

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Drawing		Module Delivery
Module Type	S		☐ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	*****		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	
Administering Department	Medical Instrumentation	College	Technical Engineering Collage
Module Leader	Mohammed Khalaf Ulaiwi	e-mail	Mohammed.Khalaf@alaen.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	None	e-mail	
Peer Reviewer Name	Dr. Mohammad Ghazi Molhem	e-mail	Mohammed.ghazi@alayer.edu.iq
Scientific Committee Approval Date	01/04/2025	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 Objectives أهداف المادة الدراسية	1. This course deals with identifying engineering drawing tools and materials, methods of using them, performing manual exercises, drawing lines, curves, and two- and three-dimensional shapes. Thus, developing the student's potential to study and apply the basics of engineering drawing. Which includes reading, disassembling and assembling geometric shapes through drawing, projection, and sections methods. In addition to how to draw engineering mechanical plans necessary to clarify design ideas. 2. Also, To learn the student the basic principles and theories of engineering drawing and how to implement different sketches by using computer programs such as (AUTOCAD).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Knowing the tools used in engineering drawing and how to use them properly. 2. The student's ability to understand and apply the basics of engineering. 3. Reading, disassembling, and assembling geometric shapes through drawing. 4. Developing the student's skill in using tools in drawing geometric shapes. 5. Developing the student's engineering imagination through deducing the projections and sections of each geometric solid and realizing its dimensions. 6. Developing student skills using AutoCAD drawing software. 7. Conducting auxiliary exercises to apply it correctly to increase its absorption capacity of the material. 8. Communicate with the most important ideas presented by the article through the Internet. 9. Developing student skills using AutoCAD drawing software. 10. Going to implement an engineering design with all its recognized requirements in the field of work, which reflect skills through designing engineering plans that meet the details and dimensions that can be implemented. 11. Applications to various engineering processes. 12. Auxiliary exercises that the student presents by applying and delivering them as a participatory work to increase his ability to absorb the material
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. AutoCAD Software, drawing settings, Drawing Tools, Line, Circle, Arc, Ellipse, Donut, Polygon, Rectangle, Point, Multiline, P line, Spline, X line. 2. Modify Tools: Erase, Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet. 3. Display Control Zoom, Pan, Redraw, Clean Screen. 4. Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Jogged radius, Ordinate dimensions. 5. Hatching Objects. 6. Text, Style, M text, Scale text, Spell. 7. 3D MODELLING, Convert 2D to 3D, Solid Editing.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Planning a unit or lesson involves a number of instructional decisions. The teacher must identify the following: the content and processes to be addressed, the strengths, needs, and interests of students, the Common Essential Learnings that could be incorporated, and the most effective instructional approaches. Such decisions are critical and must be made consciously and purposefully. It begins with the student's interest in engineering tools and the drawing board. To reach the highest level of understanding in the application of all theoretical and laboratory lesson processes.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	4	10% (10)		
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي

	Material Covered
Week 1	Introducing of Engineering Drawing.
Week 2	Drawing settings of AutoCAD.
Week 3	Drawing Tools: Point, Line, Multiline, P line, Spline, X line.
Week 4	Drawing Tools: Rectangle, Donut, Polygon.
Week 5	Drawing Tools: Circle, Arc, Ellipse.
Week 6	Modify Tools: Erase, Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet. Display Control. Zoom, Pan, Redraw, Clean Screen.
Week 7	Mid exam.
Week 8	Dimension: Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Jogged radius, Ordinate dimensions.
Week 9	Annotation Tools: Text, Style, M text, Scale text, Spell
Week 10	Hatching Objects.
Week 11, 12	3D modeling.
Week 13	Convert 2D To 3D.
Week 14	Solid Editing.
Week 15	Exercises drawing.
Week 16	Preparatory week before the final Exam.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	الرسم الهندسي، عبد الرسول عبد الحسين الخفاف، دار الكتب والوثائق العراقية، 1990.	*****

