Module Information معلومات المادة الدر اسبة							
Module Title	С	Computer Science			le Delivery		
Module Type	Ba	sic learning activities	8		🛛 Theory		
Module Code	۱	UOBAB0102026			□ Lecture ⊠ Lab		
ECTS Credits		5					
SWL (hr/sem)		125					
Module Level	UGI		Semester of Delivery		Тwo		
Administering Department		Mechanical Engineering	College	Engineering College			
Module Leader	Najlaa Ali Hus	sein	e-mail	eng.najlaaali.hussein@uobabylon.ed		iobabylon.edu.iq	
Module Leader's	Acad. Title	Lecturer	Module Leader's Qualification Ph.D.		Ph.D.		
Module Tutor	N.A.		e-mail	N.A.			
Peer Reviewer Name N.A.		e-mail	N.A.	N.A.			
Scientific Commit Date	tee Approval	31/05/2023	Version Nu	mber	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	 To develop student skills for solving most related mathematical problems in mechanical engineering by MATLAB. To learn how to write a program code and script. To learn how to import and export data. To understand how to construct the matrix and find the matrix indexing and arithmetic. To understand the built-in functions in MATLAB To cover statements in MATLAB that allow other statements to be repeated which are called loops. To learn solving a set of linear equations. To learn 2D plotting techniques. 					
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 Students can easily use MATLAB interface and type proper codes or basic commands into the command window. Identify different methods used to construct a matrix and learn how to deal with matrix arithmetic and indexing. Students intended to have the ability of how to write a script and save it and open files. Learning how to convert a string into a number and conversely. Learning how to perform numerical differentiation and integration using symbolic functions. 					
Indicative Contents المحتويات الإرشادية	 bitterstanding now a set of infear equations could be solved. 7. Learning the 2D plotting skills by MATLAB. Introduction to MATLAB [5 hrs] Basic Operations [3 hrs] Scalar Arithmetic's [3 hrs] Matrix Construction [5 hrs] Matrix Indexing [4 hrs] Matrix Arithmetics [5 hrs] String manipulation [3 hrs] Loops and Controls [6 hrs] Functions [5 hrs] Differentiations and Integrals in MATLAB [5 hrs] solving a set of linear equations. [5 hrs] Figure and Axes [5 hr] 2D Plotting [5 hrs] the ezplot family [3 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 programming, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and by computer lab.			

Student Workload (SWL)					
الحمل الدر اسي للطالب					
Structured SWL (h/sem)	62	Structured SWL (h/w)	12		
الحمل الدراسي المنتظم للطالب خلال الفصل	03	الحمل الدراسي المنتظم للطالب أسبوعيا	4.2		
Unstructured SWL (h/sem)	62	Unstructured SWL (h/w)	1 12		
الحمل الدراسي غير المنتظم للطالب خلال الفصل	02	الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.15		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125				

Module Evaluation							
تقييم المادة الدر اسية							
		Time/Nu	Weight (Marks)	Week Due	Relevant Learning		
		mber		Theek Buc	Outcome		
	Quizzes	3	10% (10)	5, 9, 13	LO #1, 3 and 5		
Formative	Assignments	4	10% (10)	3,6,9,12	LO #1-5		
assessment	Lab.	1	10% (10)	Continuous			
	Report	1	10% (10)	13	LO # 3, 5 and 6		
Summative	Midterm Exam	2 hrs	10% (10)	11	LO # 1-6		
assessment	Final Exam	3 hrs	50% (50)	16	All		
Total assessme	ent		100% (100 Marks)				

	Delivery Plan (Weekly Syllabus)			
المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Introduction to MATLAB			
Week 2	Basic Operations			
Week 3	Scalar Arithmetics			
Week 4	Matrix Construction			
Week 5	Matrix Indexing			
Week 6	Matrix Arithmetics			
Week 7	String manipulation			
Week 8	Loops and Controls			
Week 9	Functions			
Week 10	Differentiations and Integrals in MATLAB			
Week 11	Mid-term exam			
Week 12	Solving a set of linear equations.			
Week 13	Figures and Axes			
Week 14	2D Plotting			
Week 15	The ezplot family			
Week 16	Preparatory week before the final Exam			

Delivery Plan (Weekly Lab. Syllabus)			
المنهاج الأسبوعي للمختبر			
	Material Covered		
Week 1	Lab 1: Introduction to MATLAB		
Week 2	Lab 2: Executing the Basic Operations		
Week 3	Lab 3: Executing the Scalar Arithmetics		
Week 4	Lab 4: Executing the Matrix Construction		
Week 5	Lab 5: Executing the Matrix Indexing		
Week 6	Lab 6: Executing the Matrix Arithmetics		
Week 7	Lab 7: Quiz		
Week 8	Lab 8: Executing the String manipulation		
Week 9	Lab 9: Executing the Loops and Controls		

Week 10	Lab 10: Executing the Differentiations and Integrals in MATLAB by using symbolic function
Week 11	Lab 11: Solving a set of linear equations.
Week 12	Lab 12: Practicing on Figure and Axes
Week 13	Lab 13: Practicing on 2D Plotting
Week 14	Lab 14: Quiz
Week 15	Lab 15: Practicing on the ezplot family

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Introduction to MATLAB, California Institute of Technology, ACM11 Spring, 2015.	No		
Recommended Texts	MATLAB a Practical introduction to programming and Problem Solving, Stormy Attaway, Boston University, Fourth edition, 2017.	No		
Websites https://www.coursehero.com/file/38467738/Introduction-to-MATLAB-ACM11-Sprin 2015-California-Institute-of-Tech/				

Grading Scheme مخطط الدرجات					
Group	Grade	التقدير	Marks (%)	Definition	
	A - Excellent	امتياز	90 - 100	Outstanding Performance	
Success Group (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	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded	
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required	

Module Information معلومات المادة الدراسية							
Module Title	Eng	ineering Drawin	ıg	Modu	le Delivery		
Module Type		Core			🛛 Theory		
Module Code	l	UOBAB0102013			□ Lecture ⊠ Lab		
ECTS Credits		5			□ Tutorial		
SWL (hr/sem)		125			─────────────────────────────────────		
Module Level	UGI		Semester of Delivery		One		
Administering Department		Mechanical Engineering	College	Engineering College			
Module Leader	Lekaa hameec	l	e-mail	eng.liqaa.hameed@uobabylon.edu.iq		abylon.edu.iq	
Module Leader's	Acad. Title	lecturer	Module Lea	der's Qualification M.Sc.		M.Sc.	
Module Tutor	N.A		e-mail	N.A			
Peer Reviewer Name N.A		e-mail	N.A				
Scientific Commit Date	tee Approval	31/05/2023	Version Nu	mber	1.0		

Relation with other Modules					
العلاقة مع المواد الدر اسية 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	 To familiarize the student with the importance of engineering drawing. The student learns how to imagine geometric shapes. To distinguish the mechanical components and parts and the principle of their work. To develop the student's mental and motor ability in drawing simple and complex shapes. 					
	 5- The student learns how to develop a strategy and sequence for drawing, assembling and disassembling geometric shapes, drawing projections, and setting dimensions. 6- Understanding all the engineering properties of any mechanical part or product clearly and communicating the basic information that enables the factory to produce this mechanical part. 					
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 Increasing the student's ability to imagine engineering objects and methods of drawing them. Distinguish between manual drawing and computer drawing and the ability to deal with it. Acquisition of speed and great ability in drawing various engineering parts. Dealing with drawing using the AutoCAD program. 					
Indicative Contents المحتويات الإرشادية	 Indicative content includes the following. 1- Introduction [1hr] 2- Graphic instruments and their use.[1hr] 3- Lettering Graphic Geometry.[4hr] 4- Multi view orthogonal graphic projection In, first- and third- Angle projection 5- Dimension.[7hr] 6- Third view.[5hr] 					

7-	Isometric drawing and sketching,	Oblique	drawing,	Section	of	Isometric
	drawing, Sectional view .[6hr]					
8-	Auto Cad.[8]					

Learning and Teaching Strategies						
	استر اتيجيات التعلم والتعليم					
	A full explanation of the subject of manual engineering drawing and drawing using					
	the computer in the AutoCAD program and the practical application of that.					
	Developing the student's skills through scientific and systematic thinking and the					
Strategies	ability to draw engineering. Enhancing the student's skill in facing some problems					
	related to drawing engineering drawings and developing responsibility while drawing					
	engineering drawings.					

Student Workload (SWL)					
الحمل الدر اسي للطالب					
Structured SWL (h/sem)	02	Structured SWL (h/w)	6.2		
الحمل الدراسي المنتظم للطالب خلال الفصل	33	الحمل الدراسي المنتظم للطالب أسبوعيا	0.2		
Unstructured SWL (h/sem)	22	Unstructured SWL (h/w)	2 12		
الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.13		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125				

Module Evaluation							
تقييم المادة الدر اسية							
	Time/Nu Weight (Marks) Weak Due Relevant Learning						
		mber	Weight (Warks)	Week Due	Outcome		
	Quizzes	3	10% (10)	5, 10,14	LO #1, 2 to 13		
Formative	Assignments	10	10% (10)	2,3,4,5,6,7,9,	LO # 2 to 11		
assessment	Assignments	10	10/0 (10)	10,11,12			
assessment	Projects / Lab.	3	10% (10)	Continuous			
	Report	1	10% (10)	13	LO # 5, 8 and 10		
Summative	Midterm Exam	2 hrs	10% (10)	11	LO # 11		

assessment	Final Exam	3 hrs	50% (50)	16	All
Total assessment		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)						
	المنهاج الاسبوعي النظري					
	Material Covered					
	Introducing:					
	Introducing the student to a subject about the importance of engineering drawing and identifying					
Week 1	engineering tools and how to use them.					
	Types of pens used, board layout, address field preparation, how to deal with the					
	engineering board, and how to install the engineering sheet.					
	types of lines in engineering drawing:					
Week 2	Visible and continuous lines, hidden lines, center lines, dimension lines, cutting lines, and					
	drawing an application board that includes this topic.					
Week 3	Explain and illustrate how to put dimensions on any drawn geometric object.					
	engineering operations:					
14/- als 4	Teach the student how to apply and draw engineering operations					
week 4	Part 1 : Drawing parallel and intersecting lines, bisections of angles, and hexagons and					
	pentagons,etc. and drawing applied exercises on this subject.					
	engineering operations:					
Week 5	part 2 :Drawing tangential arcs and how to draw the ellipse					
	Drawing applied exercises on this subject.					
	The vertical projection theory of objects:					
Week 6	Part 1 : How to deduce the three projections in the first even angle, (front view, side view,					
	and top view)					
	The vertical projection theory of objects:					
Week 7	Part 2 : How to arrange and draw the projections required for any object on the drawing					
	sheet.					
	The vertical projection theory of objects:					
week 8	Part 3 : Drawing applied exercises on the vertical projection theory of objects.					
Week 9	The theory of cuts and sections in engineering drawing:					

