وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Applied Mechanics Engineering**	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ☒**Tutorial**	
Module Code	**PCS124**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	**1**	**Semester (s) offered**	**2**
Administering Department	**PCS**	**College**	**PPE**
Module Leader	Omar Assi Hussein	**e-mail**	omar-assi81@tu.edu.iq
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**	**Ph.D**
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval	03/06/2023	**Version Number**	1.0

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-
Module Aims, Learning Outcomes, Indicative Contents and Brief Description أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر			
Module Aims أهداف المادة الدراسية	1. To provide the students with a foundation of the theory and principles of statics. 2. To study the effects of forces on bodies at rest using Newton's laws of motion. 3. To provide the students with experience in solving problems to determine the forces and moments on structures in static equilibrium. 4. To introduce the students to the engineering applications of mechanics. 5. Learn Active materials & their specification, work and heat in ideal gasses and steam 1st law of thermodynamics practical law in steam and gasses, 2nd law of thermodynamics practical law in steam and gasses. 6. understanding the concepts of Hook's law, tension and compression stress, thin-walled cylinders and spheres, combined stress (Mohr's circle) shear and normal stress.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On successful completion of the course students will be able to: **LO1.** Apply basic knowledge of mathematics, science and engineering principles to solve technical problems. **LO2.** Design and analyze a system component, or process to meet desired needs in Mechanical Engineering. **LO3.** Design a system and conduct experiments to find suitable solution in the field of mechanical engineering. **LO4.** Identify, visualize, formulate and solve engineering problems in the field of mechanical Engineering. **LO5.** Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for societal, and environmental constraints. **LO6.** Apply their fundamental field skills towards the understanding of the impact of engineering solutions on the society in a global and social context. **LO7.** Impart knowledge of contemporary issues about society and environment. **LO8.** Apply ethical principles and responsibilities during professional practice. **LO9.** Function on multidisciplinary teams as a team member/leader and create user friendly environment.		

	LO10. Communicate effectively in oral, written, visual and graphic modes within interpersonal, team, and group environments. **LO11.** Apply the techniques, skills and modern engineering tools necessary for engineering projects. **LO12.** Recognize the need for professional advancement by engaging in lifelong learning.
Indicative Contents المحتويات الإرشادية	Indicative contents include the following. **Part A: Static. (24 Hours)** 1. Introduction to Engineering Mechanics . (2 hrs). 2. Force system, unit's system, parallelogram law, forces + components, resultant of coplanar forces components of force in space, moment of a force, moment of couples, equilibrium. (8 hrs). 3. Free body diagram, coplanar system, analysis of trusses (6 hrs). 4. Centroids & center of gravity – centroids of area, centroids determined by integration, moments of inertia (4hrs). 5. Parallel axes theorem, 2nd moment of area by integration, radius of gyration, moment of inertia of composite area .(4 hrs). **Part B:Dynamics. (12hours)** 6. Kinetics of particle, rectilinear motion, curvilinear motion, rectangular components of curvilinear motion, normal and tangential component of acceleration (6 hrs) **7.** Kinetics: Force, mass and acceleration, kinetics of particle newton's 2nd **Part C: Strength of Materials. (10hours)** 8. Hook's law, tension and compression stress, thin-walled cylinders and spheres. (5 hrs) 9. Combined stress (Mohr's circle) shear and normal stress, stress in beams (initial principal). (5 hrs)
Course Description	Mechanics is the study of forces that act on bodies and the resultant motion that those bodies experience. With roots in physics and mathematics, Engineering Mechanics is the basis of all the mechanical sciences: civil engineering, materials science and engineering, mechanical engineering and aeronautical and aerospace engineering. Engineering Mechanics provides the "building blocks" of statics, dynamics, strength of materials, and fluid dynamics. Engineering mechanics is the discipline devoted to the solution of mechanics problems through the integrated application of mathematical, scientific, and engineering principles. Special emphasis is placed on the physical principles underlying modern engineering design.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The teaching of the course is delivered through a combination of class

	lectures,Class discussions, exercises, and assignments work.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	73	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction of Static** **Two-Dimension Force System**
Week 2	Moment in two Dimension, Couple
Week 3	Resultant Force – Couple System
Week 4	Resultant of nonconcurring Force Equilibrium in Two Dimension

Week 5	Structures Three – Dimension Force System
Week 6	Structures)Method of join(Structures) , Method of Section(
Week 7	Frames and machines
Week 8	Center of Areas & Centroids
Week 9	Center of Areas & Centroids
Week 10	Composite bodies
Week 11	Moment of inertia
Week 12	Friction
Week 13	Application of Friction & Belt Friction
Week 14	Wedges
Week 15	Preparing for Final Exam
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1-Engineering Mechanics. Statics.J.L.Meriam,L.G.Krage. 2-Elements of Classical Thermodynamics, A.B.Pippard	Yes No
Recommended Texts	Sandor, B.I.; Roloff, R; et. al. "Mechanics of Solids" Mechanical Engineering Handbook Ed. Frank Kreith Boca Raton: CRC Press LLC, 1999	No
Websites	https://cae.tu.edu.iq/ed/electronic-lectures.html	

