

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering mathematics		Module Delivery
Module Type	Basic		x Theory x Tutorial
Module Code	BETC203		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	1
Administering Department	Fuel and Energy	College	TECHNICAL ENGINEERING COLLEGE
Module Leader	Ali Ahmad Azza Shahin	e-mail	ali.shahin88@yahoo.com
Module Leader's Acad. Title	LECTURER	Module Leader's Qualification	Ph.D.
Module Tutor	Ali Ahmad Azza Shahin	e-mail	ali.shahin88@yahoo.com
Peer Reviewer Name		Name	
Scientific Committee Approval Date	03/06/2025		

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Calculus	Semester	01
Co-requisites module	Differential Equations	Semester	04

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The course aims to; 1- Developing the student's ability to perform homework and deliver it on time. 2- Trying to apply the concepts by solving different types of exercises. 3- Developing the student's ability to dialogue and discussion. 4- An interesting definition of scientific material and the extent of its conformity with practical life.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Knowledge and Understanding 1- The student gets to know the concept of vectors. 2- The student gets acquainted with the types of numbers (real and complex). 3- The student gets acquainted with the hardening. 4- The student gets to know the matrices.
Indicative Contents المحتويات الإرشادية	1. Explain the concepts of matrices, determinants, ranks, eigenvalues and eigenvectors. [14hrs] 2. Define the scalar and vector functions and Use gradient, divergence and Curl for engineering applications [13hrs] 3. Use DeMoivre Theorem and Euler Formula to determine the power and roots of complex numbers. [13hrs] 4. Solve first and second orders ODE analytically. [14hrs] 5. Solve linear second order ODE in series form. [12hrs] 6. Identify Partial Differential Equations: emergence of equations, initial and boundary condition.[12hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Participation in the classroom. • Submit activities. • Quarterly and final tests and activities. • Distinguished questions and inquiries in depth and accuracy. • Directing the student towards understanding the cause and cause. • Assigning the student to some activities and collective duties. Allocating a percentage of the degree for daily homework and tests
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Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	88	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5.9
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO # 1,2,3,4,5,6 LO # 11,12,
	Assignments	30	10% (10)	4, 9	All
	Report	1	10% (10)	13	LO # 1,2,3,4,5,6,7,8,9,10
Summative assessment	Midterm Exam	1.5hr	20% (20)	7	LO # 1,2,3,4,5,6,7,8,9,10
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1-2	Review of Calculus
Week 3	Vector Analysis Vectors in plane , Vectors, Geometric addition, Geometric Subtraction, Components
Week 4	Equality of vectors, Algebraic addition, Algebraic subtraction, Length of a vector, Multiplication by scalar, Unit vector, Direction, Use of vectors for geometric proof
Week 5	Coordinates and vectors in the space (Cartesian coordinates, vector in space, length and direction, distance in space
Week 6	Scalar (Dot product)
Week 7	Scalar (Dot product)
Week 8	Vector (cross product), matrix
Week 9	Product of three or more products
Week 10	Equation of lines and planes, planes
Week 11	The distance from a point to a line
Week 12	The plane through the intersection of two planes , velocity and acceleration, curvature
Week 13	Introduction to a differential equations
Week 14	Differential equations
Week 15	Introduction to partial differential equations

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Calculus by Mint.	Yes
Recommended Texts	Calculus by Edward.	Yes
Websites		

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Petroleum Refining		Module Delivery
Module Type	Core		x Theory Lecture x Lab Tutorial Practical Seminar
Module Code	FEE208		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	Fuel and Energy	College	TECHNICAL ENGINEERING COLLEGE
Module Leader	Ali Jaafar Ghafil	e-mail	alighafel@alayen.edu.iq
Module Leader's Acad. Title	LECTURER	Module Leader's Qualification	M.Sc.
Module Tutor	Ali Jaafar Ghafil	e-mail	alighafel@alayen.edu.iq
Peer Reviewer Name	N.A.	e-mail	N.A.
Scientific Committee Approval Date	3/06/2025	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Organic Chemistry	Semester	02
Co-requisites module	Physical Chemistry	Semester	03