	Part 1 : full section (S.F.V, S.S.V, S.T.V)
Week 10	The theory of cuts and sections in engineering drawing:
Week 10	Part 2 : half - section (H.S.F.V, H.S.S.V, H.S.T.V)
Wook 11	Midterm Exam + The theory of cuts and sections in engineering drawing:
WEEK II	Part 3 : Drawing applied exercises on this subject .
Wook 12	The missing view :
WEEK 12	Part 1: explained how find the missing view
Wook 13	The missing view :
WEEK 15	Part 2: Drawing applied exercises on this subject .
Week 14	Explanation of the subject of three-dimensional drawing
	Part 1: (Isometric drawing)
Wook 15	Part 2: (Isometric drawing): Linking the given projections with the process of imagining and drawing
VVEER 15	the isometric body, and drawing applied exercises on this subject .
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)						
المنهاج الأسبوعي للمختبر						
	Material Covered					
	Introduction to the AutoCAD program:					
Week 1	Lab 1: Learn about the program and how to use it with engineering drawing material, Commands,					
	screen and menus.					
Week 2	Lab 2: Drawing exercise about types of lines in engineering drawing using the AutoCAD program.					
Week 3	Lab 3: Drawing exercise about put the dimension using the AutoCAD program.					
Week 4	Lab 4: part 1: Drawing exercise about engineering operations using the AutoCAD program.					
Week 5	Lab 5: : part 2: Drawing exercise about engineering operations using the AutoCAD program.					
Week 6	Lab 6: : part 1: Drawing exercise about the vertical projection theory of objects using the					
Week U	AutoCAD program. (Front view)					
	Lab 7: part 2: Drawing exercise about the vertical projection theory of objects using the					
Week 7	AutoCAD program. (Side view)					
Week 8	Lab 8: part 3: Drawing exercise about the vertical projection theory of objects using the					

	AutoCAD program. (Top view)
Week 9	Lab 9: part 1: Drawing exercise about the theory of cuts and sections in engineering drawing of
week 5	objects using the AutoCAD program. (S.F.V) and (H.S.F.V)
Wook 10	Lab 10: part 2: Drawing exercise about the theory of cuts and sections in engineering drawing
Week 10	of objects using the AutoCAD program.(S.S.V) and (H.S.S.V)
Wook 11	Lab 11: part 3: Drawing exercise about the theory of cuts and sections in engineering drawing
Week II	of objects using the AutoCAD program. (S.T.V) and (H.S.T.V)
Week 12	Lab 12: part 1: Drawing exercise about missing view theory of objects using the AutoCAD
WEEK 12	program.
Wook 13	Lab 13: part 2: Drawing exercise about the missing view theory of objects using the AutoCAD
WCCK 15	program.
Week 14	Lab 14: part 1: Drawing exercise about (Isometric drawing) of objects using the AutoCAD program.
Week 15	Lab 15: part 2: Drawing exercise (Isometric drawing) of objects using the AutoCAD program.
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources						
مصادر التعلم والتدريس						
	Text	Available in the Library?				
Required Texts	عبد الرسول عبد الحسين الخفاف (1986) " الرسم الهندسي " الجامعة –1 التكنولوجية	Yes				
Recommended Texts	 الشريف (1978) " الرسم الهندسي " جامعة حلب المرجع في الرسم الهندسي د. محمود صالح Manual of engineering drawing – Simmons C.H. , Maguire D.E The fundamentals of engineering drawing / Thomas E.F.& Charles J. 	No				
Websites	http://noor-book.com/x0patg http://noor-book.com/7fybwm http://noor-book.com/i4bgxl					

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

Module Information معلومات المادة الدر اسبة							
Module Title	Enginee	ring Mechanics:	statics	Modu	le Delivery		
Module Type				🛛 Theory			
Module Code	J			□ Lecture			
ECTS Credits				⊠ Tutorial			
SWL (hr/sem)		150			Practical Seminar		
Module Level	UGI		Semester o	f Deliver	Delivery 2		
Administering Department		Mechanical Engineering	College	Engineering College			
Module Leader	Dr. Mustafa Ba	aqir Hunain	e-mail	eng.mu	eng.mustafa.baqir@uobabylon.edu.i		
Module Leader's Acad. Title		Professor	Module Lea	Leader's Qualification PhD		PhD	
Module Tutor	or Dr. Mustafa Baqir Hunain.		e-mail	eng.mustafa.baqir@uobabylon.edu.ic		babylon.edu.iq	
Peer Reviewer Name		N.A.	e-mail N.A.				
Scientific Committee Approval Date		31/05/2023	Version Nu	Number 1.0			

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

Mod	ule Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإر شادية
Module Aims أهداف المادة الدراسية Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 To learn the basic quantities and idealizations of mechanics. To learn expressing forces and position in cartesian vector form and explaining how to determine the vector's magnitude and direction. To learn the concept of the free-body diagram for a particle and rigid body and equilibrium problems. To learn finding moments, couples, and resultants. To analyze the forces in the truss, frames, and machines. To learn finding the centroid of the 1D, 2D, and 3D figures and bodies. To learn the concept of dry friction and how to analyze the equilibrium of rigid bodies subjected to this force such as wedges, screw, and belts. To learn determining the moment of inertia for different 2D shapes. Students would have the ability to analyze forces, moments and resultants in 2D and 3D structures. Students intended to have the ability of analyzing the forces in the trusses and frames. Learning how to find the centroid of different shapes and volumes. Learning the types of friction and its applications in the mechanical engineering
اللان الليب	 Learning the types of friction and its applications in the mechanical engineering field. Learning how to find the moment of inertia of different shapes.
	- Basic Concents Scalars and Vectors Newton's Laws Units and Law of
	Gravitation [4 hrs]
	 Force, TWO-DIMENSIONAL FORCE SYSTEMS, Rectangular Components, Moment, Couple, and Resultants [6 hrs]
	 THREE-DIMENSIONAL FORCE SYSTEMS, Rectangular Components, Moment and Couple, and Resultants [8 hrs]
Indicative Contents المحتويات الإرشادية	 EQUILIBRIUM IN TWO DIMENSIONS, System Isolation and the Free-Body Diagram, Equilibrium Conditions, EQUILIBRIUM IN THREE DIMENSIONS, and Equilibrium Conditions [8 hrs]
	 Plane Trusses, Method of Joints, Method of Sections, and Frames and Machines [10 hrs]
	- CENTERS OF MASS AND CENTROIDS, Center of Mass, Centroids of Lines, Areas, and Volumes Composite Bodies and Figures, and Approximations [8 hrs]
	 FRICTIONAL PHENOMENA, Types of Friction, Dry Friction, and APPLICATIONS OF FRICTION IN MACHINES, Wedges, Screws, and Flexible Belts [8 hrs]

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Learning and Teaching Strategies				
	استر اتيجيات 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 type of simple experiments involving some sampling activities that are interesting to the students.			

Student Workload (SWL) الحمل الدراسي للطالب				
Structured SWL (h/sem) 93 Structured SWL (h/w) 6.2 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 6.2				
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	57	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	3.8	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل				

Module Evaluation								
	تقييم المادة الدراسية							
		Time/Nu	Woight (Marks)	Week Due	Relevant Learning			
		mber		Week Due	Outcome			
	Quizzes	2	10% (10)	5, 10	LO # 1, 2, 3, and 4			
Formative	Assignments	2	10% (10)	5, 12	LO # 1, 2, 3 and 5			
assessment	Projects / Lab.	-	-	-				
	Report	1	10% (10)	13	LO # 5			
Summative	Midterm Exam	2 hrs	10% (10)	10	LO # 1-3			
assessment	Final Exam	3 hrs	60% (50)	16	All			
Total assessme	ent		100% (100 Marks)					

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري				
	Material Covered			
Week 1	Basic Concepts Scalars and Vectors Newton's Laws Units Law of Gravitation			
Week 2	Force TWO-DIMENSIONAL FORCE SYSTEMS Rectangular Components Moment Couple Resultants			
Week 3	THREE-DIMENSIONAL FORCE SYSTEMS Rectangular Components Moment and Couple Resultants			
Week 4	EQUILIBRIUM IN TWO DIMENSIONS System Isolation and the Free-Body Diagram Equilibrium Conditions			
Week 5	EQUILIBRIUM IN THREE DIMENSIONS Equilibrium Conditions			
Week 6	Plane Trusses Method of Joints			
Week 7	Plane Trusses Method of Sections			
Week 8	Frames and Machines			
Week 9	FRICTIONAL PHENOMENA Types of Friction Dry Friction			
Week 10	Midterm Exam			
Week 11	APPLICATIONS OF FRICTION IN MACHINES (Wedges and Screws)			
Week 12	APPLICATIONS OF FRICTION IN MACHINES (Flexible Belts)			
Week 13	CENTERS OF MASS AND CENTROIDS Center of Mass Centroids of Lines, Areas, and Volumes			
Week 14	CENTROIDS of Composite Bodies and Figures; Approximations			
Week 15	Definitions of AREA MOMENTS OF INERTIA and AREA MOMENTS OF INERTIA of Composite Areas			
Week 16	Preparatory week before the 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 by J . L . MERIAM and L . G . KRAIGE.	Yes	
Recommended Texts	ENGINEERING MECHANICS-STATICS by R. C. Hibbeller	No	
Websites			