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C - Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings

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

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer Engineering Principles**			**Module Delivery**	
Module Type	**Support**			☒Theory ☐Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**PCS125**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	PCS		**College**	PCSE	
Module Leader	Mohammed Rashid Subhi		**e-mail**	Abo1986hhh@tu.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	MS.C.	
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PCS112	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Objective 1: Introduction to C++: Introduce students to the C++ programming language, its syntax, and basic features. Objective 2: Variables and Data Types: Teach students about variables, their types, and how to declare and use them in C++. Cover fundamental data types such as integers, floating-point numbers, characters, and strings. Objective 3: Input and Output: Familiarize students with input and output operations in C++, including reading user input and displaying output on the console. Objective 4: Control Structures: Teach students about control structures in C++, such as if-else statements, switch statements, and loops (while, do-while, for). Explain how these structures can be used to control program flow and make decisions. Objective 5: Functions: Introduce students to functions in C++, including function definition, parameters, return types, and function calls. Teach them how to create and use functions to modularize their code and perform specific tasks. Objective 6: Arrays and structure: Cover the concept of arrays in C++, including declaration, initialization, and accessing array elements. Teach students how to work with one-dimensional and multi-dimensional arrays.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Learning Outcome for as below: 1. Understand the basic syntax and features of the C++ programming language. 2. Identify and utilize different variable types in C++, such as integers, floating-point numbers, characters, and strings. 3. Demonstrate the ability to declare, assign values to, and manipulate variables in C++. 4. Apply input and output operations to interact with users and display information. 5. Implement control structures like if-else statements, switch statements, and loops to control the flow of program execution and make decisions. 6. Define functions in C++ with proper parameter types, return types, and function calls. 7. Utilize functions to modularize code, enhance code reusability, and perform

	specific tasks. 8. Understand the concept of arrays in C++ and the process of declaration, initialization, and accessing array elements. 9. Work with one-dimensional and multi-dimensional arrays to store and process collections of data. 10. Apply problem-solving and algorithmic thinking skills to develop simple programs using C++. 11. Demonstrate the ability to debug and troubleshoot common errors in C++ code. 12. Collaborate effectively in team-based programming projects, communicating ideas and solutions clearly.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Theory Part A & B class</u> Learning during attendance class for 15 weeks. [30 hrs] Introduction to C++: Introduce students to the C++ programming language, its syntax, and basic features. [5 hrs] Variables and Data Types: Teach students about variables, their types, and how to declare and use them in C++. Cover fundamental data types such as integers, floating-point numbers, characters, and strings. [5 hrs] Input and Output: Familiarize students with input and output operations in C++, including reading user input and displaying output on the console. [5 hrs] Control Structures: Teach students about control structures in C++, such as if-else statements, switch statements, and loops (while, do-while, for). Explain how these structures can be used to control program flow and make decisions. [5 hrs] Functions: Introduce students to functions in C++, including function definition, parameters, return types, and function calls. Teach them how to create and use functions to modularize their code and perform specific tasks. [5 hrs] Arrays and structure: Cover the concept of arrays in C++, including declaration, initialization, and accessing array elements. Teach students how to work with one-dimensional and multi-dimensional arrays. [5 hrs] <u>Practical Part A & B class</u> Learning during the lab practice for 15 weeks. [45 hrs] Code example in C++ programming language, syntax, basic features and how to declare and use them in C++. Cover fundamental data types such as integers floating-point numbers, characters, and strings [15 hrs] Code example in C++ programming language, input and output operations in C++, including reading user input and displaying output on the console as well as control structures in C++, such as if-else statements, switch statements, and loops (while, do-

	while, for). Explain how these structures can be used to control program flow and make decisions. [15 hrs] Code example in C++ programming language, function definition, parameters, return types, and function calls. Teach them how to create and use functions to modularize their code and perform specific tasks and Cover the concept of arrays/ structure in C++, including declaration, initialization, and accessing array elements. Teach students how to work with one-dimensional and multi-dimensional arrays. [15 hrs]

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	73	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	5 and 10	LO #1 - #5
	Assignments	2	20% (20)	2 and 12	LO #1 - #12
	Projects / Lab.				
	Report				

