C5. Encouraging students' creative thinking and keeping up with the most recent scientific approaches for teaching and learning.

9. Teaching and Learning Strategies

1. Introducing course syllabus to students (lectures).

2. Numerous examples are provided to demonstrate the basic principles.

3. A standardized problem-solving approach that can be applied to any problem.

4. Use figures, drawings, and graphs to offer extensive explanations and reinforce what the learner is reading.

5. At the conclusion of each chapter, self-assessment exams with answers are provided to measure learning progress.

6. Discussing and solving many problems in tutorial sessions, which enables collaboration with one or more colleagues to share ideas and debate the content.

7. Assigning activities, such as drafting research papers, to help students develop self-learning and presenting abilities.

8. Conducting quizzes.

9. Taking semester and final examinations on the designated dates.

10. Informing students about how grades are calculated for students during the semester and their exam results, and discussing failures and successes.

11. Informing students of the textbooks and reference books they need in the course and make a questionnaire for previous years in order to improve the curriculum, improve the performance of teaching staff, and raise the scientific level of the student.

12. Training students in various state institutions (third stage).

10. Evaluation methods

1. Monthly and final exams.

2. Short assessment and classroom involvement.

3. Submitting homework, research papers, and scientific reports.

4. Laboratory work.

11. Faculty						
Faculty Members						
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	**Lecturer**
Professor	1	2			1	2
Assistant Professor	1	5			6	-
Lecturer	-	10			8	2
Assistant Lecturer	4	4			8	-

Professional Development
Mentoring new faculty members
Preparation programs in the form of open lectures and seminars with training workshops that include: 1. Introducing new faculty members to the university's vision, mission, organizational structure, policies and procedures. 2. Enabling new faculty members to obtain a better understanding of their rights and obligations in addition to the rights and duties of students. 3. Providing new faculty members with detailed information about the facilities and services of the university, college, and department. 4. Introducing new faculty members to the quality of the academic program and program accreditation. 5. Introducing new faculty members to learning resources and scientific research programs.
Professional development of faculty members
1. Using current teaching methods and techniques. 2. Sharing experiences with academics from various institutions and universities. 3. Help evaluate, construct, and analyze the curriculum. 4. Continuous course assessment based on comments from instructors and students. 5. Be open to new experiences.

12. Acceptance Criterion
1. High school graduates (applied branch). 2. Admission is open to both male and female. 3. The Central Admissions Department of the Ministry of Higher Education and Scientific Research determines the minimal acceptance grades. 4. The desire of the student or guardian to study in the department.
13. The most important sources of information about the program
1. textbooks. 2. The teaching staff. 3. Workshops, seminars and conferences. 4. Websites and electronic library. 5. The local market and its needs.
14. Program Development Plan
1. Continuously updating the curriculum to keep pace with the curricula of international and established universities and the needs of the local market. 2. Increase interest in the practical aspect by providing modern educational laboratory equipment and opening new laboratories. 3. Providing modern textbooks and reference books from international publisher to the department's library. 4. Incorporating scientific and technological developments at the global level into school curricula and practical experiences. 5. Design and implement development programs in the form of open lectures and seminars with training workshops for teaching and professional staff. 6. Make memorandums of understanding with state institutions in the field of exchanging experiences and conducting scientific research and studies.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
4	PPE	Petroleum pollution and its control	basic	*	*	*	*	*	*	*	*	*	*	*	*
	405														

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

الوصف الاكاديمي
المرحلة الاولى -الفصل الاول

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Analytical Chemistry**			**Module Delivery**	
Module Type	**Support**			☒ Theory ☐Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**PGR112**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	**UGI**		**Semester of Delivery**		**1**
Administering Department	**PGR**		**College**	**PPE**	
Module Leader	**Bayda Mhmood Ali**		**e-mail**	**baidaa.m.ali@tu.edu.iq**	
Module Leader's Acad. Title			**Module Leader's Qualification**		**MSc**
Module Tutor	**N/A**		**e-mail**	**N/A**	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	**1.0**	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Types of analytical chemistry, Errors, Statistical Treatment of Analytical Data and Separation Techniques, and Classifying Analytical Techniques. To study the Quantitative Methods of Analysis, Qualitative Methods of Analysis, and Applications of Analytical Chemistry. To study the Units for Expressing Concentration of Solutions, Stoichiometric Calculation, and Preparing Solutions. To know the Basic Tools and operations of Analytical Chemistry. To study the basics of spectroscopic methods of analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Understand the principles behind quantitative and qualitative analysis of chemical samples. Know how to design experiments to separate chemical components from mixtures. Understand the operating principles of analytical instrumentation, including UV-visible spectroscopy, atomic absorption spectroscopy, and electrochemical devices. Know how to use equilibrium chemistry to explain titration experiments.
Indicative Contents المحتويات الإرشادية	Part A: Definition of Analytical chemistry and solution concentration expressions [12 hr.]. Part B: Stoichiometric Calculations and Solutions Preparing [8 hr.]. Part C: Quantitative methods of analysis [20 hr.] Part D: Qualitative methods of analysis [16 hr.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to motivate students' participation in the class by raising questions and inquiries while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, symposiums, simple experiments that are interesting to the students, and self-assessment tests.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (20)	5 and 10	#1 - #5, #6 - #10
	Assignments	2	8% (8)	4 and 13	#1- #4 and #5 - #13
	Projects / Lab.	4	8% (8)	Continuous	All
	Seminar	1	4% (4)	13	#5, and #6 - #14
Summative assessment	Midterm Exam	2hr	10% (10)	7	#1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	The Analytical Process & Chemical Measurements
Week 2	Concentration units; Molarity, Formality, Normality, Molality
Week 3	Stoichiometric Calculations and Solutions Preparing
Week 4	Gravimetric Methods of Analysis/ Precipitation Gravimetry
Week 5	Gravimetric Methods of Analysis/ Volatilization Gravimetry
Week 6	Gravimetric Methods of Analysis/ Particulate Gravimetry
Week 7	Titrimetric Methods of Analysis/ Titrations Based on Acid–Base Reactions
Week 8	Titrimetric Methods of Analysis/ Based on Complexation Reactions (EDTA Titration)
Week 9	Titrimetric Methods of Analysis/ Titrations Based on Redox Reactions
Week 10	Titrimetric Methods of Analysis/ Precipitation Titrations
Week 11	Spectroscopic Methods of Analysis/ UV-Vis Spectroscopy
Week 12	Spectroscopic Methods of Analysis/ Atomic Absorption Spectroscopy
Week 13	Electrochemical Methods of Analysis
Week 14	Potentiometric Methods of Analysis
Week 15	**Preparatory week before final exam**
Week 16	**Final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Lab 1: Introduction to the tools of analytical chemistry**
Week 2	**Lab 2: preparation standard solutions**
Week 3	**Lab 3: Determination of moisture content in a soil/ coal sample**
Week 4	**Lab 4: Estimation of HCl and CH_3COOH in mixture using acid base indicators**
Week 5	**Lab 5: Determination of Carbon Dioxide in a polluted water sample**
Week 6	**Lab 6: Determination of iron as iron (III) oxide by Gravimetry**
Week 7	**Lab 7: Estimation of Al^{3+} in the given solution using standard EDTA solution (Back Titration)**
Week 8	**Lab 8: Laboratory Reagents & Solvents: solubility tests**
Week 9	**Lab 9: Determination of dye concentration by UV-vis spectroscopy**
Week 10	**Lab 10: Metal content by atomic absorption**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Handbook of analytical chemistry by Harvey**	**Yes**
Recommended	**Fundamentals of analytical chemistry by Skoog Douglas A.**	**No**
Websites		

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

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Computer Science			**Module Delivery**	
Module Type	Basic			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR114				
ECTS Credits	3				
SWL (hr/sem)	100				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		PGR	**College**	PPE	
Module Leader	- Sondos Hussein Youssif **Waladdin M. Shaher**		**e-mail**	sundus.h.y@tu.edu.iq	
Module Leader's Acad. Title		Asst. Lect	**Module Leader's Qualification**		MSc
Module Tutor	-		**e-mail**	-	
Peer Reviewer Name		-	**e-mail**	-	
Review Committee Approval			**Version Number**		1.0