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1- Conveying the basic concepts of crude oil and how to extract it 2- Developing an understanding of petroleum and its uses in our lives. 3- The many industrial processes to which crude oil is subjected 4- Clarify and understand the basic stages of the operations of drying, desalination, separation, and others 5- How to transport petroleum and the necessary preventive measures to know how to deal with it
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1 - The student is introduced to the basic components of this fossil product 2- Studying the basic stages that crude oil passes through until it reaches the consumer in a pure form 3- Applying the basic accounts for each stage of its liquidation 4-Knowledge of the industrial operations in order to be familiar with the main plan of the company's work 5- Identify the types of materials, machines, equipment and methods of implementing engineering projects 6- Recognizing the importance of this basic product in our daily life and knowing its types and methods of transporting it of all kinds
Indicative Contents المحتويات الإرشادية	Introduction (3 hr) Classification and Composition of Crude Oils(4 hr) Evaluation of Crude Oil(2hr) Asset crude oil by using different methods(4 hr) Physical and Chemical Properties of Crude oil and Oil Products (5 hr) Changed in Properties of Crude oil and Oil Products (4 hr) Processing of Petroleum(4 hr) (Crude Oil Pre-treatment, Fractionation of Crude Oil Fractionation) (6 hr) Process Catalytic(5 hr) Operations (Processes and calculations) (6 hr) Alkylolation, Catalytic Dewaxing(4 hr) Treating Processes(4 hr) Removal of Acid Gases (4 hr) Sweetening Processes (6 hr) Improvement in Performance and Storage Stability(5 hr) Blending of Vapor Pressure, Octane Number, Viscosity, Flash Point, Aniline Point and Pour Point. (8 hr) Petroleum distillates additives: Anti knocking, Anti-oxidant(4 hr) Anti vaporization, Combustion inhibitors, Anti foaming, and Dewaxing (5 hr) Coking and treatment of bottom of the barrel (4 hr) Residue upgrading (4 hr) Anti-corrosion (4 hr) Mid present, flash-vaporization ,yield curves(4 hr)

	Lubricants oil processing: propane deasphalting, Solvent extraction (6 hr) Refinery economics (4 hr)
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Sudden tests of the theoretical material and the continuous weekly practical material. 2. Exercises and activities within the lesson and within the workshop. 3. Guiding the student to some sources to benefit from them 4. view videos that explain the working mechanism of the thermal machine.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	57	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10% (10)	5,8, 10	LO # 1,2, ,6 LO # 11,12,
	Assignments	4	10% (10)	4, 9	All
	Lab.	1	10% (10)	Continuous	

	Report	1	10% (10)	13	LO # 7,8,9,10
Summative assessment	Midterm Exam	1.5hr	10% (20)	10	
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction
Week 2	Classification of Crude Oils
Week 3	Composition of Crude Oils
Week 4	products of refinery feed stock
Week 5	Evaluation of Crude Oil
Week 6	Asset crude oil by using different methods
Week 7	Physical and Chemical Properties of Crude oil and Oil Products
Week 8	Changed in Properties of Crude oil and Oil Products
Week 9	Processing of Petroleum
Week 10	(Crude Oil Pre-treatment, Fractionation of Crude Oil Fractionation)
Week 11	Process Catalytic
Week 12	Operations (Processes and calculations)
Week 13	Alkylation, Catalytic Dewaxing
Week 14	Treating Processes
Week 15	Removal of Acid Gases
Week 16	Sweetening Processes
Week 17	Improvement in Performance and Storage Stability
Week 18	Blending of Vapor Pressure, Octane Number,
Week 19	Viscosity, Flash Point, Aniline Point and Pour Point.
Week 20	Vapor Pressure, Octane Number, Viscosity, Flash Point, Aniline Point and Pour Point.
Week 21	Petroleum distillates additives: Anti knocking, Anti-oxidant,