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduce students to the C++ programming language.
Week 2	Introduce students to the C++ programming language, its syntax, and basic features.
Week 3	Teach students about variables, their types.
Week 4	Teach students about variables, their types, and how to declare and use them in C++.
Week 5	Teach students about variables, their types, and how to declare and use them in C++. Cover fundamental data types such as integers, floating-point numbers, characters, and strings.
Week 6	Familiarize students with input and output operations in C++, including reading user input and displaying output on the console (1)
Week 7	Familiarize students with input and output operations in C++, including reading user input and displaying output on the console (2)
Week 8	**Control** Structures: if-else statements, switch statements, and loops (while, do-while, for). Explain how these structures can be used to control program flow and make decisions.
Week 9	**Condition** Structures: if-else statements, switch statements, and loops (while, do-while, for). Explain how these structures can be used to control program flow and make decisions.
Week 10	Introduce students to functions in C++
Week 11	Learning function definition, parameters, return types, and function calls
Week 12	Teach students how to create and use functions to modularize their code and perform specific tasks.
Week 13	Cover the concept of arrays/ structure in C++, including declaration, initialization, and accessing array elements. Teach students how to work with **one-dimensional**.
Week 14	Cover the concept of arrays/ structure in C++, including declaration, initialization, and accessing array elements. Teach students how to work with **multi-dimensional arrays**.
Week 15	Cover the concept of **structure** in C++, including declaration, initialization, and accessing structure elements.

Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to C++ language (code 1)
Week 2	Lab 2: The syntax, basic features and how to declare and use them in C++ (code 2)
Week 3	Lab 3: The syntax, basic features and how to declare and use them in C++ (code 3)
Week 4	Lab 4: fundamental data types such as integers floating-point numbers, characters, and strings (code 4)
Week 5	Lab 5: fundamental data types such as integers floating-point numbers, characters, and strings (code 5)
Week 6	Lab 6: The input and output operations in C++, (code 6)
Week 7	Lab 7: input and displaying output on the console (code 7)
Week 8	Lab 8: Using control structures in C++, such as if-else statements (code 8)
Week 9	Lab 9: Using switch statements, (code 9)
Week 10	Lab 10: Using loops (while, do-while, for), (code 10)
Week 11	Lab 11: Explain the flow and make decisions of code (7,8,9, and 10)
Week 12	Lab 12: Using function definition, parameters, return types, and function calls
Week 13	Lab 13: Array one dimension
Week 14	Lab 14: Array two dimensions
Week 15	Lab 15: structure

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	C++ "Beginner level"	Yes
Recommended Texts	Learn C++ Quickly: A Complete Beginner's Guide to Learning C++, Even If You're New to Programming (Crash Course With Hands-On Project)	No
Websites	https://www.coursera.org/	

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

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

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الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Digital Technique**			**Module Delivery**	
Module Type	**Support**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PCS112**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	One	
Administering Department	PCS		**College**	PPE	
Module Leader	Mohammed K. Khalis		**e-mail**	Mohammed.khalis@tu.edu.iq	
Module Leader's Acad. Title	Asst. Lecturer		**Module Leader's Qualification**	MSc	
Module Tutor	N/A		**e-mail**	N/A	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn about common numbering systems, such as binary, octal, and hexadecimal. 2. Logic gates specifications. 3. Simplification and design of Boolean functions
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Knowledge and understanding: Minimize functions using any type of minimizing algorithms (Boolean algebra, Karnaugh map or Tabulation Method). 2. Cognitive skills (thinking and analysis). Define the problem (Inputs and Outputs), and write its functions. Implement functions using digital circuits. 3. Practical and subject-specific skills (Transferable Skills). Work effectively with others. Use simulation software, for testing the designed circuit. 4. The ability to use the techniques, skills and tools of contemporary engineering in the engineering field to control petroleum systems. 5. The possibility of designing and implementing experiments, analyzing and translating the results into the real environment. 6. Understand the impact of engineering solutions globally and economically.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **<u>Part A - Numbering Systems & Logic Gates</u>** **Numbering Systems** – Decimal numbers, binary numbers, decimal to binary conversion, binary to decimal conversion, binary arithmetic, 1's and 2's complement of binary numbers, hexadecimal numbers, binary to hexadecimal conversion, hexadecimal to binary conversion, hexadecimal to decimal conversion, decimal to hexadecimal conversion, hexadecimal arithmetic and octal numbers. [12 hrs] Binary Coded Decimal (BCD) numbers, some common 4-bit decimal codes, Gray code, binary to Gray conversion, Gray to binary conversion, signed numbers and arithmetic operations with signed numbers. [8 hrs] **Logic Gates** – NOT, AND, OR, NAND, NOR, X-OR, and X-NOR gates. [8 hrs]