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	The aim of this course is to provide students with a comprehensive understanding of the key concepts and principles of computer science through the study of information technology, history of computers, hardware, software, data communication, operating system, Microsoft office, internet, e-mail, and cybersecurity.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Knowledge of the development of computer science and its impact on society. 2. Understand the information technology. 3. Identify the computer hardware. 4. Identify the computer software. 5. Ability to deal with operating system (windows) 6. Ability to deal with computer software (Microsoft office) 7. Ability to deal with internet, network and E-mail. 8. Identify and analyze various cybersecurity threats and methods of prevention.		
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Basic concepts of information technology, hardware, memory, storage, computer performance, software, data communication, computer networks, licensing, software types [4 hrs]. 2. Operating system: Windows (starting, elements, drives, directory, files, editing, formatting, and control panel), Linux, and Mac (general background) [4 hrs]. 3. Microsoft Word: Starting, elements, page setup, typing, editing, formatting, drawing, inserting, printing, and deals with tables [4 hrs]. 4. Microsoft Excel: Starting, elements, workbook, worksheet, cells, columns, rows, typing, editing, formatting, operators, formula,		

	mathematical function, engineering functions, statistical functions, conditions and looping functions, chart, functions plotting, arrays, optimization (solver, goal seek), roots finding, solve of linear and non-linear set of equations [8 hrs]. 5. Microsoft PowerPoint: Starting, elements, slides, editing, formatting, animation, transition, and timing [4 hrs]. 6. Microsoft Visio: Introduction, drawings, flowcharts, data graphics, Microsoft SharePoint: Uses, interface [4 hrs]. 7. The internet and communications: Basic concepts, explorer, search engines, searching, e-mail, Microsoft outlook, Dropbox, Microsoft one drive, google drive [4 hrs]. 8. Cybersecurity: Threats, attacks, prevention, detection, mitigation [4 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The students will be actively engaged in the tasks, which will help them develop and hone their critical thinking abilities. This will be accomplished via lectures, labs, and assignments incorporating fascinating tasks. The course includes: 1- Numerous examples worked out in detail to illustrate the basic principles. 2- Figures, sketches, and diagrams to provide a detailed description and reinforcement of what you read. 3- Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (20)	3, 11	LO #1-5, and 6
	Assignments	-	-	-	-
	Laboratory	4	10% (10)	Continuous	
	Report	2	10% (10)	3, 14	LO #1, 2, and 7
Summative assessment	Midterm Exam	3 hr	10% (10)	7	LO #1-6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري والعملي

	Material Covered
Week 1	**Introduction to computer**: concepts of hardware and software with their components; concept of computing, date and information; connecting input/output devices and peripherals to CPU.
Week 2	**Computer Components**: computer portions, hardware parts, I/O units, memory types
Week 3	**Computer Components(cont.):** basic CPU components, computer ports, personal computer, personal computer(features and types).
Week 4	**Operating system and graphical user interface GUI:** Operating systems; basic of common operating systems: the user interface , using mouse techniques
Week 5	**Operating system and graphical user interface GUI (cont.):** use of common icons, stats bar, using menu and menu-selection, concept of folders and directories, operating and closing of different windows; creating short cuts
Week 6	**Word processing:** Word processing basic, basic features of word processors, opening and closing of documents, text creation and manipulation; formatting text and paragraphs, using templates for document creation
Week 7	**Word processing (cont.):** creating and managing tables, utilizing styles and themes, spell check and grammar tools, using headers and footers
Week 8	**Spread sheet**: introduction to Spread sheet software, creating and formatting worksheet. Sorting and filtering date, using formulas and functions.
Week 9	**Spread sheet(cont.):** using formulas and functions, using pivot tables for date analysis, date validation and error checking, data visualization: creating charts and graphs
Week 10	**Presentation software:** introduction to presentation software, overview of popular presentation tools, creating a new presentation, using templates and themes, inserting and formatting text and image, transition and animation effects
Week 11	**Presentation software (cont.):** using speaker notes and timers, advanced features: hyperlinks and action buttons, troubleshooting common presentation issues, future trends presentation technology
Week 12	**Introduction to internet and web browsers:** computer networks basic; LAN, WAN; Concept of internet and its application; connecting to internet
Week 13	**Introduction to internet and web browsers (cont.):** word wide web; web browsing software's search engines; understanding URL; domain name; IP address

Week 14	**Communications and emails:** basics of electronic mail; getting an email account; sending and receiving emails; accessing sent emails; using emails; document collaboration
Week 15	**Introduction to cloud computing and services**: definition of cloud computing and its concept, cloud-based office suites(office 365 and Google workspace), Google docs, Google sheets, Google drive, Google meet
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Computer and software, D. Mohammed Bilal Zoubi, D. Ahmed Acharayah, D. Munib Qteishat.	Yes
Recommended Texts	Computer Science Illuminated, Nell Dale and John Lewis, 7th Ed., 2020.	No
Websites	-	

APPENDIX:

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

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information

المادة الدراسية معلومات

Module Title	Engineering Drawing	**Module Delivery**	
Module Type	Basic	☒ **Theory**	
Module Code	PGR116	☐ **Lecture**	
ECTS Credits	3	☒ **Lab**	
SWL (hr/sem)	75	☐ **Tutorial** ☐ **Practical** • ☐ **Seminar**	

Module Level	UG1	**Semester of Delivery**	1
Administering Department	PGR	**College**	PPE
Module Leader	Hamad Khudhair Mohammed	**e-mail**	hamadalkhalid@tu.edu.iq
Module Leader's Acad. Title	Asst. Lecturer.	**Module Leader's Qualification**	MSc.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval	-	**Version Number**	1.0

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	
Module Aims, Learning Outcomes and Indicative Contents **الإرشادية والمحتويات التعلم ونتائج الدراسية المادة أهداف**			
Module Aims **أهداف المادة الدراسية**	1. To introduce the students the using of drawing instruments. 2. To know about different types of lines and use of different types of pencil in an engineering draw. 3. To know about different types of projection. 4. To know projection of points, straight lines solids etc. 5. To introduce the students to use scales and orthographic projections. 6. To know different types of surfaces. 7. To know the projections of the lines inclined 8. To represent the object in 3D view through isometric views. 9. To know about isometric projection. 10. The student will be able to represent and convert the isometric view to orthographic view.		
Module Learning Outcomes **مخرجات التعلم للمادة الدراسية**	1. Get information about the important tools for engineering drawing. This will give student basic knowledge of technical drawings professions and means of communications to others. 2. Learning how to draw the shapes, angles and lines and others which is essential for engineer. 3. Develop student's imagination and ability to represent the shape size and specifications of physical objects. 4. Understand the main idea of using dimension for engineering drawing. 5. Familiarize with different drawing equipment, technical standards and procedures for construction of geometric figures. This will give students ability to draw three dimension objects on the paper and to draw the pectoral drawings. 6. Explain the principle of projection and sectioning.		

	7. Understand the intersection, development of surface of body and fasteners. 8. Learning the main idea from assembly and detail drawing.
Indicative Contents **المحتويات الإرشادية**	In past years, all that was available were drawing boards, papers, rulers, calipers, and others. While these instruments are still available today for manual drawings, such drawings are not suitable for contemporary manufacturing. • This is because most CNC systems today can read the information right from the files. Thus, they can easily produce a cutting program as required. Handmade drawings would just make this more cumbersome for engineers. • The advent of computer-aided design (CAD) software has made things a lot easier. This software comes with several advantages over manual drawings. You can use CAD to make drawings from scratch. However, the easier option will be first to make a 3D model. Then, you can create your drawings from there.
Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	Engineering drawing includes a description of the manufacturing process. Thus, it conveys engineering ideas for a design process. It may also provide records of already existing components. Engineering drawing is not just an illustration. Rather, its intention is to describe the shapes and sizes of components. Such descriptions may also include specifications of acceptable variations, limits, materials, and others. The drawings can be of various forms, ranging from oblique to isometric. The drawings also include a series of projections that show various angles of the components. All of these are aimed at getting the products to meet requirements.