Week 22	Anti vaporization, Combustion inhibitors, Anti foaming, and Dewaxing
Week 23	Coking and treatment of bottom of the barrel
Week 24	Residue upgrading
Week 25	Anti-corrosion
Week 26	Mid present, flash-vaporization
Week 27	yield curves
Week 28	Lubricants oil processing: propane deasphalting
Week 29	Solvent extraction
Week 30	Refinery economics

Delivery Plan (Weekly Lab. Syllabus)

النهاج الاسبوعي للمختبر

	Material Covered
Week 1	Density And specific gravity
Week 2	Kinetic viscosity
Week 3	Classification of Crude Oil
Week 4	Ash Content
Week 5	Remaining Carbon
Week 6	Acidity of Petroleum Products
Week 7	Cloud and Pour Points
Week 8	Soften Point
Week 9	Aniline Point
Week 10	Flash and Fire Points
Week 11	Salt and Water Contents

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts	1-Gary, H., And Glenn E. Handwerk, "Petroleum Refining Technology and Economics. 2- Hsu, Ch.s. and Robinson, P.R., Practical Advances in Petroleum Processing, Springer. 3- Riazi, M. R., Characterization and Properties of Petroleum Fractions, ASTM International. 4. Nelson, W.L., "Petroleum Refinery Engineering". 5. Bhaskara Rao, B.K. "Modern Petroleum Refinery Processes".	
Websites		

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Properties of Engineering Materials		Module Delivery
Module Type	Support		x Theory x Lecture Lab x Tutorial Practical x Seminar
Module Code	FEE207		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	2	Semester of Delivery	1
Administering Department	Fuel and Energy	College	TECHNICAL ENGINEERING COLLEGE
Module Leader	Fatima Adnan Jomah	e-mail	fattimadjomah@gmail.com
Module Leader's Acad. Title	Assist. LECTURER	Module Leader's Qualification	M.Sc.
Module Tutor	Fatima Adnan Jomah	e-mail	fattimadjomah@gmail.com
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	21/06/2025	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- Teach the student the importance of Engineering Materials, Metals and non-Metals then study use it as an introduction to Thermal engineering and power plants subject. 2- present the basic fundamentals of materials science and engineering on a level Appropriate 3- investigating the relationships that exist between the structures and properties of materials. 4- present the subject matter in a logical order, from the simple to the more complex.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain the atomic structure and types of primary and secondary atomic and molecular bonding. 2. Explain the crystal structures and geometry and classify different classes of space lattices in crystalline solids. 3. Perform different types of mechanical testing for evaluation of mechanical properties of material. 4. Extract information of materials behavior from phase diagram. 5. Identify the structures, properties and applications of the main engineering materials (metals, alloys, polymers, ceramics and composites). 6. Explain corrosion mechanisms and types of corrossions and methods of corrosion prevention.
Indicative Contents المحتويات الإرشادية	1. Questions and inquiries characterized by depth and accuracy. 2. Directing the student towards understanding the cause and reason. 3. Assigning the student some group activities and duties. 4. Conducting daily tests for the student 5. Scientific discussion on a regular basis 6. Encourage the student to browse many sources to collect the largest amount of information.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Sudden tests of the theoretical material and the continuous weekly practical material. 2. Exercises and activities within the lesson and within the workshop. 3. Guiding the student to some sources to benefit from them 4. view videos that explain the working mechanism of the thermal machine.
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	38	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (5)	5, 10	LO # 1,2,3,4,5,6 LO # 11,12,
	Assignments	30	10% (15)	4, 9	All
	Report	1	10% (10)	13	LO # 1,2,3,4,5,6,7,8,9,10
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1,2,3,4,5,6,7,8,9,10
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction
Week 2	Engineering Materials
Week 3,4	Engineering requirement for materials
Week 5	Atoms and atomic coordination:
Week 6,7	Crystal structure
Week 8,10	Phase diagrams
Week 11	Electrochemical cell
Week 12,13	Corrosion
Week 14	Corrosion prevention.
Week 15	Materials selection and design considerations