	Part B - Boolean Algebra & Karnaugh Map **Boolean Algebra** - Laws of Boolean algebra, rules of Boolean algebra, DeMorgan's theorems, Boolean analysis of logic circuits, the Boolean expression for a logic circuit, constructing a truth table for a logic circuit, simplification using Boolean algebra, the Sum-of-Products (SOP) form, the Product-of-Sums (POS) form, converting standard SOP to Standard POS, converting standard POS to standard SOP. [16 hrs] **Karnaugh map** - the 3-variables Karnaugh map, the 4-variables Karnaugh map, the 5-variables Karnaugh map, Karnaugh map SOP minimization, mapping a standard SOP expression, mapping a nonstandard SOP expression, Karnaugh map simplification of SOP expressions, Don't care conditions, Karnaugh map POS minimization, mapping a standard POS expression, mapping a nonstandard POS expression, Karnaugh map simplification of POS expressions. [12 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategies that will be adopted in delivering this module are summarized as follows: 1- Encourage the student's participation in the lecture explanation and solving exercises by rewarding those who answer correctly with bonus marks. 2- Encourage the students to pay high attention to the lecture explanation provided by the lecturer by making intentional simple mistakes during the lecture and reward those who find those mistakes and correct them quickly with bonus marks. 3- Acquiring feedback from students by stopping the explanation every 15 minutes to ask if there is any question or obscure part of the explanation. Then, ask a sample of the students to ensure that the explanation is understood and well received. 4- Instilling the spirit of competition among students by giving them extra assignments and asking them to complete those assignments in a given time. Those who complete the assignments before the deadline will be discussed to ensure there is no cheating. If no cheating is spotted, the students will be rewarded handsomely with extra marks.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO # 1 and 2
	Assignments	2	10% (10)	2, 12	LO # 2-5
	Lab. Reports	7	10% (10)	Continuous	All
	Lab. Exam	2	10% (10)	7, 14	LO # 1, 3-5
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO # 1 and 2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Numbering Systems – Decimal Numbers, Binary Numbers

Week 2	Decimal to Binary Conversion, Binary to Decimal Conversion, Binary Arithmetic, 1's And 2's Complement of Binary Numbers
Week 3	Hexadecimal Numbers, Binary to Hexadecimal Conversion, Hexadecimal to Binary Conversion, Hexadecimal to Decimal Conversion, Decimal to Hexadecimal Conversion, Hexadecimal Arithmetic and Octal Numbers.
Week 4	Binary Coded Decimal (BCD) Numbers, Some Common 4-Bit Decimal Codes, Gray Code
Week 5	Binary to Gray Conversion, Gray to Binary Conversion, Signed Numbers And Arithmetic Operations With Signed Numbers
Week 6	Introduction to Logic Gates – NOT, AND, OR Gates
Week 7	NAND, NOR, X-OR, And X-NOR Gates.
Week 8	Boolean Algebra - Laws of Boolean Algebra, Rules of Boolean Algebra
Week 9	Demorgan's Theorems, Boolean Analysis of Logic Circuits, The Boolean Expression for A Logic Circuit, Constructing A Truth Table for A Logic Circuit
Week 10	Simplification Using Boolean Algebra, The Sum-Of-Products (SOP) Form, The Product-Of-Sums (POS) Form
Week 11	Converting Standard SOP to Standard POS, Converting Standard POS to Standard SOP
Week 12	Karnaugh Map - The 3-Variables Karnaugh Map, The 4-Variables Karnaugh Map, The 5-Variables Karnaugh Map
Week 13	Karnaugh Map SOP Minimization, Mapping A Standard SOP Expression, Mapping A Nonstandard SOP Expression, Karnaugh Map Simplification of SOP Expressions
Week 14	Karnaugh Map POS Minimization, Mapping A Standard POS Expression, Mapping A Nonstandard POS Expression, Karnaugh Map Simplification of POS Expressions.
Week 15	**Preparatory week before the Final Exam**
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1-2	Lab 1: Introductory lecture on the Digital Technique training board and the other laboratory tools.
Week 3-4	Lab 2: Introductory lecture to the Multisim and learn how to create and simulate logic circuits.
Week 5-6	Lab 3: Logic gates
Week 7-8	Lab 4: Decimal to binary and binary to decimal converters
Week 9-10	Lab 5: The applications of Exclusive-OR
Week 11-12	Lab 6: Boolean Algebra
Week 13-14	Lab 7: Universal gates: NAND and NOR

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Digital System Principles and Applications, by Ronald J. Tocci.	Yes (Electronic Copy)
Recommended Texts	Digital Principles and Applications, by Malvino Leach.	Yes (Electronic Copy)
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors

	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work is required but credit awarded
(0 – 49)	**F –** Fail	راسب	(0-44)	Considerable amount of work required

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTOR
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**DEMOCRACY AND HUMAN RIGHT(الديمقراطية وحقوق الانسان)**			**Module Delivery**	
Module Type	**BASIC**			**محاضرات نظرية**	
Module Code	**PCS126**				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	1		**Semester (s) offered**	1	
Administering Department	PCS		**College**	PPE	
Module Leader	Qutaiba Alasad		**e-mail**	qutaibaeng@tu.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph. D.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name	None		**e-mail**	None	
Review Committee Approval			**Version Number**	1.0	