	Introduction to AutoCAD 2010 By Alf Yarwood Copyright 2009.	
Recommended Texts	Beginning Auto CAD, by Bob McFarlane, Elsevier, 2007	*****
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	MEDICAL CHEMISTRY		Module Delivery
Module Type	BASIC		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	1202MIET		
ECTS Credits	6		
SWL (hr/sem)	180		
Module Level	1	Semester of Delivery	
Administering Department	MIET	College	Engineering Technical College
Module Leader	MSC. Afrah Ali Dakhil		e-mail
Module Leader's Acad. Title	Asst. Lecturer	Module Leader's Qualification	MSC
Module Tutor		e-mail	aliafra720@gmail.com
Peer Reviewer Name	Dr. Mohammad Ghazi Molhem	e-mail	afrah.ali@alayer.edu.iq
Scientific Committee Approval Date	التاريخ	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 البرنامجية

Module Objectives أهداف المادة الدراسية	1- To write and balance chemical equation which many calculations depend on. 2- To convert chemical formula to components composition percent or to conclude empirical formula depending upon composition percent. 3- to predict about the economic pathway for specific reaction to happen depending upon stoichiometric calculations of balanced chemical equations. 4- to Know how to prepare buffers with different ranges of pH using acids with suitable dissociation constant of acid. 5- to understand effect of common ion on equilibrium of reversible reactions. 6- to focus on theoretical working principles of spectrophotometric instrumentations. 7- to discuss the importance of isotopes in diseases treatment and diagnosis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At ending of course, the student will: 1- Able to give chemical compounds their systematic names and to write their chemical formulae. 2- Know how to calculate concentrations of chemicals and to express them in various concentration terms. In addition to convert one term to another. 3- Calculate the compound composition percent according to chemical formula, or know empirical formula depending on compounds composition percent. 4- Write chemical equations of different reactions and balance them, and predict the limiting reactant in addition to the expected weight of products. 5- Estimate the reaction direction according to calculation of equilibrium constant of reversible reactions. 6- Know how to prepare buffers and how buffer work? 7- Understand importance and wide application of slightly soluble salts. 8- Perform the statistical treatment of analytical results and source of errors. 9- Recognize the importance of galvanic cells in current generation and role of electrolytic cells in metallic electroplating. 10- Consider zero, 1st and 2nd laws of thermodynamic processes, and evaluate thermodynamic functions of work, enthalpy, heat, internal energy and giving judgment of spontaneous process or not by entropy and Gibbs free energy. 11- List the components of photometric determination techniques, in addition to principals of their works. 12- Identify the photometric instrumentations such as FIS, FT-IR spectrophotometer, and mass spectrophotometry.

	13- Emphasize the vital role of isotopes in diagnosis and diseases treatment.
Indicative Contents المحتويات الإرشادية	<u>Isotopes, Chemical formula, Units conversion</u> <u>Normality, Formality, Molarity, Molality, Mole fraction, Mill equivalent, ppm, ppb, mass percent, mass/vol percent.</u> <u>Stoichiometry</u> <u>Chemical equilibrium</u> <u>dissociation constant</u> <u>pH</u> <u>Buffers</u> <u>common ion</u> <u>Solubility product constant</u> <u>Statistical treatment, average, range, standard deviation, variance, Absolute error, relative error.</u> <u>Redox reactions, Electrochemistry, electrolytes, Nernst equation, cell potential.</u> <u>1st law of thermodynamic, Reversible and irreversible process, Heat capacities, adiabatic process, Isothermal processes.</u> <u>2nd law of thermodynamic, entropy, Gibbs free energy.</u> <u>Photochemistry, electromagnetic spectrum, Beer Lambert law.</u> <u>IR Spectrophotometer, mass spectroscopy, FIS, FES.</u> <u>Potentiometer, conductive meter, pH-meter.</u>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	homework assignments, written exam, Quizzes, seminars, reports, practical tests and Online tests
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	120	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	180		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	15 min/4 times	20%	3 rd , 5 th , 7 th , 12 th	LO# 1st – 2 nd LO# 1st – 5 th LO# 5th – 7 th LO# 10th – 12th
	Assignments	5min/4 times	10%	2 nd , 6 th , 8 th , 13 th	LO# 1 st LO# 10th
	Projects / Lab.	10min/one time	5%	6 th	LO# 2nd – 5th
	Report	Each lab/5 times	5%	3 rd , 4 th , 5 th , 6 th , 7 th	LO# 1st -2nd LO# 3rd LO# 4th LO# 5 th LO# 6th – 7th
Summative assessment	Midterm Exam	60min/one time	10% (10)	10 th	LO# 1st – 10 th
	Final Exam	180min/one time	50% (50)	16 th	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) البرنامج الاسبوعي النظري	
	Material Covered
Week 1	Introduction, Units conversion, Isotopes, Chemical formula and chemical equation
Week 2	Methods of expressing analytical concentrations: Normality, Formality, Molarity, Molality, Mole fraction, Mill equivalent, ppm, ppb, wt. and vol. percent ratio.
Week 3	Stoichiometry
Week 4	Chemical equilibrium
Week 5	Acid-Base dissociation constant
Week 6	pH-scale, buffer solution