Student Workload (SWL) **الحمل الدراسي للطالب**			
Structured SWL (h/sem) **الفصل خلال للطالب المنتظم الدراسي الحمل**	45	**Structured SWL (h/w)** **أسبوعيا للطالب المنتظم الدراسي الحمل**	3
Unstructured SWL (h/sem) **خلال للطالب المنتظم غير الدراسي الحمل**	30	**Unstructured SWL (h/w)** **أسبوعيا للطالب المنتظم غير الدراسي الحمل**	2

الفصل			
Total SWL (h/sem) **الفصل خلال للطالب الكلي الدراسي الحمل**	75		

Module Evaluation
الدراسية المادة تقييم

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5, 14	LO# 1-4, 8-10
	Assignments	14	20% (20)	Continuous	
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	2	10	9	
	Final Exam	3	50	16	All
Total assessment					

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction
Week 2	Engineering graphic instruments and their using
Week 3	engineering drawing lines
Week 4	engineering drawing lines
Week 5	Graphic geometry
Week 6	Graphic geometry
Week 7	Graphic projection theory
Week 8	Graphic projection theory
Week 9	Dimensions
Week 10	Missed views
Week 11	Missed views

Week 12	Isometric drawing and sketching
Week 13	Isometric drawing and sketching
Week 14	Sectional view
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources **مصادر التعلم والتدريس**		
	Text	**Available in the Library?**
Required Texts	Engineering drawing الخفاف/الرسم الهندسي	Yes
Recommended Texts		
Websites		

APPENDIX:

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

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	English language			**Module Delivery**	
Module Type	Basic			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR117				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		PGR	**College**	PPE	
Module Leader	Ahmed Mhmood Shihab		**e-mail**	-	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		PhD
Module Tutor	-		**e-mail**	-	
Peer Reviewer Name		-	**e-mail**	-	
Review Committee Approval			**Version Number**		1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	This course is designed to provide petroleum and gas refining students with an in-depth understanding and comprehension of the essential grammars in the English language that are typically used in writing and/or speaking, along with selecting the correct method of speaking and/or listening the vocabulary (phonetics and orthography) by employing common phrases and words. Also, emphasize the use of technical English (reading passages) as the core of chemical engineer work. This course also seeks to develop the student's ability to implement and organize knowledge in the English language, so that he or she can use them appropriately and without difficulty in everyday situations.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Acquire a wide range of special terms vocabulary. 2. Recognize and use a variety of reading strategies while reading, citing, and summarizing engineering material. 3. Create brief technical presentations using material obtained from the readings, and identify and use different presenting techniques. 4. Acquire the knowledge necessary to design and carry out mock technical talks of the kind often held in engineering contexts. 5. Write a report similar to those typically produced by engineering students and working engineers (such as an incident report or a progress report) by comparing and contrasting the structure and language features of such reports. 6. Improve your ability to interact with others by taking part in class and group projects.		
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Units (1-14) in the text book [28 hrs].		
Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	The students will be actively engaged in the tasks, which will help them		

	develop and hone their critical thinking abilities. This will be accomplished via lectures, interactive discussion, and assignments incorporating fascinating tasks. The course includes: 1- Numerous examples worked out in detail to illustrate the basic principles. 2- Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning. 3- Many problems will be discussed and solved in the lecture classes, which offer working with one or more classmates to exchange ideas and discuss the material.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	19	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	6, 13	LO units 1-4, 8-12
	Assignments	4	10% (10)	Continuous	
	Seminars	2	10% (10)	4, 11	LO units 2, 3, 9, and 10
	Reports	-	-	-	-
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO units 1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Unit one/ New headway plus beginner student's and work book
Week 2	Unit two/ New headway plus beginner student's and work book
Week 3	Unit three/ New headway plus beginner student's and work book
Week 4	Unit four/ New headway plus beginner student's and work book
Week 5	Unit five/ New headway plus beginner student's and work book
Week 6	Unit six/ New headway plus beginner student's and work book
Week 7	Unit seven/ New headway plus beginner student's and work book
Week 8	Unit eight/ New headway plus beginner student's and work book
Week 9	Unit nine/ New headway plus beginner student's and work book
Week 10	Unit ten/ New headway plus beginner student's and work book
Week 11	Unit eleven/ New headway plus beginner student's and work book
Week 12	Unit twelve/ New headway plus beginner student's and work book
Week 13	Unit thirteen/ New headway plus beginner student's and work book
Week 14	Unit fourteen/ New headway plus beginner student's and work book
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	New headway plus beginner student's and work books, Liz and John Soars.	Yes
Recommended Texts	New headway beginner student's and work books	No
Websites	-	

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**

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

Note:

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Principles of process engineering I	**Module Delivery**	
Module Type	Core	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR111		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGI	**Semester of Delivery**	1
Administering Department	PGR	**College**	PPE
Module Leader	Hamad Khudhair Mohammed	**e-mail**	
Module Leader's Acad. Title	lect	**Module Leader's Qualification**	MSc
Module Tutor	Hamad K. Mohammed	**e-mail**	hamadalkhalid@tu.edu.iq
Peer Reviewer Name	-	**e-mail**	-
Review Committee Approval		**Version Number**	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	This course is intended to serve as an introduction to the fundamentals and techniques utilized in the fields of chemical and petroleum engineering. It provides the foundational skills, knowledge, and professional practice necessary for the successful completion of undergraduate and postgraduate petroleum refining engineering studies. The course will cover concepts ranging from basics such as units, dimensions, and stoichiometry to the simultaneous application of material balances with and without occurrence of chemical reaction. Its primary objective is to teach you how to systematically formulate and solve material balance problems. In addition, this course serves to introduce you to the scope of processes that petroleum refining engineers deal with in the petroleum industry.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Deal with systems of units (primary and derivative), conversion of units and dimensional consistency for validation of an equation. 2. Identify and understand the unit operations involved in a process, draw flowcharts, and develop relationships between process variables. 3. Ability to choose an appropriate basis and effectively employ the various units associated with density, concentration, temperature, and pressure and calculate the average molecular weight of a mixture. 4. Develop a conceptual understanding of material balances and understand the features of open, closed, steady-state, and unsteady-state systems. 5. Apply the ten-step strategy to solve problems that do not involve chemical reactions. 6. Determine the stoichiometric quantities of reactants and products in moles or mass given the chemical reaction. 7. Identify the limiting and excess reactants in a reaction, and calculate the fraction or percent excess reactant(s); the percent conversion,		

	or completion; the yield; and the extent of reaction apply it in material balance calculations. 8. Formulate and solve material balances using species and element balances. 9. Understand the meaning of stack gas, flue gas, orsat analysis, dry basis, wet basis, theoretical air (oxygen), and excess air (oxygen), and employ these concepts in combustion problems. 10. Understand the purpose of recycle, bypass, and purge streams. 11. Apply the ten-step strategy to solve multi-unit steady-state problems (with and without chemical reactions) involving sequential, recycle, and/or bypass, and/or purge streams. 12. Understand in a general sense how material balances are used in industry.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Definition of chemical engineering, Petroleum and gas refining engineering, Flow sheet and representation of a chemical process (PFD), The difference between a chemist and a chemical engineer. [2 hrs]. 2. Dimensions, units, symbols and conversion factors, Dimensional consistency, Precision and significant figures, Density and specific gravity, Temperature, Pressure, The mole unit, Composition and concentration, Basis of calculation, Principles and expressions of stoichiometry [8 hrs]. 3. Concepts of material balance and general strategy for solving material balance problems [4 hrs]. 4. Material balances without chemical reactions [8 hrs]. 5. Material balances with chemical reactions, stoichiometry, extent of reaction, limiting and excess reactants, conversion and degree of completion, selectivity, and yield [12 hrs]. 6. Material balances with multiple chemical reactions and element material balances [4 hrs]. 7. Material balances for combustion processes [8 hrs]. 8. Material balances involving multi-unit systems, recycle, bypass and purge streams [12 hrs].
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	

Strategies	The students will be actively engaged in the tasks, which will help them develop and hone their critical thinking abilities. This will be accomplished via lectures, interactive tutorials, and assignments incorporating fascinating tasks. The course includes: 1- Numerous examples worked out in detail to illustrate the basic principles. 2- A consistent strategy for problem solving that can be applied to any problem. 3- Figures, sketches, and diagrams to provide a detailed description and reinforcement of what you read. 4- Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning. 5- Many problems will be discussed and solved in the tutorial classes, which offer working with one or more classmates to exchange ideas and discuss the material.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	87	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	88	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	4, 11	LO #1, 2, 3, 7, 8 and 9
	Assignments	4	10% (10)	Continuous	
	Case study	2	10% (10)	6, 13	LO #1-5, and 10, 11
	Report	-	-	-	-
Summative assessmen	**Midterm Exam**	2 hr	10% (10)	7	LO #1-7

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	- Introduction - Dimensions, units, symbols and conversion factors, dimensional consistency, precision and significant figures
Week 2	Density and specific gravity, temperature, and pressure
Week 3	The mole unit, composition and concentration, basis of calculation, principles and expressions of stoichiometry
Week 4	Concepts of material balance
Week 5	Material balances without chemical reactions
Week 6	Material balances without chemical reactions
Week 7	Material balances with chemical reactions.
Week 8	Material balances with chemical reactions.
Week 9	Material balances with chemical reactions.
Week 10	Material balances with multiple chemical reactions
Week 11	Material balances for combustion processes
Week 12	Material balances involving multi-unit systems, recycle, bypass and purge streams
Week 13	Material balances involving multi-unit systems, recycle, bypass and purge streams
Week 14	Material balances involving multi-unit systems, recycle, bypass and purge streams
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	David M. Himmelblau, James B. Riggs, Basic principles and calculations in chemical engineering, 8th edition, 2012.	Yes
Recommended Texts	Richard M. Felder, Ronald W. Rousseau, Lisa G. Bullard, Elementary principles of chemical processes, 4th edition, 2016.	No
Websites	-	