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

Module Information							
معلومات المادة الدراسية							
Module Title	Manuf	acturing Engine	ering	Modu	le Delivery		
Module Type		Core			🛛 Theory		
Module Code	۱	UOBAB0102025			□ Lecture □ Lab		
ECTS Credits							
SWL (hr/sem)	125				- ⊠Practical □ Seminar		
Module Level		UGI	Semester o	of Delivery 2		2	
Administering Department		Type Dept. Code	College	Type College Code			
Module Leader	Dr. Ali Sabah A	Al-Turaihi	e-mail	Eng.ali.sabah@uobabylon.edu.iq		on.edu.iq	
Module Leader's	Acad. Title	Assistant Professor	Module Lea	eader's Qualification Ph.D		Ph.D.	
Module Tutor	Name (if available)		e-mail	E-mail			
Peer Reviewer Name Name		Name	e-mail	E-mail			
Scientific Committee Approval Date		01/06/2023	Version Nu	nber 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	 Graduates will have the knowledge and skills to enter careers in manufacturing process and systems design, operations, quality, and continuous improvement. To develop the knowledge about Iron production and the raw materials of ores To gain knowledge about the steel production and most important characteristic of steel furnace To gain knowledge about best ways for joining materials (welding types) To have knowledge in types of manufacturing process such as machining, casting To have knowledge in metal forming processes which involve cold, warm and hot forming To gain skill to deal with machining, turning, casting, and welding process. Graduates will have the ability to provide solutions and solve manufacturing engineering technology related problems. Graduates will have the technical background to advance in their careers with an understanding and necessity for personal integrity, ethical behavior, cultural awareness, lifelong learning, and continuous improvement. 			
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline An ability to apply written, oral, and graphical communication in broadly- defined technical and non-technical environments; and an ability to identify and use appropriate technical literature An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes An ability to function effectively as a member as well as a leader on technical teams 			
Indicative Contents المحتويات الإرشادية	 Indicative content includes the following. 1- Production of Metals, Raws of Iron, Production of Raw and Cast Iron, Production of Ingots [4 hrs] 2- Production of Non Ferrous Metals (Aluminum, Copper, Lead), Physical Properties Of Metals, Mechanical Properties of Metals, Mechanism of Metals Solidification, Defects of Ingots [4 hrs] 3- The Measurement and Marking-Out, Hand Tools [4 hrs] 4- Metals Machining, Casting, [4 hrs] 5- Hot And Cold Working, Plastics, Glass and Ceramics, [4 hrs] 			

6- Metals Joining, Industrial Safety, [4 hrs]
7- Practical Training Hours in The Mechanical Workshop Turning [4 hrs]
8- Practical Training Hours in The Mechanical Workshop Forging [4 hrs]
9- Practical Training Hours in The Mechanical Workshop welding [4 hrs]
10- Practical Training Hours in The Mechanical Workshop Carpentry [4 hrs]
11- Practical Training Hours in The Mechanical Workshop Turning Measuring
Instruments [4 hrs]

Learning and Teaching Strategies استر اتيجيات التعلم و التعليم				
Strategies	the Manufacturing Engineering program contains a unique, well-balanced curriculum designed to prepare the student for a fast and productive entry into today's complex manufacturing environments. Manufacturing engineers plan, develop, and optimize the process and systems of production. They improve manufacturing productivity by developing better methods of assembling, testing, and fabricating systems and products.			

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem)78Structured SWL (h/w)5.2الحمل الدراسي المنتظم للطالب أسبوعياالحمل الدراسي المنتظم للطالب خلال الفصل					
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.13		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125				

Module Evaluation

تقييم المادة الدراسية

		Time/Nu mber	Weight (Marks)	Week Due	Relevant Learning Outcome
	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
Formative	Assignments	5	10% (10)	3,6,9,12,14	LO # 3, 4, 6 and 7
assessment	Practical	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
assessment	Final Exam	3hr	50% (50)	16	All
Total assessment		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)				
	المنهاج الاسبوعي النظري			
	Material Covered			
Week 1	Production of Metals, Raws of Iron, Production of Raw and Cast Iron, Production of Ingots,			
Week 2	Production of Non Ferrous Metals (Aluminum , Copper , Lead)			
Week 3	Physical Properties Of Metals, Mechanical Properties of Metals			
Week 4	Mechanism of Metals Solidification, Defects of Ingots			
Week 5	The Measurement and Marking-Out, Hand Tools,			
Week 6	Metals Machining, Casting, Hot And Cold Working			
Week 7	Mid-term exam			
Week 8	Metals Joining, Industrial Safety			
Week 9	Practical Training Hours In The Mechanical Workshop			
Week 10	Measuring Instruments Laboratory			
Week 11	Turning			
Week 12	Forging			
Week 13	Fitting			
Week 14	Carpentry			
Week 15	Measuring Instruments			
Week 16	Preparatory week before the final Exam			

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Turning -1
Week 2	Turning-2
Week 3	Turning-3
Week 4	Welding-1
Week 5	Welding-2
Week 6	Welding-3
Week 7	Machining-1
Week 8	Machining-2
Week 9	Machining 3
Week 10	Casting-1
Week 11	Casting-2
Week 12	Casting-3
Week 13	Carpentry-1
Week 14	Carpentry-2
Week 15	Carpentry-3

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the		
		Library?		
Required Texts	Fundamentals of Manufacturing For Engineers 1st Edition, T	Yes		
	F Waters, CRC Press; 1st edition (February 29, 1996)			
Recommended Texts	Fundamentals of Manufacturing Engineering Concepts and	No		
	Applications, D. K. Singh, Springer	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	FX — Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F — Fail	راسب	(0-44)	Considerable amount of work required

Module Information							
Module Title	معلومات المادة الدراسية ule Title Mathematics II			Modu	Module Delivery		
Module Type	Support	or related learning a	ctivity		⊠ Theory □ Lecture □ Lab ⊠ Tutorial		
Module Code	ſ	UOBAB0102021					
ECTS Credits		6					
SWL (hr/sem)		150	□ Practical 150 □ Seminar				
Module Level		UGI	Semester o	of Delivery 2		2	
Administering Department		Mechanical Engineering	College	College of Engineering			
Module Leader	Basil Mahdi Ha	adi Al-Srayyih	e-mail	eng.bas	ilm.hadi@uobat	oylon.edu.iq	
Module Leader's	Acad. Title	Lecturer	Module Leader's Qualification Ph.D.		Ph.D.		
Module Tutor	Basil Mahdi Ha	Basil Mahdi Hadi Al-Srayyih e-mail eng.basilm.hadi@uobabylon.e		oylon.edu.iq			
Peer Reviewer Name N.A.		e-mail	N.A.	N.A.			
Scientific Commit Date	tee Approval	31/05/2023	Version Nu	rsion Number 1.0			

Relation with other Modules						
	العلاقة مع المواد الدراسية الآخري					
Prerequisite module	Mathematics I UOBAB0102011	Semester	1			
Co-requisites module	None	Semester				

	Module Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
	1) This module aims to reinforce students 'previous knowledge and to develop
	subjects that will take in the next levels.
Module Aims أهداف المادة الدراسية	 It also provides knowledge of how the student will solve the mathematical problems of the selected subjects using higher-level thinking skills, including critical thinking and creativity. Students learn how to plot the mathematical functions of the selected subjects. To encourage students in solving mathematical problems precisely without mistakes. This module improves students' skills in solving mathematical problems in the next levels of study.
	 Students have knowledge in Limits and continuity. Students have knowledge to find the differentiation using its rules.
	3. Students are able to find the higher derivatives and Implicit differentiation.
Module	4. Students are able to solve the exponential and logarithmic functions
Learning Outcomes	 Students are able to solve the Trigonometric and inverse Trigonometric differentiations.
مخرجات التعلم للمادة الدراسية	6. Students have knowledge about how to find the Hyperbolic and inverse Hyperbolic functions differentiations.
	7. Students have knowledge about how to find the integration using the
	Substitution and Parts rules. 8 Students have knowledge about how to find the integration of the rational
	functions by partial fractions rule.

	9. Students have knowledge about how to find the area and volume using the						
	double and triple integrals.						
	10. Students have knowledge about the basic concept of the Infinite						
	sequences and Geometric series.						
	*						
	- Limits and continuity [6 hrs]						
	- Differentiation and its rules [6 hrs]						
	- Higher derivatives and Implicit differentiation [6 hrs]						
	- Exponential and logarithmic functions differentiations [6 hrs]						
Indicative	- Trigonometric differentiations [6 hrs]						
Contents	- Inverse Trigonometric functions differentiations [6 hrs]						
المحتويات	- Hyperbolic functions differentiations [6 hrs]						
الإرشادية	- Inverse hyperbolic functions differentiations [6 hrs]						
	- Integration by Substitution and Parts rules [6 hrs]						
	- Integration of rational functions by partial fractions [6 hrs]						
	- Area, volumes, double and triple integrals [6 hrs]						
	- Infinite sequences and Geometric series [6 hrs]						
	Learning and Teaching Strategies						
	استر اليجيات النعلم والتعليم						
	The main strategy that will be adopted in delivering this module is:						
	1) To encourage students' participation in solving the mathematical						
Strategies	problems in groups during the tutorials.						
	2) Activate the critical thinking skills of the students.						
	 3) Encourage the students to ask questions in the classes. 4) Encourage the students to introduce home works. 						
	4) Encourage the students to introduce nome works.						