Week 7	Solubility of precipitations, common ion effect
Week 8	Errors & statistical treatment of analytical data sources of errors, types of errors, average mode, range, average derivation, standard deviation, relative standard deviation, variance, method of expressing accuracy, Absolute error, relative error.
Week 9	Redox reactions, balancing of redox equation
Week 10	Electrochemistry: electrochemical cells, types of electrodes, electrolytes, Nernst equation, cell potential
Week 11	Thermodynamic, Zero and first law of thermodynamic, Reversible and irreversible expansion, Heat capacities, adiabatic expansion, Isothermal processes.
Week 12	Second law of thermodynamic: spontaneous processes, entropy and Gibbs free energy.
Week 13	Photochemistry (spectrophotometer analysis), Regions of electromagnetic spectrum, Absorption and emission of electromagnetic spectrum, Beer Lambert law, instrumentations components of spectrophotometer.
Week 14	IR Spectrophotometer, mass spectroscopy, flame ionization spectrophotometry.
Week 15	Potentiometer, conductive meter, pH-meter and some other applications of chemical sensors
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

البرنامج الأسبوعي للختبر

	Material Covered
Week 1	Principals of qualitative analysis.
Week 2	Qualitative analysis of cations of 1st and 2nd groups.
Week 3	Qualitative analysis of cations of 3rd and fifth groups.
Week 4	Introduction to Quantitative (volumetric) analysis and types of standard substance in titration, principles and calculations of titration.
Week 5	How to prepare solution of primary standard materials and to standardize secondary standard substance of HCl, (acid-base titration)
Week 6	Standardization secondary standard substance of NaOH and its application by determination of vinegar acidity.
Week 7	Determination of residual chloride in tape water by titration against silver nitrate (precipitation titration).

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	1- ESSENTIALS OF GENERAL CHEMISTRY By EBBING GABBON RAGSDALE 2- CHEMICAL PRINCIPLES By Steven S Zumdahl - 4th edition	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 الرجعة)	(45-49)	More work required but credit awarded
	F - Fail	راسب	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Fundamentals of Electrical Engineering (AC)		Module Delivery
Module Type	Core	☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	1201MIET		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI		
Administering Department	MIET	College	EETC
Module Leader	Murtadha Mazhir Aueed	e-mail	engmurtadha7@gmail.com
Module Leader's Acad. Title	Asst. Lecturer	Module Leader's Qualification	M.S.c
Module Tutor		e-mail	
Peer Reviewer Name	Dr. Mohammad Ghazi Molhem	e-mail	E-mail
Scientific Committee Approval Date	31/03/2025	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 البرنامجية

Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of circuit theory through the application of techniques. 2. To understand the basic information about the different signal as like square ,triangle and the sinusoidal waves 3. To learn the basic concepts about Ac current as like Max-value , peak to peak value and average and RMS terms 4. To understand element of capacitance, inductance and resistance and their effect on AC circuits. 5. To learn the basic concept of First-Order electrical circuits. 6. To explain the parallel and series connection in AC circuits . 7. To understand Sinusoids waveforms and Phasors problems. 8. To perform AC- network theorem. 9. To perform AC Power Analysis and calculate. 10. To understand 3-phase system and how it work.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how electricity works in AC electrical circuits. 2. learn the various terms associated with AC electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Describe electrical capacitance, inductance and resistance. 5. Define First-Order electrical circuits' voltage, resistance, and current. 6. Identify the basic circuit elements and their applications. 7. Discuss the operations of sinusoids and phasors in an electric circuit. 8. Discuss the various properties of resistors, capacitors, and inductors. 9. Explain the parallel and series circuits. 10. Identify the capacitor and inductor phasor relationship with respect to voltage and current. 12. Learn the 3-Phase system, Wye connection and Delta connection. 13. Identify the power in balance phase circuit. 14. Describe the Magnetism and Magnetic Circuits
Indicative Contents المحتويات البرنامجية	Indicative content includes the following titles: 1. AC circuits I – Generation of alternating current, Sinusoidal current. The mean values of current and voltage. [15 hrs] 2. AC Circuits II - The effective values of current and voltage. The vector diagram [10 hrs]. 3. The instantaneous power and mean power of A.C , relative and apparent power [10 hrs]. 4. Revision problem classes [10 hrs] 5. 3-Phase system, Wye connection, and Delta connection [15 hrs] 6. The power in balance phase circuit. [10 hrs] 7. Revision problem classes [5 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, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students. It also includes homework assignments, written exam, Quizzes, seminars, reports, And practical tests .
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	75	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 and 10	LO #1, #2 and #10, #11
	Assignments	1	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	2	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All subjects
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

النهج الأسبوعي النظري

	Material Covered
Week 1	Generation of alternating current, Sinusoidal current and study the properties of AC.
Week 2	Average and RMS values of current & voltage, and form factor and amplitude Factor
Week 3	AC in resistive circuits Current & voltage in an inductive circuit
Week 4	Current and voltage in an capacitive circuits AC series RL, RC and RLC circuit analysis & phasor representation
Week 5	Current and voltage in an capacitive circuits parallel circuits RL, RC and RLC circuit analysis & phasor representation
Week 6	Current and voltage in an capacitive circuits AC series and parallel circuit RL, RC and RLC circuit analysis & phasor representation (common connection parallel and series)
Week 7	Mid-term exam
Week 8	Power in resistive circuits
Week 9	Power in inductive and capacitive circuits
Week 10	Power in circuit with resistance and reactance
Week 11	Measurement of power in a single-phase AC circuit
Week 12	Basic concept & advantage of Three-phase circuit
Week 13	Phasor representation of star & delta connection
Week 14	Measurements of power & power factor in 3-phase system
Week 15	AC circuits Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

البرنامج الأسبوعي للختبر

	Material Covered
Week 1	Lab 1: Introduction to electrical elements, sources, and measuring devices related to electrical circuits.
Week 2	Lab 2: Generating AC Voltages and Measurement Frequency, Period, Amplitude, and Peak Value.
Week 3	Lab 3: Calculations and Verification of the Impedance of RL series circuits
Week 4	Lab 4: Calculations and Verification of the current of RL series circuits
Week 5	Lab 5: Calculations and Verification of Impedance RC series circuits + Calculations and Verification of Current RC series circuits
Week 6	Mid-term exam
Week 7	Lab 7: Calculations and verification of the impedance of RLC series circuits
Week 8	Lab 8: Calculations and verification of the current of RLC series circuits
Week 9	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	Schaum's Outline Series, Electric Circuits Seventh Edition and Al-theraja- A textbook electrical technology	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Integral Mathematics		Module Delivery
Module Type	Support		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	1204MIET		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	Engineering Technical College
Module Leader	MSC. Iman Mahdi Jawad		e-mail
Module Leader's Acad. Title	Asst. Lecturer	Module Leader's Qualification	MSC
Module Tutor		e-mail	emanmahdi320@gmail.com
Peer Reviewer Name	Dr. Mohammad Ghazi Molhem	e-mail	iman.mahdi@alayen.edu.iq
Scientific Committee Approval Date	01/04/2025	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف الهادة الدراسية ونتائج التعلم والمحتويات البرنامجية