APPENDIX:

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

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS I			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR113				
ECTS Credits	**6**				
SWL (hr/sem)	150				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	PGR		**College**	PPE	
Module Leader	Omar Ibrahim farhan		**e-mail**		
Module Leader's Acad. Title	Asst. Lect.		**Module Leader's Qualification**	Msc	
Module Tutor			**e-mail**		
Peer Reviewer Name	-		**e-mail**	-	
Review Committee Approval			**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى

Prerequisite module	none	**Semester**	
Co-requisites module	None	**Semester**	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	Provide the students with the required basics of mathematics, functions, derivatives and its engineering applications , trigonometric functions and conic sections		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to deal with functions and graphs. 2. Ability to find the domain and range in addition to continuity. 3. Ability to find the limits and derivatives of ordinary and trigonometric. 4. Ability to learn many applications of differentiation 5. Ability to find the limits of a functions		
Indicative Contents المحتويات الإرشادية	1-Review for secondary Algebra,Numbers, Sets, Intervals, Absolute value. (2hr) 2- Functions: Domain, Range, Methods of representation, Types of functions and their graphs. Relations: Domain, Range, Symmetry and graphs. (8hr) 3-Analytical Geometry : Coordinate system in plane , linear function Equations of a line , distance formula , Midpoint formula ,distance between point and line , parallel and perpendicular lines , angle between tow lines. (6hr) 4-Trigonometric function: Types of trigonometric function, Trigonometric relation, Identities, Domain, Range and graphs of trigonometric functions. (8hr) 5-Limits,Continuous and discontinuous functions and their theorems.(8hr) 6- The derivatives, rules of derivatives, higher order derivatives,Chain rule ,Implicit differentiation, Differentials Parametric equations. (8hr) 7-derivative applications (slope , related rate of change, optimization, curve sketching, Lahopetal rule for limit)(12hr) 8- Sections of a cone : (circle , parabola , Ellipse , Hyperbola) (4hr)		
Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	The students will be actively engaged in the tasks, which will help them develop and hone their critical thinking abilities. This will be accomplished		

	via lectures, interactive tutorials, and assignments incorporating fascinating tasks. The course includes: 1- Numerous examples worked out in detail to illustrate the mathematics. 2- A consistent strategy for problem solving that can be applied to any problem. 3- Figures, sketches, and diagrams to provide a detailed description and reinforcement of what you read. 4- Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning. 5- Many problems will be discussed and solved in the tutorial classes, which offer working with one or more classmates to exchange ideas and discuss the material

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	30%	7,13	LO # 1-6,7-12
	Assignments	4	10%	continous	
	Projects / Lab.	-			
	Report	-			
Summative assessment	**Midterm Exam**	3	10%	10	#1-9
	Final Exam	3	50%	16	all
Total assessment			100%		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Review for secondary Algebra (Solve some examples by using English language). Numbers, Sets, Intervals, Absolute value.
Week 2	Functions: Domain, Range, Methods of representation, Types of functions and their graphs. Relations: Domain, Range, Symmetry and graphs.
Week 3	Analytical Geometry : Coordinate system in plane , linear function Equations of a line , distance formula , Midpoint formula ,distance between point and line , parallel and perpendicular lines , angle between tow lines.
Week 4	Trigonometric function: Types of trigonometric function, Trigonometric relation, Identities, Domain, Range and graphs of trigonometric functions.
Week 5	Limits
Week 6	Continuous and discontinuous functions and their theorems
Week 7	The derivatives, rules of derivatives, higher order derivatives
Week 8	Chain rule Implicit differentiation, Differentials Parametric equations
Week 9	Slope, derivative applications (speed, acceleration). Hospitals rule (for Limit)
Week 10	Related Rates of change
Week 11	Maximum and Minimum problems, Critical and Inflection points.
Week 12	Maximum and Minimum problems, Critical and Inflection points.
Week 13	Curve sketching.
Week 14	Sections of a cone : (circle , parabola , Ellipse , Hyperbola)
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		yes

	Calculus – Thomas 2012	
Recommended Texts	James and Stewart, 2003	no
Websites		

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
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Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

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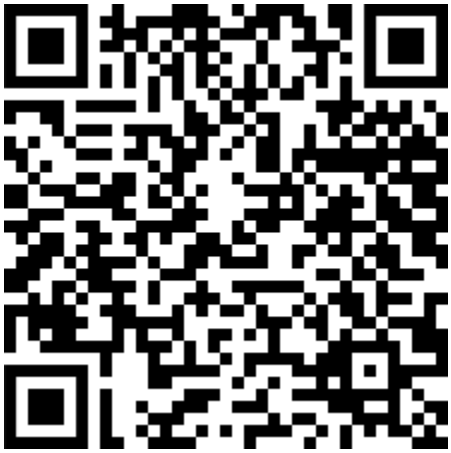

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ENGINEERING MECHANICS AND STRENGTH OF MATERIALS			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR115				
ECTS Credits	**4**				
SWL (hr/sem)	100				
Module Level	1		**Semester of Delivery**	1	
Administering Department	PGR		**College**	PPE	
Module Leader	**Dr.Mugdad Hamid**		**e-mail**		
Module Leader's Acad. Title	Asst. Prof		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		

Review Committee Approval	10/6/2023	**Version Number**	1.0

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Provide the students with the required basics of engineering mechanics, Resolution of a forces, Resultant of a force system, Moments and Couples, Equilibrium, Moments of Inertia (Areas), Moments of Inertia (mass), Friction. 2. Enabling the student to study the concepts of engineering mechanics and their applications in statics. 3. This course covers basic concepts of strength of material, Simple stress- Normal stress, Shearing stress- Bearing stress, Thin – walled cylinders, Simple strain –Hooks; law, Axial deformation, Statically Indeterminate Members, Thermal stresses, Torsion- Torsion formulas. 4. To understand Shear and moment in beams, Stresses in beams- bending stresses, Deflection and slope in beams.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to deal with forces and their resolution 2. Ability to deal with Equilibrium, Moments and Couples, Moments of Inertia and their calculations. 3. Ability to find the friction. 4. Ability to deal with strength of material, Simple strain and Simple stresses and their calculations. 5. Ability to deal with Shear and moment in beams, Stresses in beams- bending stresses, Deflection and slope in beams.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Definition of mechanical engineering and its relationship to oil and gas refining engineering, and ways to benefit from the science of

	mechanical engineering [2 hrs]. 2. Dimensions, units, symbols and conversion factors, basic concepts of engineering mechanics, Fundamentals of static and dynamic, Analysis of forces, Principles and Analyze the forces acting on the bodies. [8 hrs]. 3. Concepts of resultant forces, methods of calculating its, moments resulting from the effect of forces on bodies, and its applications [4 hrs]. 4. . Equilibrium of the body, determining the center of gravity of the body [4 hrs]. 5. Utilizing moment of inertia calculations for areas and masses [8 hrs] 6. Dealing with friction in the surfaces of objects [8 hrs]. 7. Concepts of strength of materials, definitions of stress and strain, its types, and its effects on bodies [8]. 8. Sections and structures, bends and torsions resulting from loads and their effects [12].
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The students will be actively engaged in the tasks, which will help them develop and hone their critical thinking abilities. This will be accomplished via lectures, interactive tutorials, and assignments incorporating fascinating tasks. The course includes: • Numerous examples worked out in detail to illustrate the basic principles. • Figures, sketches, and diagrams to provide a detailed description and reinforcement of what you read. • A consistent strategy for problem solving that can be applied to any problem. • Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning. • Many problems will be discussed and solved in the tutorial classes, which offer working with one or more classmates to exchange ideas and discuss the material.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	41	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20%(10)	4, 11	LO #1, 2, 3, 7, 8 and 9
	Assignments	4	10%(10)	Continuous	
	Case study	2	10%(10)	6, 13	LO #1-5, and 10, 11
	Report	-	-	-	-
Summative assessment	**Midterm Exam**	3	10%(10)	7	LO #1-7
	Final Exam	3	50%(50)	16	All
Total assessment			100%(100Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fundamental and Scope of Mechanics, Preview of static, Units and Dimension.
Week 2	Resultants of force systems
Week 3	Principle of moment, Coplanar Applications, couples.
Week 4	Equilibrium of force system, Equilibrium applications
Week 5	Trusses and Frames