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	5.2		
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	72	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4.8		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	150				

Module Evaluation تقييم المادة الدر اسية							
	Time/Nu Weight (Marks) Week Due Relevant Learning						
		Inder			Outcome		
	Quizzes	2	10% (10)	9,12	LO # (1-6) and (7)		
Formative	Assignments	2	10% (10)	9,12	LO #(1-6) and (7)		
assessment	Lab	-	-	Continuous			
	Report	1	10% (10)	14	LO # 9		
Summative	Midterm Exam	2 hrs	10% (10)	13	LO # 1-8		
assessment	Final Exam	3 hrs	60% (60)	16	All		
Total assessme	ent		100% (100 Marks)				

Delivery Plan (Weekly Syllabus)					
	المنهاج الاسبوعي النظري				
	Material Covered				
Week 1	Limits and continuity				
Week 2	Differentiation and its rules				
Week 3	Higher derivatives and Implicit differentiation				
Week 4	Exponential and logarithmic functions differentiations				
Week 5	Trigonometric differentiations				
Week 6	Inverse Trigonometric functions differentiations				
Week 7	Hyperbolic functions differentiations				
Week 8	Inverse hyperbolic functions differentiations				
Week 9	Integration theorems and its applications				

Week 10	Indefinite and definite integrals
Week 11	Integration by Substitution and Parts rules
Week 12	Integration of rational functions by partial fractions
Week 13	Mid-term exam
Week 14	Area, volumes, double and triple integrals
Week 15	Infinite Sequences and Geometric Series
Week 16	Preparatory week before the final Exam
	Delivery Plan (Weekly Lab. Syllabus)
	المنهاج الأسبوعي للمختبر
	Material Covered
Week 1	لا يوجد مختبر
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources				
مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Thomas – Calculus. 4 th edition	Yes		

Recommended Texts	Thomas – Calculus. 11 th edition	No
Websites	https://vulms.vu.edu.pk/Courses/MTH101/Downloads/Thoma 20Edition.pdf	as%20Calculus%2011th%

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

Module Information							
Module Title Mathematics I			Modu	Module Delivery			
Module Type	Support	or related learning a	ctivity	⊠ Theory			
Module Code	ſ	UOBAB0102011			Lecture		
ECTS Credits		6			⊠ Tutorial		
SWL (hr/sem)		150			Practical		
Module Level		UGI	Semester o	of Delivery One		One	
Administering Department		Mechanical Engineering	College	College of Engineering			
Module Leader	Basil Mahdi Ha	adi Al-Srayyih	e-mail	eng.bas	ilm.hadi@uobat	oylon.edu.iq	
Module Leader's	Acad. Title	Lecturer	Module Leader's Qualification Ph.D.		Ph.D.		
Module Tutor	Basil Mahdi Ha	Basil Mahdi Hadi Al-Srayyih e-mail <u>eng.basilm.hadi@uobabylon.edu.ic</u>		oylon.edu.iq			
Peer Reviewer Name N.A.		e-mail	N.A.				
Scientific Commit	tee Approval	31/05/2023	Version Nu	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 الدر اسية ونتائج التعلم والمحتويات الإرشادية
	1) This module aims to reinforce students 'previous knowledge and to develop
	new basic mathematical techniques needed to support the engineering
	subjects that will take in the next levels.
	2) It also provides knowledge of how the student will solve the mathematical
Module	problems of the selected subjects using higher-level thinking skills,
Aims	including critical thinking and creativity.
أهداف المادة الدر اسية	3) Students learn how to plot the mathematical functions of the selected
* 3	subjects.
	4) To encourage students in solving mathematical problems precisely without
	mistakes.
	5) This module improves students' skills in solving mathematical problems in
	the next levels of study.
	1 Students have knowledge in first second higher-degree Rational and
	Polynomial functions
	 Students have knowledge to find the results and plot the above mentioned
	equations
Madula	3. Students are able to find the equation roots.
Learning	4. Students are able to solve the vectors problems.
Outcomes	5. Students are able to solve and plot the exponential and logarithm problems.
	6. Students have knowledge about basic concept of the trigonometric
مخرجات التعلم المادة الدر اسرة	functions.
للمادة الدر الليب	7. Students are able to plot the trigonometric functions.
	8. Students have knowledge about the basic concept of inverse trigonometric
	functions.
	9. Students have knowledge about the basic concept of hyperbolic functions.

	- First and second -degree functions [3 hrs]
	- Higher-degree functions [3 hrs]
	- Plot the first, second, higher-degree functions [6 hrs]
	- Rational and Polynomial functions [6 hrs]
	- Plot the Rational and Polynomial functions [6 hrs]
Indicative	- Vectors functions and its applications [6 hrs]
Contents	- The Dot & Cross Products of vectors and its applications [6 hrs]
المحتويات الار شادية	- Exponential functions [6 hrs]
	- Logarithm functions [6 hrs]
	- Trigonometric functions [6 hrs]
	- Plotting the Trigonometric functions [6 hrs]
	- Inverse Trigonometric functions [6 hrs]
	- Hyperbolic functions [6 hrs]
	Learning and Teaching Strategies
	استراتيجيات التعلم والتعليم
	The main strategy that will be adopted in delivering this module is:
	1) To encourage students' participation in solving the mathematical
Strategies	problems in groups during the tutorials.
Sudlegies	2) Activate the critical thinking skills of the students.
	3) Encourage the students to ask questions in the classes.
	4) Encourage the students to introduce home works.

Student Workload (SWL)				
الحمل الدر اسي للطالب				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	5.2	
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	72	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4.8	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	150			

Module Evaluation تقييم المادة الدر اسية						
	Time/Nu Weight (Marks) Week Due Relevant Learning mber Outcome					
	Quizzes	2	10% (10)	7,12	LO # (1-4) and (5-7)	
Formative	Assignments	2	10% (10)	7,12	LO #(1-4) and (5-7)	
assessment	Lab	-	-	Continuous		
	Report	1	10% (10)	14	LO # 4	
Summative	Midterm Exam	2 hrs	10% (10)	13	LO # 1-7	
assessment	Final Exam	3 hrs	60% (60)	16	All	
Total assessment		100% (100 Marks)				

Delivery Plan (Weekly Syllabus)					
	المنهاج الاسبوعي النظري				
	Material Covered				
Week 1	Cartesian Coordinate System				
WEEKI	Functions (First, second and Higher -degree equations)				
Week 2	Plotting the first, second and higher-degree equations				
Week 3	Rational functions and its plotting				
Week 4	Polynomials functions and its plotting				
Week 5	Vectors and its applications				
Week 6	The Dot & Cross products of vectors and its applications				
Week 7	Exponential functions				
Week 8	Logarithm functions				
Week 9	Polar Coordinate System				
Week 10	Trigonometric functions				
Week 11	Plotting the trigonometric functions				
Week 12	Plotting the trigonometric functions with Phase shift				
Week 13	Mid-term exam				
Week 14	Inverse trigonometric functions				
Week15	Hyperbolic functions				
Week 16	Preparatory week before the final Exam				

	Delivery Plan (Weekly Lab. Syllabus)		
	المنهاج الأسبوعي للمختبر		
	Material Covered		
Week 1	لا يوجد مختبر		
Week 2			
Week 3			
Week 4			
Week 5			
Week 6			
Week 7			
Week 8			
Week 9			
Week 10			
Week 11			
Week 12			
Week 13			
Week 14			
Week 15			

Learning and Teaching Resources				
	مصادر التعلم والتدريس			
	Text	Available in the Library?		
Required Texts	Thomas – Calculus. 4 th edition	Yes		
Recommended Texts	Thomas – Calculus. 11 th edition	No		
Websites	https://vulms.vu.edu.pk/Courses/MTH101/Downloads/Thoma 20Edition.pdf	as%20Calculus%2011th%		

Grading Scheme مخطط الدرجات					
Group	Grade	التقدير	Marks (%)	Definition	
	A - Excellent	امتياز	90 - 100	Outstanding Performance	
Success Group (50 - 100)	B - Very Good	جبد جدا 80 - 89 Above average		Above average with some errors	
	C - Good	ختر	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	FX – Fail	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded	
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required	

Module Information							
	معلومات المادة الدراسية						
	Engi	neering Meltallu	rgy	IVIOU	lle Delivery		
Module Type		Core			🛛 Theory		
Module Code		UOBAB0102024			□ Lecture ☑ Lab		
ECTS Credits				□ Tutorial			
SWL (hr/sem)							
Module Level		UGI	Semester o	of Delivery 2		2	
Administering Department		Type Dept. Code	College	Type College Code			
Module Leader	Dr. Ali Sabah A	Al-Turaihi	e-mail	Eng.ali.sabah@uobabylon.edu.iq		on.edu.iq	
Module Leader's	Acad. Title	Assistant Professor	Module Lea	eader's Qualification Ph.D.		Ph.D.	
Module Tutor	Name (if available)		e-mail	E-mail			
Peer Reviewer Name		Name	e-mail	E-mail			
Scientific Committee Approval Date		01/06/2023	Version Nu	mber 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 is an introductory module for 1st year engineering students to the area of engineering materials. The module aims to introduce the structure and application of engineering metallurgy used in all areas of engineering including, mechanical, manufacturing, bioengineering and electronic.					
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 Describe the properties of engineering materials (metals and non-metals), how they are measured, and how they relate to material microstructure Read a phase diagram, and determine structure from the composition and thermal history of an alloy The learner will be familiar with the characteristics of metals, ceramics, polymers, semiconductors, diodes, biomaterials, electrochemistry and basics of solid mechanics Conduct material performance related experiments, collect and analyse data and 					
Indicative Contents المحتويات الإرشادية	 write technical reports. Indicative content includes the following. Introduction to Metallic and Non-Metallic Materials, [4 hrs] Crystal and Micro-Structure of Metals and Alloys, [2 hrs] Crystallization and Solidification Process and Cooling Curves, [2 hrs] Thermal Equilibrium Diagrams, Thermal Equilibrium Diagrams of Iron and Carbon, [4 hrs] Relation Between Micro-Structure and Mechanical Properties, [2 hrs] Basic Heat Treatments for Iron and Alloys, Light Metals, Copper and Zinc an Their Alloys, [4 hrs] 					

Learning and Teaching Strategies				
استر اتيجيات التعلم والتعليم				
Strategies	Metallurgy is defined as a technique for extracting metals in their natural, unprocessed state. Minerals are metal complexes combined with soil, limestone, sand, and rock. Metals are recovered from minerals for commercial applications at a fair cost and with very little labour. The metal obtained from these minerals is utilised in a variety of applications, including equipment, machinery, and machinery manufacture. Various extraction procedures, such as screen, pulp, and mineral oil, are used to remove metallic ore from mines. Metal recovery			

from sludge, heap leaching, and flotation are among the extraction methods.
Based on the type of metal, the metal ore mining market can be classified into aluminium, copper, iron, nickel, lead, zinc, and others. The metals such as aluminium, copper, and iron are widely used in numerous applications such as auto parts manufacturing, power plant, and construction equipment. The key driver for the growth of the metal ore mining market is the demand for these metals. The metals have the potential to reduce the carbon footprint in several applications and hence, manufacturers are finding them useful in the development of environmentally friendly products.