Module Objectives أهداف الهادة الدراسية	1. To develop problem solving skills and understanding of Integral calculus through a broad range of Integration techniques. 2. To understand theory and methods of integrations and apply it on various types of functions. 3. This is the basic subject for all engineering fields 4. Demonstrate basic knowledge and understanding of a core of linear algebra and applied mathematics. 5. Introduce student to integration of trigonometric functions and their inverses.
Module Learning Outcomes مخرجات التعلم للهادة الدراسية	At ending of course, the student will: 1. Identify the integration. 2. Interpret definite and indefinite integrals. 3. Integrate functions resulting in inverse trigonometric functions. 4. Integrate functions involving exponential and logarithmic functions. 5. Learn approximation techniques for integration. 6. Calculate the areas of curved regions by using integration methods. 7. Find the volume of a solid of revolution using various integration methods. 8. Learn how to find the length of a plane curve for a given function. 9. Teaching students how to calculate the inverses of matrices and how to identify them. 10. Teaching students how to find the solution of a homogeneous system of linear equations. 11. Teaching students how to find the eigenvalues of a matrix and the corresponding eigenvectors of a matrix. 12. Determine the diagonalizability of a given matrix.
Indicative Contents المحتويات البرنامجية	Indicative content includes the following. Introduction to integration. Methods of integration and Basics of Definite and indefinite Integration, Integration of trigonometric and inverse functions. Integration of the exponential functions, Integration of logarithmic functions. Integration of Hyperbolic and inverse hyperbolic functions, numerical integration and applications of the definite integrals. [30 hrs] Area of surface, Volume of revolution, Length of plane curve, Matrices and Inverse of matrix, Matrix Diagonalization Solution of homogeneous systems, Eigenvalues, and Eigenvectors [40 hrs] Revision problem classes [3 hrs] <u>IR Spectrophotometer, mass spectroscopy, FIS, FES.</u> <u>Potentiometer, conductive meter, pH-meter.</u>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. Classes and interactive lessons will be used to achieve this.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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	15 min/4 times	20%	3 rd , 5 th , 7 th , 12 th	LO# 1st – 2 nd LO# 1st – 5 th LO# 5th – 7 th LO# 10th – 12th
	Assignments	5min/4 times	10%	2 nd , 6 th , 8 th , 13 th	LO# 1 st LO# 10th
	Projects / Lab.	10min/one time	5%	6 th	LO# 2nd – 5th
	Report	Each lab/5 times	5%	3 rd , 4 th , 5 th , 6 th , 7 th	LO# 1st -2nd LO# 3rd LO# 4th LO# 5 th LO# 6th – 7th
Summative assessment	Midterm Exam	60min/one time	10% (10)	10 th	LO# 1st – 10 th

	Final Exam	180min/one time	50% (50)	16 th	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