Week 6	Centroids and Center of gravity
Week 7	Moments of Inertia, Radius of gyration,(Areas and mass)
Week 8	Friction, applications
Week 9	Mid-term Exam + Principles of strength of material
Week 10	Stress, type of stress (Simple, Normal, Shearing, Bearing)
Week 11	Strain, type of strain, Simple strain –Hooks; law
Week 12	Torsion- Torsion formulas
Week 13	Stresses in beams- bending stresses(Unsymmetrical, Built- up)
Week 14	Deflection and slope in beams
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Engineering mechanics statics, sixth edition, J.L. Meriam, L.G. Kraige • Hibbeler , 10th edition , 2005	yes
Recommended Texts	• Engineering Mechanics by Hibbeler 10th edition , 2012	yes

	• Singer “strength of materials” 3rd edition,1980 and 4th edition	
Websites		

APPENDIX:

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

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

الوصف الاكاديمي
المرحلة الاولى -الفصل الثاني

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Human Rights and Democracy (حقوق الانسان والديمقراطية)	**Module Delivery**	
Module Type	Suplement	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR125		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGII	**Semester of Delivery**	2
Administering Department	PGR	**College**	PPE
Module Leader	Qutaiba Hameed Mohammed	**e-mail**	qutaiba.aldulaimi88@tu.edu.iq
Module Leader's Acad. Title	Asst. Lecturer	**Module Leader's Qualification**	M.Sc.
Module Tutor	-	**e-mail**	-
Peer Reviewer Name	-	**e-mail**	-
Review Committee Approval	-	**Version Number**	1.0

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. القدرة على إدراك المفهوم الاساسي لحقوق الانسان والطفل والديمقراطية. 2. القدرة على فهم الاصول التاريخية للمفهومين ومعرفة ايجابيات وسلبيات حقوق الانسان والديمقراطية. 3. الاطلاع على حقوق الانسان والطفل والديمقراطية في الاسلام. 4. التعرف على مصادر حقوق الانسان والطفل وخصائص وسمات الديمقراطية. 5. معرفة أثر التطور التكنولوجي على حقوق الانسان والطفل والديمقراطية . 6. التطرق لمفاهيم ذات صلة بالمصطلحين مثل (العولمة، مؤسسات المجتمع المدني، الانتخابات والاستفتاء، الحكم الرشيد، الجرائم الانسانية، الدستور). 7. الاطلاع على الضمانات التي تكفل حقوق الانسان والطفل وتكفل النظام الديمقراطي والحقوق والحريات العامة.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. التعرف على المصطلحات ذات الصلة بمفهوم حقوق الانسان والطفل والديمقراطية. 2. التعرف على اهم الحقوق التي كفلها الإسلام للإنسان والطفل واستثمارها في معالجة الآفات والحالات السلبية التي تغزو المجتمعات في العصر الحالي. 3. الاستفادة من مزايا الديمقراطية ومكوناتها في معالجة التذبذب وعدم الاستقرار في المجتمع والحفاظ على الاستقرار والسلم المجتمعي. 4. الاطلاع على المواثيق الدولية المختصة بمجالات حقوق الانسان والطفل الصادرة عن المنظمات الدولية وجمعية الأمم المتحدة. 5. الاستفادة من تجارب الاخرين (الدول المتقدمة في مجالات حقوق الانسان والطفل والديمقراطية). 6. اللمام بالقوانين والدساتير الدولية والإقليمية والمحلية المختصة بقضايا حقوق الانسان والحريات العامة والديمقراطية. 7. التعرف على جرائم الإبادة الجماعية والجرائم الإنسانية ومدى تأثيرها على مفهوم حقوق الانسان والطفل والديمقراطية.
Indicative Contents المحتويات الإرشادية	يتضمن المحتوى الارشادي ما يأتي: 1. حقوق الانسان والطفل والديمقراطية في الحضارات القديمة والإسلام (6 ساعات). 2. مصادر حقوق الانسان العالمية والمحلية، خصائص وسمات الديمقراطية (4 ساعات). 3. ضمانات حقوق الانسان العالمية والمحلية وضمانات النظام الديمقراطي (4 ساعات). 4. حقوق الانسان والطفل والديمقراطية وأثر التقدم التكنولوجي عليهما (4 ساعات). 5. العولمة، مؤسسات المجتمع المدني، الانتخابات والاستفتاء، الدستور (4 ساعات) 6. الجرائم الإنسانية وانواعها، الحكم الرشيد، (2 ساعة). 7. الوثائق الدولية الخاصة بحقوق الطفل والديمقراطية المعاصرة (4 ساعات).

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	تم وضع استراتيجية التعلم والتعليم من اجل ان يحصل الطالب على معلومات كاملة تغطي المنهج

	الدراسي المعد للمادة ولكي تتحقق الغاية الاساسية للمنهج الذي ينصب نحو المام وإدراك الطالب بالمفاهيم الاساسية لحقوق الانسان والديمقراطية، والاطلاع على المصادر والضمانات والمواثيق الدولية للمصطلحين من اجل استثمارها في معالجة الظواهر السلبية في المجتمع والحفاظ على الاستقرار والسلم المجتمعي.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.43
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5, 11	LO #1, 2, 3, 4, 5, 6 & 7
	Online Assignments	2	10% (10)	6, 10	LO #1, 2, 3, 4, 5, 6 & 7
	Onsite discussions	1	5% (5)	7	LO #1, 2, 3 & 4
	Report	1	5% (5)	14	LO #5, 6 & 7
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1-4
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	الجذور التاريخية لحقوق الانسان والديمقراطية في الحضارات القديمة
Week 2	حقوق الانسان والطفل والديمقراطية في الاسلام
Week 3	مصادر حقوق الانسان على المستوى الخارجي الدولي، سمات وخصائص الديمقراطية

Week 4	مصادر حقوق الانسان على المستوى الداخلي المحلي، مزايا الديمقراطية
Week 5	ضمانات حقوق الانسان على المستوى المحلي، مكونات الديمقراطية
Week 6	ضمانات حقوق الانسان على المستوى الدولي، الضمانات التي تكفل النظام الديمقراطي
Week 7	مجلس حقوق الانسان، الانتخابات واهميتها
Week 8	**امتحان نصف الفصل**
Week 9	التطور التكنولوجي وأثره على حقوق الانسان والطفل والديمقراطية
Week 10	مفهوم العولمة، مؤسسات المجتمع المدني
Week 11	الحكم الرشيد (المبادئ، المعايير)، الاستفتاء
Week 12	الدستور وانواعه
Week 13	حقوق الطفل في المواثيق والعهود الدولية
Week 14	الجرائم الانسانية (جرائم الابادة الجماعية) وتأثيرها على حقوق الانسان والطفل والانظمة الديمقراطية
Week 15	الديمقراطية المعاصرة وحقوق الانسان والطفل ودراسة حالات لأمثلة واقعية حدثت في المجتمعات الدولية والعربية وفي العراق
Week 16	**امتحان نهاية الفصل**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	كتاب حقوق الانسان والديمقراطية، من تأليف :1- ا.د. ماهر صالح علاوي الجبوري، ا.د رياض عزيز هادي، ا.د. رعد ناجي الجدة، ا.م.د كامل عبد العنكود، ا.م.د علي عبد الرزاق محمد، ا.د. حسان محمد شفيق، (2009).	نعم
Recommended Texts	الديمقراطية، من تأليف: تشارلز تيللي، ترجمة محمد فاضل طباخ، الهيئة المصرية العامة للكتاب، (2010).	كلا
Websites	-	

APPENDIX:

GRADING SCHEME
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria

Fail Group (0 – 49)	**FX –** Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Introduction to Petroleum Technology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PGR124**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	PGR		**College**	PPE	
Module Leader	Luay Ahmed Khamees		**e-mail**	Luaykhamees75@tu.edu.iq	
Module Leader's Acad. Title	Assist Lecturer		**Module Leader's Qualification**	M.SC.	
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Providing students with the basics of scientific knowledge in the field of Petroleum and Gas Refining Engineering department and improving their professional abilities in the direction of analytical and creative thinking through the use of information technologies, data analysis and modern experimental methods in formulating and solving problems. 2. Preparing well-qualified engineers to advance the activities of Petroleum and Gas Refining Engineering department and the ability to manage dealing with them in all aspects of life, especially in the field of oil industries. 3. Conducting scientific research of an academic nature to keep pace with the global scientific march and research of an applied nature to translate engineering knowledge and its theories into action by addressing the problems that the country suffers from in all fields. 4. Contribute in one way or another in terms of design, supervision, follow-up and advice for the reconstruction of the country in the various sectors of the oil and petrochemical industries, with the provision of engineering consultancy, the preparation of economic feasibility studies, project designs and the provision of technical services. 5. Rooting scientific sobriety and making it a feature of this department in accordance with international controls and standards. 6. Providing students with the basics of scientific knowledge in the field of Petroleum and Gas Refining Engineering department and improving their professional abilities in the direction of analytical and creative thinking through the use of information technologies, data analysis and modern experimental methods in formulating and solving problems. 7. Preparing well-qualified engineers to advance the activities of Petroleum and Gas Refining Engineering department and the ability to manage dealing with them in all aspects of life, especially in the field of oil industries.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Broad-based education to understand the impact of engineering solutions globally and economically. 2. Ability to work in multidisciplinary teams. 3. The possibility of applying cognitive sciences such as mathematics and pure petroleum sciences. 4. The ability to use the techniques, skills and tools of contemporary engineering in the engineering field of the petroleum industries. 5. The ability to design petroleum and petrochemical systems to meet the required needs within realistic economic determinants. 6. The possibility of designing and implementing experiments, analyzing the results and translating them into reality.
Indicative Contents	Indicative content includes the following.

المحتويات الإرشادية	Indicative content includes the following. Part A – Energy Sources in nature, and An introduction to crude oil and its origin. Reservoir characterization. [8 hrs.]. Reservoir characterization. Reservoir engineering,. [6 hrs.]. Part B – Hydrocarbon exploration methods. Introduction to oil and gas drilling operations. Drilling Fluid properties.. [10 hrs.]. Drilling Fluid properties. Drilling problem and methods of treatment. Well completion.. [12 hrs.]. Introduction to production engineering. Hydrocarbon production from the well and surface equipment. An introduction about all process that take place on oil and gas in the field.. [10 hrs.] Part C – Introduction to oil properties . Introduction to refineries and crude oil refining. [10 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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 and interactive tutorials. The following steps will be applied to enhance the learning strategies : 1. Using appropriate teaching methods in line with the level of students and allowing students to discuss. 2. Using modern and advanced means to deliver the largest amount of knowledge to the student. 3. Presenting the course vocabulary to the students (lectures). 4. Assigning students assignments, such as writing research papers, so that students acquire skills for self-learning and presentation. 5. Conducting sudden exams. 6. Oral exams via e-learning platforms. 7. Conducting the quarterly and final exams on the specified dates. 8. Informing students of how students' grades are calculated during the semester, their exam results, and discussing failures and successes. 9. Informing students of the curriculum books and auxiliary books that they need in the course vocabulary

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91`	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5, 9	LO (1,2,3,4), LO (5,6,7,8)
	Assignments	2	10%(10)	3, 12	LO (1,2), LO (9,10,11)
	Seminar	1/1	10%(10)	1	
	Scientific Report	-	-	-	-
Summative assessment	**Midterm Exam**	2 hr.	10%(10)	10	LO 1-9
	Final Exam	3 hr.	50%(50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Energy Sources in nature, and An introduction to crude oil and its origin.
Week 2	Reservoir characterization.
Week 3	Reservoir characterization.
Week 4	Reservoir engineering,
Week 5	Hydrocarbon exploration methods.
Week 6	Introduction to oil and gas drilling operations.
Week 7	Drilling Fluid properties.
Week 8	Drilling problem and methods of treatment.
Week 9	Well completion.
Week 10	Introduction to production engineering.

Week 11	Hydrocarbon production from the well and surface equipment.
Week 12	An introduction about all process that take place on oil and gas in the field.
Week 13	Introduction to oil properties , and introduction to refineries and crude oil refining
Week 14	Introduction to oil refineries and crude oil refining
Week 15	**Preparatory week before the final Exam.**
Week 16	**final Exam.**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1- Petroleum engineering. 2- Handbook of petroleum technology. .	No
Recommended Texts	1- An Introduction to petroleum Technology, Economics and politics by James G. Speight 2- Reservoir Engineering Hand book. 3- Petroleum production engineering.	Yes No No
Websites	https://www.arab-oil-naturalgas.com/ https://www.sciencedirect.com/search?qs=oil	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group	**A –** Excellent	امتياز	90 – 100	Outstanding Performance

(50 - 100)	**B -** Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	Principles of process engineering II	**Module Delivery**	
Module Type	Core	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR121		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	PGR	**College**	PPE
Module Leader	Hamad K. Mohammed	**e-mail**	
Module Leader's Acad. Title	lect	**Module Leader's Qualification**	MSc
Module Tutor	Hamad K. Mohammed	**e-mail**	hamadalkhalid@tu.edu.iq
Peer Reviewer Name	-	**e-mail**	-
Review Committee Approval		**Version Number**	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PGR111	**Semester**	1
Co-requisites module	None	**Semester**	-
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	This course is a complement to the fundamentals and techniques used in the chemical and petroleum engineering fields, as it provides the essential skills, knowledge, and professional practice needed to successfully complete undergraduate and postgraduate studies in petroleum refining engineering. The course will cover concepts ranging from the ideal gas laws, real gas, and their relationships, multiphase equilibrium to energy balances with and without a chemical reaction, enthalpy calculations, and humidity. Its primary goal is to teach you how to deal with ideal and real gases and to formulate and solve energy balance problems systematically. In addition, this course introduces you to the scope of operations that petroleum refining engineers deal with in the petroleum industry.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	9. Understand the conditions under which the ideal gas law applies, and the conditions for which real gas relations must be used. 10. Solve material balances involving ideal or real gases. 11. Recognize the connection between multiphase equilibrium and separation technology. 12. Understand phase diagrams and the associated terminology as well as the phase rule. 13. Understand vapor-liquid equilibrium for a binary system. 14. Understand terminology associated with energy balances. 15. Understand types of energy included in energy balances. 16. Formulate and solve energy balances without reaction. 17. Understand the meaning of standard heat (enthalpy) of formation, heat (enthalpy) of reaction, higher and lower heating values. 18. Calculate the standard heat of reaction from tabulated standard heats of formation (or combustion) for different reactions. 19. Combine the heat of formation with sensible heat changes to solve		

	problems involving chemical reactions. 20. Solve simple material and energy balance problems involving reactions. 21. Understand humidity, dry-bulb temperature, wet-bulb temperature, humidity chart, moist volume, and adiabatic cooling line. 22. Use the humidity chart to determine the properties of moist air. 23. Calculate enthalpy changes and solve heating and cooling problems involving moist air.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 9. Ideal gases, ideal gas mixture, material balances involving ideal gases. [6 hrs]. 10. Real gases, equation of state, critical state and compressibility, compressibility charts [6 hrs]. 11. Multiphase equilibrium, phase diagrams and the phase rule, single-component two phase systems (vapor pressure), two component gas/single component liquid systems (saturation, condensation, and vaporization), two component gas/two component liquid systems, ideal solution relations, vapor-liquid equilibria phase diagrams, K-value, bubble point and dew point calculations, multicomponent vapor-liquid equilibrium [20 hrs]. 12. Energy balances: Terminology, types (heat, work, kinetic, potential, and internal energies, Enthalpy), heat capacity [6 hrs]. 13. Energy balances without chemical reactions, steady-state close and open systems [8 hrs]. 14. Energy balances with chemical reactions, the standard heat (enthalpy) of formation, the heat (enthalpy) of reaction, integration of heat of formation and sensible heat, the heat (enthalpy) of combustion [16 hrs]. 15. Humidity: Terminology, the humidity (psychrometric) chart and its application [8 hrs].
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The students will be actively engaged in the tasks, which will help them develop and hone their critical thinking abilities. This will be accomplished via lectures, interactive tutorials, and assignments incorporating fascinating tasks. The course includes: 4- Numerous examples worked out in detail to illustrate the basic

	principles. 5- A consistent strategy for problem solving that can be applied to any problem. 6- Figures, sketches, and diagrams to provide a detailed description and reinforcement of what you read. 7- Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning. 8- Many problems will be discussed and solved in the tutorial classes, which offer working with one or more classmates to exchange ideas and discuss the material.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	87	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	88	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5, 11	LO #1-4, and 8-11
	Assignments	4	10% (10)	Continuous	
	Case study	2	10% (10)	6, 13	LO #1-6, and 8-12
	Report	-	-	-	-
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Ideal gases
Week 2	Real gases (equation of state and compressibility)
Week 3	Multiphase equilibrium (phase diagrams and the phase rule and vapor pressure)
Week 4	Multiphase equilibrium (saturation, condensation, and vaporization)
Week 5	Multiphase equilibrium (two component gas/two component liquid systems)
Week 6	Multiphase equilibrium (vapor-liquid equilibria phase diagrams)
Week 7	Energy balances (terminology, types, and units)
Week 8	Energy balances without chemical reactions
Week 9	Energy balances without chemical reactions
Week 10	Energy balances with chemical reactions (enthalpy of formation)
Week 11	Energy balances with chemical reactions (enthalpy of reaction)
Week 12	Energy balances with chemical reactions (enthalpy of combustion)
Week 13	Humidity (terminology and the humidity chart)
Week 14	Humidity (applications of the humidity chart)
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	David M. Himmelblau, James B. Riggs, Basic principles and calculations in chemical engineering, 8th edition, 2012.	Yes
Recommended Texts	Richard M. Felder, Ronald W. Rousseau, Lisa G. Bullard, Elementary principles of chemical processes, 4th edition, 2016.	No
Websites	-	