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts	[1] Van Vlack, Elements of Material Science [2] Khanna O.P., A Text Book of Material Science & Metallurgy [3] Fontana, M.G., "Corrosion Engineering", McGrawHill. [4] Jones, D.A., "Principal and Protection of Corrosion", PrenticeHall.	Yes
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
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	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
المؤسسة التعليمية	جامعة العين العراقية	الكلية التقنية الهندسية	
وصف للمادة	اسم المقرر	جرائم نظام البعث في العراق	
	عدد الساعات والوحدات الدراسية	ساعتان أسبوعيا / 2 وحدة	
	عدد الأسابيع	اسبوعا 15	
	العام / الفصل	الأول / 2024-2025	
	تاريخ اعداد لوصف	2024 / 9 / 1	
	طرق التعليم	محاضرات نظرية مكتوبة	
مدرس المادة	ندى ناظم ناجي		
اللقب العلمي	مدرس مساعد	الشهادة	M.Sc.
البريد الالكتروني	nadhimnada2@gmail.com		

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1- تمكين الطالب من التعرف على انواع الجرائم التي ترتكب داخل الدولة والتمييز ما بينها وبين الجرائم ضد الانسانية من خلال التعرف على صفاتها واسسها والقوانين التي تنطبق عليها . 2- التعرف قوانين المحكمة الجنائية الدولية ضد الانسانية. وقوانين المحكمة الجنائية العراقية العليا عام 2005، الموثقة الى انتهاكات نظام حزب البعث الانسانية خلال فترة الحكم. 3- تمكين الطالب من التعرف على القوانين المحلية والدولية ولاسيما التي تتعامل مع قضايا حقوق الانسان والانتهاكات المرتكبة ضدها. ورفع مستوى الثقافة القانونية لديه التي تجعله يتبناها لرفض تلك الانتهاكات سواء داخل نظام الدولة الذي ينتمي اليه أو خارجه .
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Module Learning Outcomes مخرجات التعلم للهادة الدراسية	استفادة الطلاب من معرفة مفهوم الجريمة وأنواعها ومجال تطبيقها .-1 تسليط الضوء على جرائم نظام البعث في العراق , وأبرز انتهاكاته للقوانين العراقية والدولية والتي -2 تتدرج ضمن قضايا الجرائم الدولية . بيان صور انتهاكات حقوق الانسان وجرائم السلطة، ومدى خطورة تلك الجرائم النفسية والاجتماعية -3 والبيئية وأثرها على الشعب العراقي .
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• التمرين • العصف الذهني • الحوار والنقاش • اختبار سريع • كتابة البحوث

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	20	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation تقييم الهادة الدراسية
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		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (15)	5 and 10	
	Assignments	2	10% (10)	2 and 12	
	Projects / Lab.	0	0%		
	Report	1	10% (10)	13	
Summative assessment	Midterm Exam	2hr	15% (15)	7	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
البرنامج الاسبوعي النظري	
	Material Covered
الاسبوع الاول	مفهوم وتعريف الجرائم واقسامها
الاسبوع الثاني	موقف قانون المحكمة الجنائية العراقية العليا لسنة 2005 من انتهاكات نظام البعث واهم القرارات الصادرة عنها
الاسبوع الثالث	الجرائم النفسية
الاسبوع الرابع	الجرائم الاجتماعية
الاسبوع الخامس	موقف النظام البعثي من الدين
الاسبوع السادس	انتهاكات القوانين العراقية
الاسبوع السابع	صور انتهاكات حقوق الانسان وجرائم السلطة
الاسبوع الثامن	بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث
الاسبوع التاسع	اماكن السجون والاحتجاز لنظام البعث
الاسبوع العاشر	الجرائم البيئية لنظام البعث في العراق
الاسبوع الحادي عشر	تجفيف الاهوار
الاسبوع الثاني عشر	تجريف بساتين النخيل والاشجار والمزروعات
الاسبوع الثالث عشر	جرائم القابر الجماعية