البرنامج الأسبوعي النظري

	Material Covered
Week 1	Introduction to integration.
Week 2	Methods of integration and Basics of Definite and indefinite Integration.
Week 3	Integration of trigonometric and inverse functions.
Week 4	Integration of the exponential functions.
Week 5	Integration of logarithmic functions.
Week 6	Integration of Hyperbolic and inverse hyperbolic functions.
Week 7	Mid-term Exam + numerical integration and applications of the definite integrals.
Week 8	Area of surface
Week 9	Volume of revolution
Week 10	Length of plane curve
Week 11	Matrices and Inverse of matrix.
Week 12	Matrix Diagonalization
Week 13	Solution of homogeneous systems
Week 14	Eigenvalues and Eigenvectors
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Notes on Calculus II Integral Calculus Miguel A. Lerma	
Recommended Texts	1 Thomas ' Calculus (pdf) Fourteenth edition Based on the original work by GEORGE B. THOMAS, JR.	No
Websites	https://sites.math.northwestern.edu/~mlerma/courses/math214-2-02f/notes/c2-all.pdf http://dl.konkur.in/post/Book/Paye/Thomas-Calculus-14th-Edition-%5Bkonkur.in%5D.pdf	

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	Medical physics		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	12345UoB			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery		1
Administering Department	MIET	College	Engineering Technical College	
Module Leader	Dr.Watan.H .Jaer		e-mail	Watan.Hmood@alayen.edu.iq
Module Leader's Acad. Title	lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor	Safa Hameed Majeed		e-mail	Safa.Hameed@alayen.edu.iq
Peer Reviewer Name	Dr. Mohammad Ghazi Molhem		e-mail	Mohammed.ghazi@alayen.edu.iq
Scientific Committee Approval Date	10/02/2025	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 البرنامجية

Module Objectives أهداف المادة الدراسية	1- to recognize the influence of forces on the human body Identify how the skeleton works 2- to show how pressure affects the body's organs Recognize physical activity of the lungs and breathing 3- to demonstrate the physics of the cardiovascular system and the urinary system 4- to distinguishes the basic principles using the applications of electricity and magnetism in medicine 5- to shall be acquainted with respiratory, cardiovascular and cardiovascular equipment 6- to distinguishes the basic principles, using the sound waves in medicine and the use of x-rays in the diagnosis and identification of diseases
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1- Understand the difference between the Forces. 2- Know the bone has at least six functions. What are the main components of the bone, and to study the methods of Measurement the minerals quantity in the bone 3- know methods of diathermy 4- understand how Energy change in the body 5- know pressures inside the body parts and measure it 6- understand how to work the lungs and How the blood and lungs interact 7- know nervous system and the neuron 8- know the graphing devices of the body organs 9- know the applications of Electricity and Magnetism in Medicine 10- know the application of sound in medicine, know sonar devices 11- know the application of light and laser in medicine 12- know Major components of the cardiovascular system 13- know physics of nuclear medicine 14- know the x- ray device
Indicative Contents المحتويات البرنامجية	1- Define the Forces , Frictional Forces , Dynamics (5hrs) 2- functions of the skeleton and Bone consists of quite different materials and how to measure mineral in the bones (5 hrs) 3- Types of thermometers , Heat therapy, Cryogenics (5 hrs) 4- Sphygmomanometer, blood pressure, bladder pressure , tonometer(4hrs) 5- Function of Lungs & Breathing, breath rate, airways, Dalton's law of partial pressures(3hrs) 6- The nervous system and the neuron, Electrocardiogram, Electro retion gram (ERG), The magneto cardiogram (MCG)(4hrs) 7- Magnetic signals from the heart –magneto cardiogram(3hrs) 8- Macro shock, Micro shock (3hrs) 9- General Properties of Sound, Acoustic Impedance, Absorption, A-mode Display, Doppler Ultrasound(5hrs) 10- Endoscope, cystoscopes, Emissive IR photography. (5hrs) 11- Laser, population inversion, X-ray (6hrs) 12- Physics of the cardiovascular system (5 hrs)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Daily assessment - weekly assessment - quarterly assessment - objective questions - general questions - practical tests.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
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	200		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

النهج الأسبوعي النظري

	Material Covered
Week 1	Forces on and in the body.