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

Module Aims, Learning Outcomes, Indicative Contents and Brief Description أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر	
Module Aims أهداف المادة الدراسية	**١-القدرة على ادراك المفهوم الاساسي لحقوق الانسان والطفل والديمقراطية.** **٢- القدرة على فهم الاصول التاريخية للمفهومين. ومعرفة ايجابيات وسلبيات حقوق الانسان والديمقراطية.** **٣- الاطلاع على حقوق الانسان والطفل والديمقراطية في الاسلام.** **٤- التعرف على مصادر حقوق الانسان والطفل وخصائص وسمات الديمقراطية.** **٥ـــمعرفة اثر التطور التكنولوجي على حقوق الانسان والطفل والديمقراطية.** **٦-التطرق لمفاهيم ذات صلة بالمصطلحين مثل (العولمة، مؤسسات المجتمع المدني ، الانتخابات والاستفتاء ، الحكم الرشيد ، الجرائم الانسانية، الدستور).** **٧-الاطلاع على الضمانات التي تكفل حقوق الانسان والطفل وتكفل النظام الديمقراطي والحقوق والحريات العامة.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**١- التعرف على المصطلحات ذات الصلة بمفهوم حقوق الانسان والطفل والديمقراطية.** **٢- التعرف على اهم الحقوق التي كفلها الإسلام للإنسان والطفل واستثمارها في معالجة الآفات والحالات السلبية التي تغزو المجتمعات في العصر الحالي .** **الاستفادة من مزايا الديمقراطية ومكوناتها في معالجة التذبذب وعدم الاستقرار في المجتمع والحفاظ على الاستقرار والسلم المجتمعي.** **٣- الاطلاع على المواثيق الدولية المختصة بمجالات حقوق الانسان والطفل الصادرة عن المنظمات الدولية وجمعية الأمم المتحدة.** **٤- الاستفادة من تجارب الاخرين (الدول المتقدمة في مجالات حقوق الانسان والطفل والديمقراطية).** **٥- اللمام بالقوانين والدساتير الدولية والإقليمية والمحلية المختصة بقضايا حقوق الانسان والحريات العامة والديمقراطية.** **٧- التعرف على جرائم الإبادة الجماعية والجرائم الإنسانية ومدى تأثيرها على مفهوم حقوق الانسان والطفل والديمقراطية.**
Indicative Contents المحتويات الإرشادية	**يتضمن المحتوى الارشادي مايأتي:** **١- حقوق الانسان والطفل والديمقراطية في الحضارات القديمة والإسلام (٨ ساعات).** **٢- مصادر حقوق الانسان العالمية والمحلية، خصائص وسمات الديمقراطية (٤ ساعات).** **٣- ضمانات حقوق الانسان العالمية والمحلية وضمانات النظام الديمقراطي (٤ ساعات).** **٤- حقوق الانسان والطفل والديمقراطية واثر التقدم التكنولوجي عليهما (٤ ساعات).** **٥- العولمة ، مؤسسات المجتمع المدني ، الانتخابات والاستفتاء، الدستور(٤ ساعات)** **٦- الجرائم الإنسانية وانواعها ، الحكم الرشيد ، (٢ ساعة).** **٧- الوثائق الدولية الخاصة بحقوق الطفل والديمقراطية المعاصرة (٤ ساعات).**
Course Description	**حقوق الانسان: هي حقوق يتمتع بها جميع مكونات البشر لمجرد اننا من ابناء البشر، وهذه الحقوق متأصلة في جميع البشر مهما كان عرقهم او جنسهم او قوميتهم او مذهبهم ولاتمنح من أي دولة، وتتضمن حقوق الانسان والطفل في الحضارات القديمة والاسلام، المواثيق الدولية ، مصادر وضمانات حقوق الانسان ، القوانين والدساتير، مجلس حقوق الانسان، العولمة، التقدم التكنولوجي واثره على حقوق الانسان.**

	الديمقراطية: يرجع مصطلح الديمقراطية الى الحضارة اليونانية القديمة وهي عبارة عن مصطلح مكون من مقطعين هما: (Cratia) التي تعني حكم و (Demo) التي تعني الشعب ليصبح المفهوم حكم الشعب ، وتتضمن الديمقراطية التطرق الى مفهومها ومعرفة الجذور التاريخية لها ، المكونات ، الخصائص ، المميزات ، الضمانات ، علاقة الديمقراطية ب (الدستور ، مؤسسات المجتمع المدني ، حقوق الانسان ، الحكم الرشيد، الانتخابات) ، الديمقراطية المعاصرة
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	تم وضع استراتيجية التعلم والتعليم من اجل ان يحصل الطالب على معلومات كاملة تغطي المنهج الدراسي المعد للمادة ولكي تتحقق الغاية الاساسية للمنهج الذي ينصب نحو المام وادراك الطالب بالمفاهيم الاساسية لحقوق الانسان والديمقراطية ، والاطلاع على المصادر والضمانات والمواثيق الدولية للمصطلحين من اجل استثمارها في معالجة الظواهر السلبية في المجتمع والحفاظ على الاستقراروالسلم المجتمعي .