Student Workload (SWL)				
الحمل الدر اسي للطالب				
Structured SWL (h/sem)	70	Structured SWL (h/w)	E 2	
الحمل الدراسي المنتظم للطالب خلال الفصل	70	الحمل الدراسي المنتظم للطالب أسبوعيا	5.2	
Unstructured SWL (h/sem)	22	Unstructured SWL (h/w)	1 /	
الحمل الدراسي غير المنتظم للطالب خلال الفصل	22	الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.4	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100			

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

Delivery Plan (Weekly Syllabus)			
	المنهاج الاسبوعي النظري		
	Material Covered		
Week 1	Introduction To Metallic and Non-Metallic Materials		
Week 2	Crystal And Micro-Structure of Metals And Alloys		
Week 3	Crystallization And Solidification Process and Cooling Curves		
Week 4	Thermal Equilibrium Diagrams		
Week 5	Thermal Equilibrium Diagrams of Iron And Carbon		
Week 6	Relation Between Micro-Structure And Mechanical Properties		
Week 7	Basic Heat Treatments For Iron		
Week 8	Mid term exam		
Week 9	Basic Heat Treatments For Alloys and Light Metals		
Week 10	Copper		
Week 11	Zinc		
Week 12	Copper And Zinc And Their Alloys		
Week 13	Hardening		
Week 14	steels		
Week 15	Classification of the steel		
Week 16	Preparatory week before the final Exam		

Delivery Plan (Weekly Lab. Syllabus)			
	المنهاج الاسبوعي للمختبر		
	Material Covered		
Week 1	Specimen preparation of metal		
Week 2	Microstructure examination of metals		
Week 3	Lab discussion on previous experiments		
Week 4	Microscopic examination of pure metals and solution		
Week 5	Tests for mechanical properties (hardness tests)		
Week 6	Lab discussion on previous experiments		
Week 7	Cooling curves		

Week 8	Microstructure examination of cold working specimen
Week 9	Lab discussion on previous experiments
Week 10	Microstructure examination of annealing specimen
Week 11	Examine the rolling direction of plate
Week 12	Lab discussion on previous experiments
Week 13	Examine the effect of annealing process on the microstructure of material under the microscope
Week 14	Examine the effect of cooling rate under the microscope
Week 15	Lab discussion on previous experiments

Learning and Teaching Resources			
	مصادر التعلم والتدريس		
	Text	Available in the Library?	
Required Texts	Metallurgy Fundamentals Fifth Edition, Text by Daniel A. Brandt (Author), J.C. Warner (Author)	Yes	
Recommended Texts	Metallurgy for the Non-Metallurgist, Second Edition(05306G) Second Edition, by ASM International (Author), Arthur C. Reardon (Editor)	No	
Websites			

Grading Scheme						
مخطط الدرجات						
Group	Grade	التقدير	Marks (%)	Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
Success Group (50 - 100)	B - Very Good	جيد جدا 80 - 89 Above average with some e		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	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded		
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required		

Module Information							
معلومات المادة الدراسية							
Module Title	E	nglish Language I		Modu	le Delivery		
Module Type		basic			⊠ Theory		
Module Code	1	UOBAB0102016			□ Lecture □ Lab		
ECTS Credits		5			Tutorial		
SWL (hr/sem)		125			□ Seminar		
Module Level	UGI		Semester of Delivery 1		1		
Administering Department		Mechanical Engineering	College	College of Engineering			
Module Leader	Noor Ahmad H	lameed	e-mail	Noor.hameed.eng@uobabylon.edu.i		abylon.edu.iq	
Module Leader's Acad. Title Asst.		Asst. lect	Module Lea	der's Qualification Master		Master	
Module Tutor	NA		e-mail	NA			
Peer Reviewer Name		NA	e-mail	e-mail NA			
Scientific Committee Approval Date		31/05/2023	Version Nu	Number 1.0			

Relation with other Modules			
العلاقة مع المواد الدر اسية 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 الدر اسية	 To improve English Language skills and understanding the differences between tenses To understand the written text and able to use skimming, scanning skills. To prepare every topic through and get knowledge on way of conducting various tasks. To motivate students by conducting seminars, workshops, events, guest lectures, and competitions on English language frequently. To enable the students comprehend the spoken form of language To develop listening skills. Listening is the basis to learn any language. No one can speak second language without listening. 				
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 To know language means to understand and speak the language. Encourages to participate in Role-play which is one of the effective methods for language learning. It develops thinking skills and spontaneity. They can improve their communicative functions or conversational skills like greeting, asking and giving Etc. Individualized English language instruction in a small- classroom setting, welcoming, inclusive, and friendly cultural environment. Bringing valuable and diverse international student perspectives to the university. Emphasize and facilitate the growth of critical thinking skills for students Promote the consistent use of English both inside and outside of the classroom. Support the university's various international initiatives with English language training and cultural expertise. Communicate with English speakers, to acquire the linguistic skills necessary for various life situations. Expanding student's vocabulary. Individual words do not constitute vocabulary. Idioms, collocations, and lexical phrases are also included. Try understanding native speakers. 				
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part 1 Grammar, speaking, numbers (7hrs) Reading and speaking, where are they from, countries. (7hrs)				

Negatives, questions & short answer. An interview with students. (7hrs) Possessive adjectives, listening, the alphapet.(7hrs)
Present simple, adjective & noun. Listening and speaking . (7hrs)
Adverbs of frequency. Lifestyle questionnaire. Speaking. Future plans.(7hrs)
Part 2
Question words. Pronouns. Reading and writing, conversation. (5hrs)
Past simple, preposition. Reading and vocabulary. (5hrs)
Adverbs. Requests and offers. Present continuous. Signs all around. Reading and listening. (10hrs)

Learning and Teaching Strategies					
	استر اتيجيات 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, considering type of simple experiments involving some sampling activities that are interesting to the students. Also, the other strategy is to make mistakes and try new things out, mistakes are an essential part of learning a language. To become a better speaker, you have to speak, even if you make lots of mistakes. And finally, focusing on listening. Listening turns out to be a really effective way to learn a				
	language.				

Student Workload (SWL)

الحمل الدر اسي للطالب

Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	4.2
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4.1
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	125		

Module Evaluation								
	تقييم المادة الدر اسية							
		Time/Nu	Weight (Marks)	Week Due	Relevant Learning			
		mber		Week Due	Outcome			
	Quizzes	2	10% (10)	5, 9	LO #1, 2, 10 and 11			
Formative	Assignments	2	10% (10)	3, 11	LO # 3, 4, 6 and 7			
assessment	Projects / Lab.	-	-					
	Report	1	10% (10)	13	LO # 5, 8 and 10			
Summative	Midterm Exam	2 hr	10% (10)	7	LO # 1-7			
assessment	Final Exam	2hr	60% (60)	16	All			
Total assessme	Fotal assessment 100% (100 Marks)							

	Delivery Plan (Weekly Syllabus)			
	المنهاج الأسبوعي النظري			
	Material Covered			
Week 1	Introduction – grammar , practicing conversation.			
Week 2	Questions. Numbers (reading).			
Week 3	Short answers. Social expression. Listening			
Week 4	Possessive adjectives. Listen and identify the people. Saying email addresses			
Week 5	Present simple. Article(a, an) listening			
Week 6	Adverbs of frequency. Question and negatives			
Week 7	Mid-term Exam			
Week 8	Prepositions. Reading and vocabulary. Directions.			
Week 9	Past simple. Irregular verbs. Listening and speaking			
Week 10	Adverbs. Requests & offers. Everyday problems.			
Week 11	(I'd like) some, any. Signs. Conversation.			

Week 12	Future plans (revision) social expressions (2) autobiography.
Week 13	Present simple and present continuous
Week 14	Past simple (regular)
Week 15	Opposite verbs (reading and speaking)
Week 16	Preparatory week before the final Exam

	Delivery Plan (Weekly Lab. Syllabus)
	المنهاج الأسبوعي للمختبر
	There is no lab
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس				
	Available in the Library?			
Required Texts	Fundamentals of English language teaching. New Head way Plus. John and Liz Soars. Beginner student's Book.	yes		
Recommended Texts	Vocabulary and Grammar	No		
Websites	https://apkcombo.com/ar/new-headway-for-beginner-studen-t- book/com.newheaway1/	-		

Grading Scheme مخطط الدر جات					
Group	تقدير 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	ختر	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	FX — Fail	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information معلومات المادة الدر اسية						
Module Title		Physics		Modu	le Delivery	
Module Type		Supplementary		~	Theory	
Module Code]	UOBAB0102012		_ ✓	Lecture Lab	
ECTS Credits		5		~	Tutorial Practical	
SWL (hr/sem)		125 Seminar				
Module Level		UGI	Semester o	of Delivery one		
Administering De	partment	Mechanical Engineering	College	Engineering college		
Module Leader	Nawal Hussein	Alraheimy	e-mail	Eng.nawal.hussein@uobabylon.edu.iq		babylon.edu.iq
Module Leader's	Acad. Title	Assistance Professor	Module Leader's Qualification MS.C.		MS.C.	
Module Tutor	Nawal Hussein	Alraheimy	e-mail	Eng.nawal.hussein@uobabylon.edu.iq		babylon.edu.iq
Peer Reviewer Na	eviewer Name N. A. e-mail N.A.					
Scientific Committee Approval Date		31/5/2023	Version Nu	mber	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 الدر اسية	 The student will learn the concepts of unit and measurement. The student should be able to identify the properties of matter. The student will understand the vectors and their properties. The student will learn the difference between the effect of force and torque on rigid body. The student will learn recognize the difference between the term of potential energy and kinetic energy . The student will understand the elastic properties of solid as stress and strain The student should be able to recognize the properties of fluid. The student will learn the concept of heat and temperatures. The student will learn the properties of sound and light student will learn about the electricity and magnetism and the relationship between them. 					
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Enabling the student to understand properties of solid, liquid and gaseous materials Enabling the students to know the physical laws and apply them in problem solving. Enabling the student to solve physical problems that related to theoretical lectures. Enabling students to solve problems that face them practically Qualifying students theoretically and practically enabling them to continue their higher degree learning and to have a special role in research and work in scientific and industrial institutions 					
Indicative Contents المحتويات الإرشادية	 Fundamental properties of matter (4hr) Equilibrium of body (6hr) Elastic properties (5hr) Energy and power (7hr) Mechanic of fluid(7hr) Heat and temperature (7hr) Sound, light and their applications (8hr) Electricity, magnetism and their applications (10hr) Nuclear Physics and its Applications (8hr) 					

Learning and Teaching Strategies				
استر اتيجيات التعلم والتعليم				
Strategies	The strategy aims to improve student's critical thinking and encourage them to participate in theoretical lectures in problems solving and in practical labs by performing simple interesting experiments which enhances collaboration between them and makes them good at team work .			