الاسبوع الرابع عنتر	احداث مقابرة الابداء الجماعية
الاسبوع الخامس عنتر	التسلسل الزمني لمقابر الابداء الجماعية

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	حقوق الانسان والطفل والديمقراطية. د. رعد ناجي الجدة وأخرون، جامعة تكريت- 2009 .	yes
Recommended Texts	حقوق الانسان ، تطورها، مظاهرها، حياتها. د. رياض عزيز . هادي، بغداد، 2005	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 (قييد السمعة)	(45-49)	More work required but credit awarded
	F - Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Calculations of Chemical Processes			
Module Type	Core		☒ Theory Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	FEE205			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	2	Semester of Delivery		1
Administration Department	Fuel and Energy	College	TECHNICAL ENGINEERING COLLEGE	
Module Leader	Ali Jaafar Ghafil		e-mail	alighafel@alayen.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification		
Module Tutor	Ali Jaafar Ghafil		e-mail	alighafel@alayen.edu.iq
Peer Reviewer Name	NA	e-mail	NA	
Scientific Committee Approval Date	3/6/2025	Version Number	1	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Principals of Chemical Processes	Semester	02
Co-requisites module	None	Semester	--

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	- Classification the processes according their systems and surrounding - Using the mass conversation law to calculate the quantities of input and output , material .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Explain the meaning of the following terms:1- Batch ,semi batch ,continues transient and steady state processes. 2- Recycle and purge streams and their purposes.3- fractional conversion and limiting and excess reactants.4- Yield and selectivity.5- Dry and wet basis, theoretical and excess air - Understanding a process description, (a) draw and fully label a flowchart; (b) choose a convenient basis of calculation; (c) for a multiple-unit process, identify the subsystems for which balances and each possible subsystem; (e) write in order the equations you would use to calculate specified process variables; and (f) perform the calculations. You should be able to do these computations for single-unit and multiple-unit processes and for processes involving recycle bypass, or purge streams. If the system involves reactions, you should be able to use molecular species balances, atomic species balances, or extents of reaction for both the degree-of freedom analysis and the process calculations. - Given a combustion reactor and information about the fuel composition, calculate the feed rate of air from a given percent excess or vice versa. Given additional information about the conversion of the fuel and the absence or presence of CO in the product gas, calculate the flow rate and composition of the product gas..
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Balances on continues, batch and semi-batch processes, flow charts, flow charts scaling (30 hr) Overall and component balances, Balances for systems with recycle and bypass streams. (30hr) Material Balances with Chemical Reactions (20 hr) Combustion Reaction (30)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	- Questions and inquiries characterized by depth and accuracy. - Directing the student towards understanding the cause and reason. - Assigning the student some group activities and duties. - Conducting daily tests for the student - Scientific discussion on a regular basis
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Student Workload (SWL)

الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Project	1	10% (10)	contineous	
Summative assessment	Midterm Exam	2hr	20% (20)	10	
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
Week (1-2)	Fundamentals of Material Balances Balances on continues, batch and semi-batch processes, flow charts, flow charts scaling
Weeks (3-6)	Material Balances without Chemical Reactions Choose of basis, Overall and component balances, Balances for systems with recycle and bypass streams.
Weeks (7 - 12)	Material Balances with Chemical Reactions Limiting and excess reactants, conversion, yield, selectivity, recycle and purging
Week (13-15)	Combustion Reactions Theoretical and excess air, Material balances on combustion processes

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	J Felder, Richard M. Elementary principle of chemical Processes.	Yes
Recommended Texts	Himmelblau, David M. "Basic principles and calculations in chemical engineering".	Yes