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	الجذور التاريخية لحقوق الانسان والديمقراطية في الحضارات القديمة
Week 2	حقوق الانسان والطفل والديمقراطية في الاسلام
Week 3	مصادر حقوق الانسان على المستوى الخارجي الدولي، سمات وخصائص الديمقراطية
Week 4	مصادر حقوق الانسان على المستوى الداخلي المحلي، مزايا الديمقراطية
Week 5	ضمانات حقوق الانسان على المستوى المحلي، مكونات الديمقراطية
Week 6	ضمانات حقوق الانسان على المستوى الدولي، الضمانات التي تكفل النظام الديمقراطي
Week 7	مجلس حقوق الانسان، الانتخابات واهميتها
Week 8	امتحان نصف الفصل
Week 9	التطور التكنولوجي واثره على حقوق الانسان والطفل والديمقراطية
Week 10	مفهوم العولمة، مؤسسات المجتمع المدني
Week 11	الحكم الرشيد (المبادئ، المعايير) ، الاستفتاء
Week 12	الدستور وانواعه
Week 13	حقوق الطفل في المواثيق والعهود الدولية
Week 14	الجرائم الانسانية (جرائم الابادة الجماعية) وتأثيرها على حقوق الانسان والطفل والانظمة الديمقراطية
Week 15	الديمقراطية المعاصرة وحقوق الانسان والطفل ودراسة حالات لأمثلة واقعية حدثت في المجتمعات الدولية والعربية وفي العراق.
Week 16	امتحان نهاية الفصل

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**كتاب حقوق الانسان والديمقراطية.** **من تأليف :١-ا.د. ماهر صالح علاوي الجبوري، ا.د رياض عزيز هادي ، ا.د. رعد ناجي الجدة، ا.م.د كامل عبد العنكود ، ا.م.د علي عبد الرزاق محمد، ا.د. حسان محمد شفيق، (٢٠٠٩)**	Yes
Recommended Texts	**١ـ ـالديمقراطية ،من تأليف : تشارلز تيللي ، ترجمة محمد فاضل طباخ ، الهيئة المصرية العامة للكتاب،(٢٠١٠).** **٢ـ كتاب حقوق الانسان الاساسية والدور الامني لحمايتها، المؤلف: الدكتور مبارك علوي محمد،(٢٠١٩).**	No
Websites	N/A	

APPENDIX:

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

Note:

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	ELECTRICAL MACHINES	**Module Delivery**	
Module Type	BASIC	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PCS125		
ECTS Credits	4		
SWL (hr/sem)			

Module Level	UGI	**Semester of Delivery**	2
Administering Department	PSCE	**College**	PPE
Module Leader	Mohammed H. Ibrahim	**e-mail**	
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	M.Sc.
Module Tutor	None	**e-mail**	None
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	1

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	PCS111	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The aim of the module is to provide a comprehensive understanding of DC machines, covering fundamental principles of magnetism and electromagnetism, including magnetic force, flux density, and magnetic circuits. Additionally, the course delves into the construction and operation of DC generators and motors, exploring topics such as magnetomotive force, Faraday's laws, armature windings, torque, efficiency, and speed control. The lectures also touch upon single induction motors, aiming to equip students with the knowledge necessary to analyze, design, and operate DC machines effectively.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand DC machine principles and components. 2. Grasp magnetism and electromagnetism fundamentals, including magnetic force laws. 3. Ability to Calculate and analyze magnetic flux, flux density, and circuits. 4. Apply magnetomotive force and Faraday's laws to magnetic circuits. 5. Understand Lenz's law, induced EMF, and self-induction. 6. Ability to analyze magnetic hysteresis and its relevance to DC machines. 7. Describe DC generator construction, armature windings, motor characteristics, and speed control techniques, including single induction motor operation.
Indicative Contents المحتويات الإرشادية	1. Introduction to DC Machines: Overview of DC machines and their applications. 2. Magnetism and Electromagnetism: Basic principles of magnetism, Coulomb's laws and magnetic force, and Intensity of magnetic fields. 3. Magnetic Circuits: Magnetic flux and flux density, Analysis of magnetic circuits, and Magnetomotive force and reluctance. 4. Faraday's Laws and Induced EMF: Application of Faraday's laws in DC machines, Understanding Lenz's law, and Coefficient of self-induction. 5. Magnetic Hysteresis: Concept and effects of magnetic hysteresis and Implications for DC machines. 6. DC Generators: Construction and operation principles and Types of DC generators. 7. DC Armature Windings: Different types of armature windings and Characteristics and applications. 8. Characteristics and Losses: Analysis of DC machine characteristics and Losses and efficiency calculations. 9. DC Motors: Overview of DC motor types and Armature torque analysis. 10. Motor Performance and Control: Speed, losses, starting, braking characteristics, and Speed control techniques for DC motors. 11. Electric Braking: Principles and methods of electric braking. 12. Single Induction Motors: Operating principles and characteristics.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies of this course encompass a blend of theoretical instruction, practical demonstrations, and interactive engagement to ensure comprehensive understanding and practical application of DC machine principles. Lectures provide theoretical foundations, explaining concepts such as magnetism, electromagnetism, and magnetic circuits, while practical demonstrations offer hands-on experience with DC generators and motors. Interactive discussions and problem-solving sessions encourage student participation, facilitating deeper comprehension and critical thinking. Assessment methods include assignments and quizzes, ensuring continuous evaluation of student progress and understanding.