Week 2	Physics of the skeleton.
Week 3	Heat & cold in medicine
Week 4	Energy, work and power of the body, Pressure in body organs
Week 5	Physics of the lungs and breathing.
Week 6	Physics of cardiovascular system
Week 7	Mid Term Exam
Week 8	Physics of urinary system.
Week 9	Electricity within the body.
Week 10	Sound in medicine and physics of hearing.
Week 11	Light in medicine and physics of vision.
Week 12	Diagnostic X-rays
Week 13	Physics of nuclear medicine (radioisotopes in medicine).
Week 14	Physics of radiation therapy+ Radiation protection
Week 15	Preparatory week before the final exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

البرنامج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to laboratory tools
Week 2	Lab 2: the simple pendulum
Week 3	Lab 3: hook's law
Week 4	Lab 4: the blood pressure
Week 5	Lab 5: the friction
Week 6	Lab 6: the speed of sound
Week 7	Lab 7: the laser
Week 8	Lab 8: viscosity of liquids
Week 9	Lab 9: The cylindrical body
Week 10	Lab 10: The convex lens

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Required Texts	Introductory Physics I Elementary Mechanics by Robert G. Brown	NO
Recommended Texts	https://webhome.phy.duke.edu/~rgb/Class/intro_physics_1/intro_physics_1.pdf	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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	رأسبب (قيد البرعالية)	(45-49)	More work required but credit awarded
	F - Fail	رأسبب	(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	Arabic Language		Module Delivery	
Module Type	Basic		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	1001MTU			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGI	Semester of Delivery		1
Administering Department	MIET	College	EETC	
Module Leader	Azhar Rahim Al-Asadi		e-mail	Azhar.Rahim.Owaid@alayan.edu.iq
Module Leader's Acad. Title	Assistant Professor		Module Leader's Qualification	A.P
Module Tutor	Azhar Rahim Al-Asadi		e-mail	Azhar.Rahim.Owaid@alayan.edu.iq
Peer Reviewer Name	Name رئيس القسم	e-mail	E-mail	
Scientific Committee Approval Date	2025/3/27	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 البرنامجية				
Module Objectives أهداف المادة الدراسية	1. Recognize common grammatical errors, explain their causes, and how to avoid them. 2. Learn the rules related to the connected, long, and open taa' and how to write them correctly. 3. Learn the rules for writing the extended and shortened alif and how to use the solar and lunar letters correctly.			

	- Recognize the letters dad and dhad and know how to distinguish between them in writing. - Learn how to write the hamza correctly according to grammatical rules. - Recognize punctuation marks and use them correctly in texts. - Understand the differences between nouns and verbs and distinguish between them in sentences. - Understand the objects and how to use them correctly in texts. - Learn numbers and numbers and how to use them to express quantities. - Avoid common grammatical errors in practical contexts to enhance grammar understanding and improve language skills. - Study nun and tanween, understand the meanings of prepositions, and use them correctly in sentences. - Focuses on the formal aspects of administrative discourse and how to write it correctly and appropriately. - Identify the language of administrative discourse and understand its use in administrative communication. - Understand examples of administrative correspondence to apply the concepts and skills acquired in administrative discourse.
Module Learning Outcomes مخرجات التعلم للوحدة الدراسية	- Students' ability to analyze and identify common linguistic errors and apply correct rules to avoid them. - The ability to correctly use linguistic rules related to the closed, long, and open taa. - Students' ability to correctly use the extended and shortened alif and the solar and lunar letters. - Students' ability to distinguish between the letter Ḍād and the letter Ḍād and to apply correct writing rules. - The ability to correctly write the hamza according to linguistic rules. - The ability to correctly use punctuation in written texts. - Students' understanding of the differences between nouns and verbs and enabling them to use them correctly in sentences. - The ability to correctly use objects in written texts. - The ability to correctly use numbers and numbers to express quantities. - The ability to correctly apply common linguistic errors in practical contexts and correct them appropriately. - Understand the use of nun, tanween, and the meanings of prepositions and use them correctly in sentences. - The ability to write administrative letters in a correct and appropriate style and understand the language of administrative letters. 12.13 Apply the acquired concepts and skills in writing administrative correspondence correctly and effectively.
Indicative Contents المحتويات البرنامجية	- Introduction to linguistic errors and definitions of the connected taa', the long taa', and the open taa' (3 hours). - Rules for writing the extended and shortened alif and identifying the solar and lunar letters (3 hours).