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Physical chemistry		Module Delivery
Module Type	Core		☒ Theory Lecture xLab Tutorial ☐ Practical Seminar
Module Code	206FEE		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	Fuel and energy	College	TECHNICAL ENGINEERING COLLEGE
Module Leader	Ali Jaafar Ghafil	e-mail	alighafel@alayen.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	
Module Tutor	Ali Jaafar Ghafil	e-mail	alighafel@alayen.edu.iq
Peer Reviewer Name	N.A	e-mail	
Scientific Committee Approval Date	17/06/2025	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Analytical chemistry	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Explain how to derive rate of reaction equation based on elementary reaction. Steady state approximation. 2. Analyze the rate for serial, multiple and complex reaction. 3. Explain surface phenomena such as capillarity, adsorption and electrical chemistry
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. By interpreting the real gases, the student will be able to solve the problems. 2. Describes the ideal and real gases. 3. Uses the Van Der Waals gas equation. 4. Uses the real gas and Van Der Waals isotherms. 5. Describes the critical state, adapts critical state equation to the problems. 6. By interpreting the some properties of liquids and solids, the student will be able to solve the problems. 7. Describes the condensed phases. 8. Express and uses the vapor pressure. 9. Interpreting the phase equilibrium in simple systems, the student will be able to questions them. 10. Express the stability of the phases in the pure substance.
Indicative Contents المحتويات الإرشادية	1. Definitions of thermodynamic systems and properties. Temperature and the zeros law of thermodynamics.(4) 2. Properties of gasses: Maxwell's distribution of molecular velocities .ideal gas .vander Waals equation and boyls law (10) 3. Energy, calculations of work. (5) 4. Work, heat, and the First Law of Thermodynamics. (10) 5. Enthalpy, internal energy, heat capacities at constant volume and constant pressure. (4) 6. Changes in state functions for isothermal, adiabatic, irreversible and reversible processes. (5) 7. Carnot cycle and heat engines: heat, work and efficiency for a cyclic process. (3) 8. Statements of the Second Law of Thermodynamics, calculation of entropy changes. (6) 9. Spontaneity, Helmholtz and Gibbs free energies. (5) 10. Chemical potential and changes in phase. (5) 11. Equilibrium in chemical reactions(7) 12. Thermo chemistry. Hees law ,enthalpy of formation and fire. (5) 13. Electrical chemistry, types of cells(8) 14. Analytical cell, voltanic cells, concentration cells and potential electrode cell. (4) 15. Applications(4)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The student can develop his skills through applied examples, explain the material visually on the computer, and integrate laboratory information with theoretical calculations.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	8.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم الهادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	4,5,6,7,8	
	Assignments	6	10% (10)	4,5,6,7,8,9	
	Projects / Lab.	2	10%(10)	1-15	
	Report	1	10% (5)	14	
Summative assessment	Midterm Exam	1.5hr	10% (15)	15	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

البرنامج الأسبوعي النظري

	Material Covered
Week 1	Definitions of thermodynamic systems and properties. Temperature and the zeroth law of thermodynamics.
Week 2	Properties of gasses: Maxwell's distribution of molecular velocities .ideal gas .vander Waals equation and boyls law
Week 3	Energy, calculations of work.
Week 4	Work, heat, and the First Law of Thermodynamics.
Week 5	Enthalpy, internal energy, heat capacities at constant volume and constant pressure.
Week 6	Changes in state functions for isothermal, adiabatic, irreversible and reversible processes.
Week 7	Carnot cycle and heat engines: heat, work and efficiency for a cyclic process.
Week 8	Statements of the Second Law of Thermodynamics, calculation of entropy changes.
Week 9	Spontaneity, Helmholtz and Gibbs free energies.
Week 10	Chemical potential and changes in phase.
Week 11	Equilibrium in chemical reactions
Week 12	Thermo chemistry. Hees law ,enthalpy of formation and fire.
Week 13	Electrical chemistry, types of cells
Week 14	Analytical cell, voltanic cells, concentration cells and potential electrode cell
Week 15	Applications

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1-elements of physical chemistry by Samuel glsstone and David Lewis Macmillan 2-physcial chemistry by p.w Atkins, oxford university press	Yes

Recommended Texts		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.				