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

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	30% (30)	4, 8, 12	LO #1,2,3,5,6,7,9,10, and 11
	Assignments	2	10% (10)	Continuous	
	Projects / Lab.	-	-	-	-
	Case Study	-	-	-	-
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to DC Machine
Week 2	Magnetism and Electromagnetism, Magnetic Force (Coulomb laws), Intensity of Magnetic field
Week 3	Magnetic Flux, Flux Density, Magnetic Circuit
Week 4	Magnetomotive Force, Reluctance, Magnetic Circuits, Faraday's Laws
Week 5	Lenz's Law, Induced EMF, Coefficient of Self-induction
Week 6	Magnetic Hysteresis
Week 7	DC Generators, Construction of DC Generation
Week 8	Types of DC Armature Windings, Types of DC Generators
Week 9	Characteristics and Losses of DC Machine, Condition for Maximum Efficiency
Week 10	DC Motors, Types of DC Motors, Armature Torque of DC Motor
Week 11	Speed, Losses, Starting, Braking and Characteristic of DC Motors
Week 12	Speed Control of DC Motors, Electric Braking, DC Motor Characteristics
Week 13	Single Induction Motors
Week 14	Single Induction Motors
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	E. HUGHES "ELECTRICAL TECHNOLOGY" LONGMANS, LONDON, 2005.	No, but available as a soft copy
Recommended Texts	Mehta VK, Mehta R. Principles of electrical machines. S. Chand Publishing; 2002.	No, but available as a soft copy
Websites		

APPENDIX:

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

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ELECTRICAL			**Module Delivery**	
Module Type	SUPLEMENT			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PCS111				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**	1st	
Administering Department	PCS		**College**	PPE	
Module Leader	Amer B. Rakan		**e-mail**	amerbasheer@tu.edu.iq	
Module Leader's Acad. Title	Asst. Lect.		**Module Leader's Qualification**	MSc	
Module Tutor			**e-mail**		
Peer Reviewer Name	-		**e-mail**		
Review Committee Approval	-		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To study the systems of units and understand the fundamental concepts of current, voltage, and resistance. 2. To learn about resistors, including color coding, Ohm's Law, power, efficiency, and energy calculations. 3. To analyze DC circuits, including series circuits, Kirchhoff's Voltage Law, and the relationships within series circuits. 4. To understand voltage laws, including the voltage divider rule and the behavior of voltage sources in series. 5. To study the internal resistance of voltage sources and voltage regulation. 6. To analyze parallel circuits and their characteristics. 7. To apply current laws, including Kirchhoff's Current Law and the current divider rule, and analyze voltage sources in parallel circuits. 8. To analyze series-parallel circuits and their behavior. 9. To study source conversions, ladder networks, methods of analysis, and the behavior of current sources in parallel and series. 10. To analyze circuits using mesh analysis, including determinants, the branch current method, and the general approach to mesh analysis. 11. To apply mesh and nodal analysis methods, including the format and general approaches. 12. To understand bridge networks and the conversion between delta and star configurations. 13. To study network theorems, including superposition and its application. 14. To understand Thevenin's Theorem and Norton's Theorem, including their applications and the maximum power transfer theorem.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introduction: Systems of Units, Current, Voltage, Resistance Learn about the different systems of units used in electrical engineering. Understand the concepts of current, voltage, and resistance and their fundamental relationships. 2. Resistors: Color Coding, Ohm’s Law, Power, Efficiency, Energy Gain knowledge of resistor color coding and how to interpret resistor values. Understand Ohm's Law and its applications in electrical circuits. Learn about power calculations in resistive circuits and the concepts of efficiency and energy. 3. DC Circuits: D.C. Series Circuits, Kirchhoff’s Voltage Law, Series Circuits Relations. Study DC series circuits and analyze their behavior using Kirchhoff's Voltage Law. Understand the voltage and current relationships in series circuits. Learn how to calculate the