APPENDIX:

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

Note:

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS II			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR123				
ECTS Credits	**6**				
SWL (hr/sem)	150				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	PGR		**College**	PPE	
Module Leader	Ali Mohammed Hussein		**e-mail**		
Module Leader's Acad. Title	Lect.		**Module Leader's Qualification**	Msc	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics I	**Semester**	1

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	Provide the students with the required basics of mathematics, functions, integration, trigonometric functions, transcendental functions, matrices, and determinants and their engineering applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	6. Ability to learn different methods of integration and its applications 7. Ability to deal with transcendental functions, matrices, and determinants 8. Ability to treated with matricies
Indicative Contents المحتويات الإرشادية	1-Integration (Anti-derivatives), Rules of Integration, Differential equations, Indefinite integration.(4hr) 2- Area under a curve (as a limit of summation) and their finding by using definite integral (8hr) 3-First fundamental theorem of integral, Rules of indefinite integral.(2hr) 4-First fundamental theorem of integral, Rules of definite integral. (2hr) 5-Second fundamental theorem of integral (differential of integral). (2hr) 6- Applications on definite integral: Areas, volumes, surfaces area, arc length. (10hr) 7-Approximate of definite integral. And Transcendental functions (In(x), e^x, a^x, log(x)) and Hyperbolic Functions. (8hr) 8-The Inverse of Trigonometric functions: Domain, Range, properties and their graphs.(6hr) 9-Methods of integration: (by parts, partial fractions, reduction formulas, by substitution) and improper integrals. (10hr) 10-Determinants and their applications (Matrices). (4hr)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The students will be actively engaged in the tasks, which will help them develop and hone their critical thinking abilities. This will be accomplished via lectures, interactive tutorials, and assignments incorporating fascinating tasks. The course includes: 1- Numerous examples worked out in detail to illustrate the mathematics. 2- A consistent strategy for problem solving that can be applied to any problem. 3- Figures, sketches, and diagrams to provide a detailed description and

	reinforcement of what you read. 4- Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning. 5- Many problems will be discussed and solved in the tutorial classes, which offer working with one or more classmates to exchange ideas and discuss the material

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	30%	8,13	LO # 1-7,8-12
	Assignments	4	10%	continous	
	Projects / Lab.	-			
	Report	-			
Summative assessment	**Midterm Exam**	3	10%	12	#1-11
	Final Exam	3	50%	16	all
Total assessment			100%		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Integration (Anti-derivatives), Rules of Integration, Differential equations, Indefinite integration
Week 2	Area under a curve (as a limit of summation) and their finding by using definite integral.

Week 3	Area under a curve (as a limit of summation) and their finding by using definite integral.
Week 4	First fundamental theorem of integral, Rules of indefinite integral.
Week 5	First fundamental theorem of integral, Rules of definite integral.
Week 6	Second fundamental theorem of integral (differential of integral).
Week 7	Applications on definite integral: Areas, volumes, surfaces area, are length.
Week 8	Applications on definite integral: Areas, volumes, surfaces area, are length.
Week 9	Approximate of definite integral. Transcendental functions (In(x), e_x, a_x, log(x)).
Week 10	Hyperbolic Functions and its inverse
Week 11	The Inverse of Trigonometric functions: Domain, Range, properties and their graphs.
Week 12	Methods of integration: (by parts, partial fractions, reduction formulas, by substitution) and improper integrals.
Week 13	Methods of integration: (by parts, partial fractions, reduction formulas, by substitution) and improper integrals.
Week 14	Determinants and their applications.
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Calculus – Thomas 2012	yes
Recommended Texts	James and Stewart, 2003	no
Websites		

APPENDIX:

GRADING SCHEME
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors

	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Organic chemistry	**Module Delivery**	
Module Type	Basic	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR122		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	PGR	**College**	PPE
Module Leader	Rand sad ahmed	**e-mail**	-
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	-	**e-mail**	-
Peer Reviewer Name	-	**e-mail**	-
Review Committee Approval		**Version Number**	1.0

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	-

Co-requisites module	None	Semester	-

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	This course provides the students with the basic concept of organic chemistry, hybridization, purification, empirical and molecular formula of organic compounds. It also offers classification, structure, nomenclature, physical and chemical properties, and uses of organic compounds including alkanes, alkenes, alkynes, alcohols, aromatic, ethers, aldehydes and ketones, carboxylic acids and derivatives, esters and amines.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to nomenclature, classification and draw the molecular formula and structures of the organic compounds. 2. Ability to deal with physical and chemical properties of organic compounds. 3. Understand the relation between geometry and charge distribution to chemical and physical properties. 4. Ability to make the chemical equation of any organic reactions. 5. Understand the mechanism of organic reaction.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Introduction to organic chemistry (basic concepts), hybridization [2 hrs]. 2. Purification, empirical and molecular formula of organic compounds [2 hrs]. 3. Classification and nomenclature of organic compounds [2 hrs]. 4. Hydrocarbons (alkanes, alkenes, and alkynes): structure, nomenclature, physical and chemical properties, and uses [6 hrs]. 5. Alcohols: structure, nomenclature, physical and chemical properties, and uses [2 hrs]. 6. Ethers, aldehydes and ketones: structure, nomenclature, physical and chemical properties, and uses [2 hrs]. 7. Carboxylic acid and carboxylic acid derivatives: structure, nomenclature, physical and chemical properties, and uses [4 hrs]. 8. Esters and amines: structure, nomenclature, physical and chemical properties, and uses [2 hrs]. 9. Aromatic compounds (aromatic hydrocarbon, aromatic halogen, aromatic amine, aromatic carboxylic acids): structure, nomenclature, physical and chemical properties, and uses [6 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The students will be actively engaged in the tasks, which will help them develop and hone their critical thinking abilities. This will be accomplished via lectures, interactive labs, and assignments incorporating fascinating tasks. The course includes: 1- Numerous examples worked out in detail to illustrate the basic principles. 2- A consistent strategy for problem solving that can be applied to any problem. 3- Figures, sketches, and diagrams to provide a detailed description and reinforcement of what you read. 4- Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning. 5- Many problems will be discussed and solved in the lecture classes, which offer working with one or more classmates to exchange ideas and discuss the material.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5, 14	LO #1-5
	Assignments	2	10% (10)	3, 10	LO 4 and 5
	Seminar	-	-	-	
	Report	14	10% (10)	Continuous	
Summative assessment	**Midterm Exam**	3 hr	10% (10)	7	LO #1-5
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to organic chemistry (basic concepts), hybridization
Week 2	Purification, empirical and molecular formula of organic compounds
Week 3	Classification and nomenclature of organic compounds
Week 4	Hydrocarbons (alkanes, alkenes, and alkynes)
Week 5	
Week 6	
Week 7	Alcohols
Week 8	Ethers, aldehydes and ketones
Week 9	Carboxylic acid and carboxylic acid derivatives
Week 10	
Week 11	Esters and amines
Week 12	Aromatic compounds
Week 13	
Week 14	
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Organic Chemistry, K. S. Mukherjee, 1st ed., 2010.	No
Recommended Texts	Organic Chemistry, Solomons, Fryhle and Snyder, 3rd ed., 2023.	No
Websites	-	

APPENDIX:

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

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

	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Engineering Workshops	**Module Delivery**	
Module Type	Suplement	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	PGR126		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	PGR	**College**	PPE
Module Leader	**Dr.Mugdad Hamid**	**e-mail**	
Module Leader's Acad. Title	Asst. Prof	**Module Leader's Qualification**	PhD
Module Tutor		**e-mail**	
Peer Reviewer Name	-	**e-mail**	-
Review Committee Approval		**Version Number**	1.0

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	-

Co-requisites module	None	**Semester**	-
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	Theoretical and practical training in which the student is scientifically and technically established with the most necessary skills in the field of engineering technology.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of this course students will be able to: Knowledge of technical skills in the field of: 1. industrial safety. 2. Measurement. 3. Filing. 4. Carpentry. 5. Welding. 6. Mechanical operation. 7. Sanitary engineering. 8. The basics of electrical work.		
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Industrial safety workshop [2 hrs]. 2. Measurement & Marking workshop [3 hours]. 3. Filing workshop [5 hrs]. 4. Carpentry workshop [5 hrs]. 5. Welding workshop [5 hrs]. 6. Casting workshop [5 hrs]. 7. Machining workshop [5 hrs]. 8. Plumbing workshop [5 hrs]. 9. Electrical workshop [2 hrs].		
Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	The learning and teaching strategy is designed to: Carefully cover in lectures the necessary fundamental material and analytical techniques, and demonstrate concepts with appropriate (and where possible practical) examples Allow students adequate time to practice the techniques using a large number of carefully selected tutorial problems.		