Student Workload (SWL) الحمل الدر اسي للطالب				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	4.2	
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4.13	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	125			

Module Evaluation							
تقييم المادة الدراسية							
	Time/Nu Weight (Marke) Weak Due Relevant Learning						
		mber	Weight (Wanks)	Week Due	Outcome		
	Quizzes	4	10% (10)	3,6,9,12	LO #1, 2 and 3		
Formative	Assignments	4	10% (10)	3,6,9,12	LO # 1,2,3 and 4		
assessment Projects / Lab.		1	10% (10)	Continuous			
	Report	1	10% (10)	13	LO # 1,2, 3 and 4		
Summative	Midterm Exam	2 hr	10% (10)	7	LO # 2,3 4		
assessment	Final Exam	3hr	50% (50)	16	All		
Total assessment100% (100 Marks)							

	Delivery Plan (Weekly Syllabus)		
المنهاج الاسبوعي النظري			
	Material Covered		
Week 1	Introduction, Concept of Unit and Measurement, Fundamental and derived units, Units of length, weight, mass, time. Matter: properties of solids, liquids and gases, Dimensional Analysis, Conversion of Units.		
Week 2	Vectors, Coordinate Systems, Vector and Scalar Quantities, Some Properties of Vectors, Components of a Vector and Unit Vectors, Scalar Product of Vectors.		

Week 3	The Force and Low of Motion, The Concept of Force Newton's First Law Newton's, Second Law Mass and weight The Gravitational Force and Weight Newton's Third Law, Free body diagram Forces of Friction.
Week 4	Static Equilibrium, The torque, The Rigid Object in Equilibrium, The Center of Gravity, Examples.
Week 5	Elasticity, Elastic Properties of Solids, Stress, Strain and Elasticity Modulus
Week 6	Energy, Work and Power, Systems, Work Done by a Constant Force, Kinetic Energy and The Work Kinetics
WEEKO	Energy Theorem, Potential Energy Conservation of energy, Transfer of Energy, Power.
Week 7	Fluid Mechanics, Properties of fluids, Density, fluid pressure, Atmospheric pressure, surface tension, capillary, Viscosity. Measurement of pressures.
Week 8	Buoyant Forces and Archimedes' Principle, Fluid Dynamics, Continuity equation. Bernoulli's Equation and its applications.
Week 9	Temperature and Heat, Thermometers and the Celsius Temperature Scale, The Absolute Temperature Scale,
	Thermodynamics, Energy Transfer Mechanisms
Week 10	Mid Term Exam, + Sound, Introduction to waves, Properties of Waves: Frequency, velocity and intensity. Sound Waves and its speed Intensity of Sound Waves Sound Level
Week 11	Light and Optics, The Nature of Light ,The Light Reflection and Refraction, Fiber Optics, Images formed by
	Mirrors and thin Lenses, The Magnifier, The Microscope.
Week 12	Electricity, Electric Charges, Coulombs Law, Electric Force, Electric Field, Electric Potential, Capacitance, Capacitors, Dielectrics.
Week 13	Electric Current, Resistance, Resistors, Electrical Power and Electrical Safety.
Week 14	Magnetism, Magnetic Poles, Magnetic force, Magnetic Fields, Biot- Savart Law
	Nuclear Physics and its Applications, Some Properties of Nuclei, Radioactivity, The Decay Processes, Natural
Week 15	Radioactivity, Nuclear Reactions, Nuclear Magnetic Resonance, Nuclear Fission, Nuclear Reactors, Nuclear
	Fusion, Radiation Damage, Uses of Radiation, X – ray.
Week 16	Preparatory week Before the Final Exam.

Delivery Plan (Weekly Lab. Syllabus)			
المنهاج الأسبوعي للمختبر			
	Material Covered		
Week 1	Lab 1: Speed of sound in Air.		
Week 2	Lab 2: Propagation of sound in Rod.		
Week 3	Lab 3: Surface Tension.		
Week 4	Lab 4: Buoyancy		
Week 5	Lab 5:Falling Sphere Viscosimeter.		
Week 6	Lab 6: Deformation of Solid bodies, Bending of flat Beam		
Week 7	Lab 7: Torsion on cylindrical Rods.		
Week 8	Lab 8: Hooks Law		
Week 9	Lab9: First Second Class Levers.		
Week 10	Lab10: Parallelogram of Force.		
Week 11	Lab11: Static and Dynamic Friction		
Week 12	Lab12: Gravitational Constant.		

Week 13	Lab13: Moment of Inertia.
Week 14	Lab14: Harmonic Oscillation of a string pendulum.
Week 15	Lab15: Free Fall.

Learning and Teaching Resources				
	Text	Available in the Library?		
Required Texts	Physics of science and engineers, Raymond A. Serway – Emeritus, James Madison University, Thomson Brook , 2004, 5 th Edition,	NO		
Recommended Texts	General Physics principles and applications, Hassan Maridi, Taiz University, 3 rd edition, 2020.	Yes		
Websites	https://drive.google.com/file/d/1yD84ivrIoJzQcnDvY97taX8Fs7h	nx3nB/view?usp=sharing		

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

Module Information معلومات المادة الدر اسبة							
Module Title		Arabic Language		Modu	le Delivery		
Module Type	В	asic learning activity	,		🛛 Theory		
Module Code		UOBABb2		── □ Lecture			
ECTS Credits		2			□ Tutorial		
SWL (hr/sem)		50			Practical		
Module Level		UGI	Semester of Delivery		у	One	
Administering Dep	partment	CBM-ENG	College	MAT-ENG		NG	
Module Leader	Hiba Mohamn	ned Sagban	e-mail	eng730.hiba.mohammed@uobabylon.edu iq		d@uobabylon.edu.	
Module Leader's	Acad. Title	Assist. Lecturer	Module Lea	Leader's Qualification Master		Master	
Module Tutor	None		e-mail	None			
Peer Reviewer Name		Prof. Samir Hamid Awad	e-mail	mat.samir.hamid@uobabylon.edu.iq		babylon.edu.iq	
Scientific Committee Approval Date		01/06/2023	Version Nu	mber 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	تقوية القدرة اللغوية لدى الطلبة.	-1			
أهداف المادة الدر اسية	اكتسابهم مهارة التعبير الصحيح.	-2			
	تعويد الطلاب على فهم المادة المقروءة؛ والتعبير الصحيح.	-3			
	تنمية قدرات الطلاب ومهاراتهم الخطية والاملائية فضىلا عن اطلاعه على الارث الادبي.	-4			
	تنمية قدرات الطلاب ومهاراتهم الفكرية والابداعية والقدرة على التعبير عن الواقع بأسلوب ادبي رفيع.	-5			
	المعرفية المستهدفة	مخرجات			
Module Learning	المهارية المستهدفة	مخرجات			
Outcome	فهم لغة القران الكريم.	-1			
Outcomes	القدرة على التعبير الصحيح في لغته الام وهي اللغة العربية.	-2			
	زيادة حصيلة الطالب الثقافية عن طريق التعرف على التراث الادبي.	-3			
مخرجات التعلم للمادة الدراسية	يجنبه درس اللغة العربية من الوقوع في الاخطاء الاملائية.	-4			
	القدرة على فهم علامات تعبيرية اخرى لها دلالات خاصة ك علامات الترقيم.	-5			
	معرفة أقسام الكلام في اللغة العربية.	-1			
Indicative Contents	التعرف على خصائص اللغة العربية ومميز اتها.	-2			
indicative contents	ضبط الرسم الاملائي للهمزة وألف التفريق والضاد والظاء.	-3			
المحتويات الإرشادية	دراسة الادب الحديثٌ و أساليب تأثره بالأداب القديمة العربية والعالمية	-4			
	تنمية قدرة الطلبة على التعبير الإبداعي ونقد الواقع بطريقة ادبية.	-5			

Learning and Teaching Strategies				
استر اتيجيات التعلم والتعليم				
Strategies	يتم اتباع اسلوب المناقشة، وطريقة المحاضرة. علاوة على الطريقة الاستنتاجية من خلال طرح المشكلات واستنتاج الحلول. بالإضافة الى الطريقة القياسية المبنية على طرح قاعدة عامة واعطاء الامثلة.			