	3- Studying the letters dad and dha' and learning how to write them correctly. (3 hours). 4- Learning how to write the hamza correctly according to linguistic rules (3 hours). 5- Studying punctuation marks and learning how to use them correctly in linguistic texts (3 hours). 6- Recognizing nouns and verbs, distinguishing between them, and understanding the rules related to them (3 hours). 7- Studying objects and learning how to use them in linguistic sentences (3 hours). 8- Recognizing numbers and using them correctly in phrases and sentences (3 hours). 9- Studying common linguistic errors and their applications in linguistic texts (3 hours). 10. Learn the use of nun and tanween, understand the meanings of prepositions, and use them correctly in sentences. (2 hours) 11. Identify the formal aspects of administrative discourse and understand its language and grammar. (2 hours) 12. Study examples of administrative correspondence and apply them in writing. (2 hours) 13- This guiding content provides students with a comprehensive understanding of linguistic concepts, grammar, and practical applications that help them develop their language skills.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1- Active Interaction: Students are encouraged to participate and actively participate in lessons through group discussions and interactive activities. 2- Cooperative Learning: Students are encouraged to collaborate and cooperate through group work and group projects, where students collaborate with each other to achieve specific learning objectives.
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- 3- Practical Application: Students are provided with opportunities to apply acquired concepts and skills in practical, real-life contexts, enhancing effective engagement with the material.
- 4- Using Modern Technologies: Students benefit from the use of technology in the learning process, such as using computers and the internet for research and self-study.
- 5- Providing Immediate Feedback: Students are provided with immediate feedback and continuous assessment, both oral and written, to help them improve their performance and develop their skills.
- 6- Diversifying Communication Methods: A variety of communication and teaching methods are used, such as explanatory lectures, group discussions, practical activities, and presentations, to meet the different learning needs and styles of students.
- 7- Using these strategies promotes effective student interaction and learning,
- 8- and motivates students to participate and acquire knowledge and skills in a comprehensive and engaging manner.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم الهادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	5 ,10. 13	LO #1, 5 and, 11
	Assignments	3	15% (15)	2 and 12	LO #3, 6 and 12
	Projects / Lab.				
	Report	1	10% (10)	14	LO #1-13

Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - 7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)**النهج الأسبوعي النظري**

	Material Covered
Week 1	Introduction to Grammatical Mistakes: The Taa Marbuta, the Long Taa, and the Open Taa
Week 2	Rules for Writing the Extended and Shortened Alif - Solar and Lunar Letters
Week 3	Ḍād and Ḍā'
Week 4	Writing the Hamza
Week 5	Punctuation
Week 6	Nouns and Verbs and Differentiating Between Them
Week 7	Objects + Numbers
Week 8	Midterm Exam
Week 9 and 10	Applications of Common Grammatical Mistakes
Week 11	Noun and Tanween - Meanings of Prepositions
Week 12	Formal Aspects of Administrative Discourse
Week 13 and 14	Language of Administrative Discourse: Examples of Administrative Correspondence
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources**مصادر التعلم والتريس**

	Text	Available in the Library?
Required Texts	Common Grammatical Mistakes, written by: Khaled bin Hilal bin Nasser Al-Anbari Library: The Promising Generation, First Edition. 2 - Rules of Spelling and Punctuation, by: Abdul Salam Haroun, edited by: Nabil Abdul Salam Haroun, Dar Al-Kotob Al-Ilmiyyah, First Edition, 2005.	Yes
Recommended Texts	Parts of Arabic Speech in Terms of Form and Function, by: Dr. Fadel Mustafa Al-Saq, introduction by Professor Dr. Tamam Hassan, Al-Khanji Library, Cairo, 1977 edition.	No
Websites	The Collage E-Library	

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 البرعالة)	(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.