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	19	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	6, 12	LO #1-4, and 6, 7
	Assignments	9	20% (20)	Continuous	
	Labs.	-	-	-	-
	Report	-	-	-	-
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1-5
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Industrial safety workshop & measurement and marking workshop
Week 2	Filing workshop
Week 3	Filing workshop
Week 4	Carpentry workshop
Week 5	Carpentry workshop
Week 6	Welding workshop
Week 7	Welding workshop
Week 8	Plumbing workshop
Week 9	Plumbing workshop
Week 10	Machining workshop
Week 11	Machining workshop

Week 12	Casting workshop
Week 13	Casting workshop
Week 14	Electrical workshop
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Abd Fares, Engineering workshops	Yes
Recommended Texts	Technology of Machine Tools, Steve F. Krar & J. William Oswald, McGraw-Hill, 4th Ed., 1991.	No
Websites	-	

APPENDIX:

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

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

	Ministry of Higher Education and Scientific Research - Iraq Tikrit University College of Petroleum Processes Engineering Department of Petroleum Control System Engineering	

MODULE DESCRIPTOR
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ARABIC LANGUAGE اللغة العربية**			**Module Delivery**	
Module Type	BASIC			**محاضرات نظرية**	
Module Code	PGR127				
ECTS Credits	**2**				
SWL (hr/sem)	50				
Module Level	1		**Semester (s) offered**	1	
Administering Department	PGR		**College**	PPE	
Module Leader	Nawal Salih Mahdi		**e-mail**	nawal.s.mahdi@tu.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	MSc	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name	None		**e-mail**	None	
Review Committee Approval			**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	لايوجد	**Semester**	-
Co-requisites module	لايوجد	**Semester**	-

Module Aims, Learning Outcomes, Indicative Contents and Brief Description أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر	
Module Aims أهداف المادة الدراسية	• **تخريج كوادر مؤهلة تأهيلاً كافياً في اللغة العربية وآدابها بالمستويات المختلفة، وفق فلسفة الجامعة ورسالتها.** • **الحفاظ على اللغة العربية، والإعلاء من شأنها، والحرص على استعمالها وتوظيفها توظيفاً صحيحاً في مناحي حياتنا المختلفة.** • **اكتشاف المواهب الأدبية وتنميتها لدى الطلبة، لتمكينهم من الإبداع في مجال اللغة العربية.** • **اتصال المتعلم بتراث أمته وحضارتها، لا سيما في مجال اللغة والأدب، واطلاعه على ما أنتجه الفكر العربي قديماً و حديثاً في هذا الإطار.** • **الإفادة من معطيات العلم والتكنولوجيا الحديثين في مجال تعلم اللغة واكتسابها.** • **نشر اللغة العربية والاعتزاز بها، في إطار الجمع بين الأصالة والمعاصرة.** • **تلبية احتياجات المجتمع المحلي والعربي والإقليمي من المتخصصين في اللغة العربية، للعمل في المجالات العلمية والتربوية والتعليمية والإعلامية والإدارية.** • **اكتساب الطلبة معارف والمعلومات المناسبة في اللغة العربية وآدابها ومهاراتها الأربع.** • **تنمية الذائقة اللغوية والأدبية لدى الطلبة، بما يمكنهم من الحكم الصحيح على ما يسمعون أو يقرؤون.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. تزويد الطالب بثقافة عامة فضال عن دراستهم اللغوية** **2. ابعاد الطالب عن التحدث باللهجات المحلية.** **3. تزويد الطالب بمفردات علوم اللغة العربية** **4. متابعة قراءة الطالب على وفق القراءات السليمة.** **5. التعرف إلى مستويات نظام اللغة العربية.** 6. **ممارسة الكتابة والكلام باللغة العربية الفصيحة.**
Indicative Contents المحتويات الإرشادية	**يتضمن المحتوى الارشادي مايأتي:** **1. أنواع الهمزات (2 ساعة)** **2. الجملة الاسمية وعلاماتها (2 ساعة)** **3. سورة الرحمن (2 ساعة)** **4. الميزان الصرفي (2 ساعة)** **5. الشاعر عمرو بن كلثوم (2 ساعة)** **6. النواسخ كان واخواتها وإن واخواتها (2 ساعة)** **7. الجملة الفعلية والمنصوبات (2 ساعة)** **8. الشاعر الرصافي (2 ساعة)** **9. الفعل الصحيح والفعل المعتل (2 ساعة)** **10. المنقوص والمقصور والممدود (2 ساعة)** **11. المشتقات (2 ساعة)** **12. علامات الترقيم (2 ساعة)** **13. العدد (2 ساعة)** 14. **علم البلاغة (2 ساعة)**

Course Description	**إعداد كوادر تعليمية وبحثية متخصصة في اللغة العربية وآدابها، للإسهام في تلبية الحاجة المحلية والعربية والعالمية. يتطلع القسم الى اعداد جيل متمكن علميا وثقافيا مرتبطا بتراث الامة حريصا على الارتقاء باللغة نطقا وكتابة قادرا على تعزيز مكانتها بين لغات العالم المتحضر فاللغة آلة الفكر التي تؤمّن التعبير عنها وتطويره. ولما كان الفكر متجددا كان على اللغة كذلك ان تكون قادره على تنميها قدراتها والارتقاء بأدائها لتكون مؤهلة لنقل الافكار الجديدة وتطويرها. إجراء البحوث والدراسات الجادة خدمة للغة العربية والمعرفة الإنسانية. خدمة المجتمع المحلي فيما يتعلق باللغة العربية وآدابها من خلال النشاطات، والمحاضرات، والندوات، والمؤتمرات التي يعقدها القسم، أو يشارك فيها.**
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	تقوية ملكة الابداع لدى دارسي اللغة العربية فلا يقتصر استخدامها على الاغراض الحياتية العامة بل يتعداه الى تنشئة اجيال من المبدعين في المجالات اللغوية والادبية كافه يحاكي ما لدى الامم المتحضرة من ابداع.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	19	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time (hr)	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (20)	3, 5, ,7, 9,11,13,	LO #1, 2,3,....., 11
	Assignments (Homeworks)	6	15% (15)	2, 4, 6, 10,12,14	LO # 1, 2, 3, ...,11
	Reports	7	5% (5)	3, 5, ,7, 9,11,13,	
Summative assessment	**Midterm Exam**	2	10% (10)	8	LO # 1-7
	Final Exam	3	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**أنواع الهمزات**
Week 2	**الجملة الاسمية وعلاماتها**
Week 3	**سورة الرحمن**
Week 4	**الميزان الصرفي**
Week 5	**الشاعر عمرو بن كلثوم**
Week 6	**النواسخ كان واخواتها وإن واخواتها**
Week 7	**الجملة الفعلية والمنصوبات**
Week 8	**الشاعر الرصافي**
Week 9	**الفعل الصحيح والفعل المعتل**
Week 10	**المنقوص والمقصور والممدود**
Week 11	**المشتقات**
Week 12	**علامات الترقيم**
Week 13	**العدد**
Week 14	**علم البلاغة**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	القران الكريم • شرح ابن عقيل • الصرف الواضح ومصادر اللغة و الأدب القديم والحديث و البلاغة العربية و النحو العربي و الصرف و الاملاء.	Yes
Recommended Texts	أوضح المسالك إلى ألفية ابن مالك، والصرف العربي أحكام ومعان، ومجلة الدراسات اللغوية والأدبية	No
Websites	N/A	

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