Student Workload (SWL)					
الحمل الدر اسي للطالب					
Structured SWL (h/sem)	22	Structured SWL (h/w)	2.2		
الحمل الدر اسي المنتظم للطالب خلال الفصل		الحمل الدر اسي المنتظم للطالب أسبو عيا	2.2		
Unstructured SWL (h/sem)		Unstructured SWL (h/w)			
الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	الحمل الدراسي غير المنتظم للطالب أسبو عيا	1.1		
Total SWL (h/sem)	50				
الحمل الدراسي الكلي للطالب خلال الفصل	50				

Module Evaluation تقييم المادة الدر اسية						
	Time/Number Weight (Marks) Week Due Relevant Learning Outcome					
	Quizzes	1	10% (10+10)	4, 8	LO # All	
Formative	Assignments	1	10% (10+10)	6, 12	LO # All	
assessment	Seminars	1	10% (10)	15	LO # All	
	Report	1	10% (10)	10	LO # 2,3,4, and 5	
Summative	Midterm Exam	2 hr	10% (10)	7	LO # All	
assessment	Final Exam	3 hr	50% (50)	16	All	
Total assessme	ent		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)				
المنهاج الأسبوعي النظري				
	Material Covered			
Week 1	خصائص اللغة العربية			
Week 2	إملاء رسم الهمزة			
Week 3	إملاء (ألف التفريق) وعلامات الرقيم			
Week 4	اخطاء لغوية شائعة			
Week 5	أدب حديث			
Week 6	أقسام الكلام			
Week 7	العدد			
Week 8	اسماء الاستفهام ودلالاتها			
Week 9	مقالة			
Week 10	المفرد والتثنية والجمع			
Week 11	المذكر السالم			
Week 12	المؤنث السالم			
Week 13	جمع التكسير			
Week 14	مادة اختيارية			
Week 15	أختياري			
Week 16	اسبوع تهيئة للامتحان النهائي			

Delivery Plan (Weekly Lab. Syllabus)				
المنهاج الاسبوعي للمختبر				
	Material Covered			
Week 1				
Week 2				

Learning and Teaching Resources						
مصادر التعلم والتدريس						
	Text	Available in the Library?				
Required Texts	شرح ابن عقيل على ألفية ابن مالك المؤلف : ابن عقيل ، عبد الله بن عبد الرحمن العقيلي.	None				
Recommended Texts	معاتي النحو المؤلف: د. فاضل صالح السامرائي الناشر: دار الفكر للطباعة والنشر والتوزيع - الأردن جامع الدروس العربية المؤلف: مصطفى بن محمد سليم الغلابينى (ت ١٣٦٤هـ) الناشر: المكتبة العصرية، صيدا – بيروت. مغني اللبيب عن كتب الأعاريب، المؤلف: ابن هشام (ت ٧٦١هه)، المحقق: د. مازن المبارك / محمد علي حمد الله/ الناشر: دار الفكر - دمشق	None				
Websites	https://shamela.ws/ https://www.neelwafurat.com/ https://www.noor-book.com/ http://mohamedrabeea.net/list.aspx?bookId=75					

Grading Scheme						
Group Grade التقدير Marks (%) Definition						
	A – Excellent	امتياز	90 - 100	Outstanding Performance		
Success Group (50 - 100)	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
	C – Good	ختر	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	FX – Fail	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded		
(0 – 49)	F — Fail	راسب	(0-44)	Considerable amount of work required		

Module (Course Syllabus) Catalogue
2020-2021

College/Institute	College of Engineering					
Department	Department	Department of Mechanical Engineering				
Module Name	Computer Es	sential				
Module Code						
Degree	Technical Diploma			Bachler ☑		
	High Diploma	a a	ster	PhD]	
Semester	1st					
Qualification	Master's Deg	ree in				
Scientific Title	Assistant Lec	turer				
ECTS (Credits)	4					
Module type	Prerequisite	Cor	e	Assist. 🗸		
Weekly hours	3					
Weekly hours (Theory)	(0) hr Class		(0) Total hrs Workload			
Weekly hours (Practical)	(3) hr Class	(3) hr Class		(3) Total hrs Workload		
Number of Weeks	12					
Lecturer (Theory)						
E-Mail						
Lecturer (Practical)						
E-Mail						
Websites						

Course Book

Course Description	The course introduces you to 'Computer Skills' concepts. You will learn to use Windows 10 on the PC-compatible computers as well as MS Office 2016 which has the following applications: word processing program (MS Word), a spreadsheet program (MS Excel), a presentation program (MS PowerPoint). Windows 7 will be used to illustrate operating system concepts and disk organization. This class is intended for students requiring 'handson' knowledge of computer applications. This class will be accepted as a university module.					
Course objectives	 Giv bus Intr par Pro Pov knc Provi comp 	 Give students an in-depth understanding of why computers are essential components in business, education and society. Introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software. Provide hands-on use of Microsoft Office 2016 applications Word, Excel, Access and PowerPoint. Completion of the assignments will result in MS Office applications knowledge and skills. Provide "computer skills" curriculum that prepares students for life-long learning of computer concepts and skills. 				
	1 In the quizz	Assignments: eir academic semeste es, 1 report, 1 presen Attendance Polic	r, students are ob tation, and 2 horr	bliged to tal ne works as	ke midterm and final exams, do 3 their assignments.	
Student's obligation	Stude onlin mater crises classe	ents are expected to a e classes whether thr rial present in lecture e, and illness are exc es will be placed on p	attend each class rough moodle or s or over moodle sused from class. probation.	for the enti- zoom meet . Only stud . The stude	ire semester either face to face or ting. Students are responsible for ents with official absence, family nt who misses 10 percent of the	
	3 Since misse being annot	3. Make Exam up Policy: Since all examination are announced in advance, ZERO grade will be given to any missed examination unless a student has an acceptable reason, such as illness, for not being able to take the examination during all those days when the examination was announced				
Required Learning Materials	zoom a pers	zoom meeting application (online classes), Moodle (E-Learning), Students are required a personal computer or a smart phone, and a good internet connection.				
	Task		Weight (Marks)	Due Week	Relevant Learning Outcome	
		Paper Review	Null	Null		
	Ass	Homework	14	3,5		
	igni	Class Activity	2	Null		
	mer	Report	10	7		
	Its	Seminar	14	9		
		Essay	Null	Null		
		Project	Null	Null		
			4 Nu11	3,0,9,12 Null		
		Lau. Midterm Exam	16	7		
		Final Exam	40	13		
Evoluation	rmar Exam Total					
Evaluation		Total	100	15		
Evaluation	• Une	Total derstand key concepts	100 s relating to com	15 puters, hard	lware and software.	
Specific learning	• Uno • Stu	Total derstand key concepts dents will recognize	100 s relating to comp when to use each	15 puters, hard of the MS	lware and software. Office programs to create	
Specific learning	• Une • Stu pro	Total derstand key concepts dents will recognize y fessional & academic	100 s relating to comp when to use each c documents.	15 puters, hard of the MS	lware and software. Office programs to create	
Specific learning outcome:	Une Stu pro Stuc docu	Total derstand key concepts dents will recognize fessional & academic lents will use MS (ments following curr	100 s relating to comp when to use each c documents. Office programs rent professional	15 puters, hard of the MS to create and/or indu	lware and software. Office programs to create personal, academic and business istry standards.	

	• "Learnin Digest	ng and Teaching Information Technology Computer Skills in Context", E.			
Course References:	• 2. "Objective Computer Engineering for Diploma Engineers". GKP				
	• 3. "Con	uputer Fundamentals", ISBN-13: 978-8176567527, P. K. Sinha			
Practical Topics	Week	Learning Outcome			
Hardware and Software	1	Hardware definition, the main parts of the computer, input/output ports, computer memory, Types of Memory, Storage Media, Input/output devices, Operating system, Application Software, Interfaces, and Accessibility Options.			
	2	Windows Starting, windows task bar, Start a menu, pin shortcut, Creating shortcut icon, Control Panel, Date & time, (Region, Volume, Resolution)			
Windows 10	3	setting, screen colour, windows explorer, Navigation bar common file type, Drives information, Sort files, recycle bin, Formatting file compression, Searching from file and folder, NotePad and WordPad, Print screen, Anti-virus, installing new printer, and changing the default printer			
Internet and Network Security	4	Introduction into internet, introduction into emailing system, Searching via internet, Internet application (google products), Introduction to Network security, and Protection & security.			
	5	Word processing, creating new document, inserting text, Creating and applying			
Migrosoft Word 2010	6	style, Page setup, Indention line & paragraph, page break. Header and footer, creating hullets, creating number, Page and Text Border			
Wheresone word 2010	7	Insert and delete table, Table properties, switching between files, comparing			
	8	document, Mailing merge.			
	9	Starting Microsoft excel, windows of excel, loading sheet, Selecting cells, inserting row and column into a worksheet, deleting and adjusting a row and			
Microsoft Excel 2010	10	column, (move, delete, edit) cell contents, (sorting, searching and replacing) data, Adding border to the cells, formatting the neck ground, aligning cell contents, Basic function, formula and filtering of data, worksheet (margin, header and footer, scaling), how to create a chart with example.			
	11	Presentation PowerPoint Windows, Inserting new slides, Slide's layout, themes, font (type, size, colour, and shadow effect), Creating a table, table			
Microsoft PowerPoint 2010	12	properties, inserting clipart, Insert (Shapes, smart art, chart), animation, slide effect, (move, copy, hide, show, delete) slides, slide setup, printing slides.			

Questions Example Design

Q1/ Count via diagram Computer main and sub parts.

Q2/ give the definition of the following terms (RAM, CPU, ALU, ROM, OS)

Q3/ Open Midterm.JPG on the desktop, design the same writing paper following the instructions

Extra notes:

Ask questions, Respect and listen to your classmates, and the teacher, Raise your hand to speak, Be prepared for class, Be quiet when the teacher and your classmates are talking, Share new ideas, Respect others' property, Keep your workspace tidy, Be kind, Always do your best, Be a good friend, Be on time, Share with others, Use equipment properly, turn in your homework on time, Use positive language, Listen with your ears and your eyes, Contribute to discussions, Be respectful of others' ideas, Follow the teacher's directions, Cooperate with your classmates, Be creative, Be honest, Use technology appropriately, Be proud of your work

University of Babylon



جامعة بابل

First Cycle – Bachelor's degree (B.Sc.) – chemical Engineering بكالوريوس علوم - هندسة كيمياوية



- 1. Overview
- 2. Undergraduate Modules 2023-2024
- 3. Contact

1. Overview

This catalogue is about the courses (modules) given by the program of chemical Engineering to gain the Bachelor of Engineering degree. The program delivers (xx) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج الهندسة الكيمياوية للحصول على درجة بكالوريوس هندسة . يقدم البرنامج (48) مادة دراسية، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Code	Course/Module Title	ECTS	Semester
ENCHOc1 10 10	Chemistry	2.00	1
Class (hr./w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	-	92	33
Description			

Module 1

the branch of chemistry involves separating, identifying and determining the relative amounts of components of a sample of matter.

Applications of analytical chemistry in different areas Analytical chemistry is applied by industry, medicine, and all the sciences.

Chemical methods : Involves the measurement of a mass of a chemical species or volume of a reagent solution produced or consumed by a chemical reaction. (a) Gravimetric analysis: In this method the analyte is precipitated in the form of highly pure insoluble precipitate.

Titrimetric analysis: The definite volume of the analyte is allowed to react with a suitable reagent whose standard solution can be prepared and the volume of the solution consumed for the complete reaction is used to find out the concentration of analyte solution

physico-chemical methods: These methods involve both chemical reaction and physical

measurement. These include : - colorimetry - chromatography - spectrophotometry - fluorimetry - atomic spectroscopy - mass spectroscopy - nuclear magnetic resonance(NMR) - x-ray spectroscopy - electroanalytical techniques - amperometry. - Electrophoresis

Module Information معلومات المادة الدر اسية						
Module Title	Principle of Electrical Engineering		Modu	Module Delivery		
Module Type		S			⊠ Theory —	
Module Code	UOBAB0102014			☐ Lecture ☑ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
ECTS Credits	5					
SWL (hr/sem)	125					
Module Level		UGI	Semester of Delivery 1		1	
Administering Department		Mechanical	College	ENG		
Module Leader	Farah Fahem Hussein		e-mail	Eng.1	farah.fahem@uo	babylon.edu.iq
Module Leader's Acad. Title		Assistant Lecturer	Module Leader's Qualification		Master	
Module Tutor	Farah Fahem Hussein		e-mail	Eng.farah.fahem@uobabylon.edu.iq		babylon.edu.iq
Peer Reviewer Name		NA	e-mail NA			
Scientific Committee Approval Date		31/05/2023	Version Nu	sion Number 1.0		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 module "Basics of Electrical Engineering" aims to provide students with a fundamental understanding of the principles, concepts, and applications of electrical engineering. The specific aims of this module are the following objectives are targeted: 1. Introduction to Electrical Engineering: The module aims to introduce students to the field of electrical engineering, its historical background, and its significance in various technological applications. 2. Circuit Analysis: Students are taught the fundamentals of circuit analysis, including Ohm's Law, Kirchhoff's Laws, network theorems (such as Thevenin's and Norton's theorem), and techniques for solving simple and complex circuits. 3. DC Circuits: The module aims to provide an understanding of direct current (DC) circuits, including the behavior of passive circuit elements like resistors. Students will learn how to analyze and solve circuits involving DC sources. 4. Electric Power Systems: The module covers the basics of electric power systems. 5. Basic Electrical Measurements: Students will be introduced to different electrical measurement techniques and instruments, including voltmeters, ammeters, oscilloscopes, and multimeters. They will learn how to make accurate measurements of voltage, current, and resistance in electrical circuits. 6. Basic Electrical Measurements: Students will be introduced to different electrical measurement techniques and instruments, including voltmeters, ammeters, oscilloscopes, and multimeters. They will learn how to make accurate measurements of voltage, current, and resistance in electrical circuits. 7. Problem-Solving Skills: Through practical examples, assignments, and laboratory work, the module aims to develop students' problem-solving skills in electrical engineering. They will learn how to apply theoretical concepts to solve real-world electrical engineering problems. Overall, the module "Basics of Electrical Engineering" aims to provide s			
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 Upon completion of the module "Basics of Electrical Engineering," students are expected to achieve the following learning outcomes: 1. Understanding of Electrical Principles: Students should demonstrate a solid understanding of the fundamental principles and concepts of electrical engineering, including Ohm's Law, Kirchhoff's Laws, network theorems, and basic circuit analysis techniques. 2. Competence in Circuit Analysis: Students should be able to analyze and solve simple and complex electrical circuits using appropriate techniques and tools. They should be able to calculate voltages, currents, and power dissipation in circuits accurately. 3. Ability to Make Electrical Measurements: Students should be able to use electrical measurement instruments, such as voltmeters, ammeters, and oscilloscopes, to make accurate measurements of voltage, current, and resistance in electrical circuits. They 			

	measurement results.				
	4. Awareness of Safety and Standards: Students should be aware of electrical safety				
	practices and understand the importance of following safety guidelines in electrical				
	engineering. 5 Problem-Solving Skills: Students should demonstrate the ability to apply their				
	knowledge of electrical engineering principles to solve practical problems. They				
	should be able to identify and analyze electrical engineering problems, develop				
	appropriate solution strategies, and effectively communicate their solutions.				
	6. Critical Thinking and Analytical Skills: Students should develop critical thinking and				
	analytical skills through the module, enabling them to evaluate and interpret electrical engineering concepts principles and data. They should be able to think				
	logically and make informed decisions in solving electrical engineering problems.				
	7. Teamwork and Communication: Students should have opportunities to work in teams				
	and develop effective communication skills. They should be able to collaborate with				
	others, share knowledge, and present their ideas and solutions clearly and concisely.				
	By achieving these learning outcomes, students will have a strong foundation in the basics				
	of electrical engineering, enabling them to pursue further studies in the field or apply their				
	knowledge in various engineering disciplines and industries.				
	Part A - DC Circuit Theory				
	Basic concepts and units[2 hrs].				
	basic DC circuits Laws, Current and voltage definitions[2 hrs].				
	Current and voltage sources[2 hrs].				
	dependent and non-dependent Current and voltage sources[3 hrs].				
	Passive circuit elements[2 hrs].				
	Combining resistive elements in series and parallel [2 hrs].				
Indicative					
Contents	Part B – DC Circuit Analysis				
المحتويات الإرشادية	Kirchhoff's Jaws[4 hrs]				
	Mesh and Nodal analysis [4 hrs].				
	Superposition theorem [4 hrs].				
	source transformation [3 hrs].				
	Thevenin and Norton analysis Methods [6hrs].				
	maximum power transfer [4 hrs].				
	Millman's theorem [4 hrs].				
	reciprocity theorem, [3 hrs].				

Learning and Teaching Strategies			
استر اتيجيات التعلم والتعليم			
Strategies	The module "Basics of Electrical Engineering" can employ various learning and teaching		
	strategies to enhance students' understanding and engagement. Here are some common		

strategies used in this module:

- 1. Lectures: Lectures are a primary teaching method in this module, where instructors deliver theoretical concepts, principles, and explanations. Lectures can include visual aids such as slides, diagrams, and animations to facilitate understanding. Instructors may also provide real-life examples and applications to make the content more relatable.
- 2. Practical Examples and Problem-Solving: Instructors can use practical examples and problem-solving exercises to help students apply theoretical concepts to real-world situations. By presenting and solving problems related to electrical circuits, students can develop critical thinking and analytical skills.
- 3. Laboratory Work: Laboratory sessions provide hands-on experience and reinforce theoretical concepts. Students can perform experiments and measurements using electrical components and instruments. This allows them to apply theoretical knowledge, gain practical skills, and understand the behavior of electrical systems in a controlled environment.
- 4. Group Discussions and Collaborative Learning: Group discussions and collaborative learning activities encourage students to engage actively in the learning process. Students can work together to solve problems, analyze case studies, or discuss challenging concepts. This promotes peer learning, critical thinking, and communication skills.
- 5. Tutorials and Workshops: Tutorials and workshops offer opportunities for students to seek additional help and clarification on specific topics. Instructors or teaching assistants can provide individual or small-group assistance, address students' questions, and guide them through problem-solving exercises.
- 6. Multimedia and Interactive Tools: Multimedia resources, such as videos, animations, and interactive simulations, can be used to enhance understanding and engage students. These resources can provide visual representations of abstract concepts and allow students to interact with the content, fostering active learning.
- 7. Guest Lectures and Industry Visits: Inviting guest speakers from industry or conducting visits to electrical engineering-related facilities can provide students with real-world perspectives and insights. Professionals can share their experiences, current trends, and practical applications, giving students a broader understanding of the field.
- Assessments and Feedback: Regular assessments, such as quizzes, assignments, and exams, can be used to evaluate students' understanding and progress. Constructive feedback helps students identify areas for improvement and reinforces their learning. Feedback can be provided through written comments, discussions, or one-on-one consultations.
- 9. Online Resources and Platforms: Online resources, such as e-learning platforms, online forums, and educational websites, can support student learning outside the

classroom. These resources can provide additional readings, practice exercises, and
interactive modules to supplement classroom teaching.
10. Self-directed Learning: Encouraging students to take ownership of their learning
through self-directed study is important. Students can explore additional resources,
conduct independent research, and deepen their understanding of specific topics.
This cultivates lifelong learning skills and promotes curiosity in the field of electrical
engineering.
By combining these learning and teaching strategies, the module "Basics of Electrical Engineering" aims to create an interactive and engaging learning environment that caters to different learning styles, promotes critical thinking, and prepares students for further studies and professional practice in electrical engineering.

Student Workload (SWL) الحمل الدر اسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus)		
المنهاج الأسبوعي النظري		
	Material Covered	
Week 1	Basics of Network Elements	
Week 2	Current and voltage sources, (dependent and non-dependent)	
Week 3	Resistance and Resistivity, Combining resistive elements in series and parallel	
Week 4	Ohm's Law	
Week 5	Kirchhoff's Laws	
Week 6	Circuit Analysis - Nodal and Mesh	
Week 7	Linearity and Superposition	
Week 8	Mid-term Exam	
Week 9	Circuit Analysis – Super Node and Super Mesh	
Week 10	Source Transformations	
Week 11	Thévenin Equivalent circuits	
Week 12	Norton Equivalent circuits	
Week 13	maximum power transfer	
Week 14	Millman's theorem	
Week 15	reciprocity theorem	
Week 16	Preparatory week before the final Exam	

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الأسبوعي للمختبر	
Material Covered	
Week 1	Lab 1: Understanding the operation of measurement devices

Week 2	Lab 2: Electrical Circuit Measurements
Week 3	Lab 3: Resistor Code
Week 4	Lab 4: Ohm's Law
Week 5	Lab 5: Kirchhoff's Laws
Week 6	Lab 6: Nodal Analysis
Week 7	Lab 7: Mesh Analysis
Week 8	Lab 8: Superposition Theorem
Week 9	Lab 9: Thevenin's Theorem
Week 10	Lab 10: Max. Power Transfer
Week 11	Lab 11: Millman's Theorem
Week 12	Lab 12: Substitution Theorem
Week 13	Lab 13: Reciprocity Theorem
Week 14	Lab 14: Compensation Theorem
Week 15	Lab 15: Compensation Theorem
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Fundamentals of Electric Circuits, 4 th edition, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes			
Recommended Texts	Ecommended Texts Introduction to Circuit Analysis, 10 th edition, Boylestad .				
Websites					

Grading Scheme مخطط الدر جات								
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	FX — Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F — Fail	راسب	(0-44)	Considerable amount of work required