	total resistance, current, and voltage across each element in a series circuit. 4. Voltage Laws: Voltage Divider Rule, Voltage Sources in Series Learn the voltage divider rule and how to apply it in circuit analysis. Understand the behavior of voltage sources connected in series. Gain knowledge of the voltage distribution across a series circuit with multiple voltage sources. 5. Voltage Source: Internal Resistance of Voltage Sources, Voltage Regulation Understand the concept of internal resistance in voltage sources and its impact on circuit performance. Learn about voltage regulation and methods to maintain a stable output voltage. Gain knowledge of voltage regulators and their applications. 6. Parallel Circuits: Parallel Circuits Analysis Study parallel circuits and analyze their behavior using Kirchhoff's Current Law. Understand the current and voltage relationships in parallel circuits. Learn how to calculate the total resistance, current, and voltage across each element in a parallel circuit. 7. Current Laws: Kirchhoff's Current Law, Current Divider Rule, Voltage Sources in Parallel, Open and Short Circuits Understand Kirchhoff's Current Law and its application in circuit analysis. Learn the current divider rule and how to apply it in parallel circuits. Study the behavior of voltage sources connected in parallel. Gain knowledge of open and short circuits and their effects on circuit behavior. 8. Series-Parallel: Series-Parallel Circuits Understand the analysis and behavior of series-parallel circuits. Learn how to simplify complex series-parallel circuits into equivalent circuits. Analyze the voltage and current relationships in series-parallel configurations. 9. Source Conversions: Ladder Network, Methods of Analysis, Current Sources, Source Conversions, Current Sources in Parallel, Current Sources in Series Gain knowledge of ladder networks and their analysis methods. Learn about different methods of circuit analysis, such as nodal and mesh analysis. Understand current sources and their behavior in parallel and series configurations. Study source conversions between current sources and voltage sources. 10. Mesh Analysis: Determinants, Branch Current Method, Mesh Analysis (General Approach) Understand the concept of mesh analysis and its applications in circuit analysis. Learn the branch current method and how to solve circuits using determinants. Gain proficiency in applying mesh analysis to solve complex circuits.

	11. Mesh and Nodal Analysis: Mesh Analysis (Format Approach), Nodal Analysis (General Approach), Nodal Analysis (Format Approach) Further explore mesh analysis, focusing on different approaches and techniques. Learn about nodal analysis and its general and format approaches. Gain proficiency in applying nodal analysis to solve circuits. 12. Bridge Networks: Bridge Network, Delta to Star and Star to Delta Conversion 13. Understand the behavior and applications of bridge networks in circuit analysis. 14. Learn the concepts of delta-to-star
Indicative Contents المحتويات الإرشادية	1. Introduction: • Systems of Units: Introduction to different systems of units and their importance in electrical circuits. • Current, Voltage, Resistance: Understanding the fundamental concepts of current, voltage, and resistance and their relationship. 2. Resistors: • Color Coding: Learning how to interpret resistor color codes and determine their resistance values. • Ohm's Law: Understanding the relationship between current, voltage, and resistance. • Power, Efficiency, Energy: Exploring power calculations, efficiency, and energy consumption in resistor circuits. 3. DC Circuits: • D.C. Series Circuits: Analyzing series circuits and applying Kirchhoff's Voltage Law. • Series Circuits Relations: Understanding the relationships between voltage, current, and resistance in series circuits. 4. Voltage Laws: • Voltage Divider Rule: Learning how to calculate voltages in series circuits using the voltage divider rule. • Voltage Sources in Series: Analyzing circuits with multiple voltage sources connected in series. 5. Voltage Source: • Internal Resistance of Voltage Sources: Understanding the concept of internal resistance in voltage sources and its effect on circuit behavior. • Voltage Regulation: Exploring voltage regulation techniques and their importance in maintaining stable output voltages.

6. Parallel Circuits:
    - Parallel Circuits Analysis: Analyzing parallel circuits and calculating total resistance, current division, and voltage division.
7. Current Laws:
    - Kirchhoff's Current Law: Understanding Kirchhoff's Current Law and its application in circuit analysis.
    - Current Divider Rule: Learning how to calculate current division in parallel circuits.
    - Voltage Sources in Parallel: Analyzing circuits with multiple voltage sources connected in parallel.
    - Open and Short Circuits: Understanding the behavior of circuits in the presence of open and short circuit conditions.
8. Series-Parallel Circuits:
    - Series-Parallel Circuits: Analyzing circuits that contain both series and parallel components.
9. Source Conversions:
    - Ladder Network: Understanding ladder networks and their analysis using source conversions.
    - Methods of Analysis: Exploring different methods of circuit analysis, including source conversions.
    - Current Sources: Understanding the behavior and analysis of circuits with current sources.
    - Source Conversions: Converting voltage sources to current sources and vice versa.
    - Current Sources in Parallel: Analyzing circuits with multiple current sources connected in parallel.
    - Current Sources in Series: Analyzing circuits with multiple current sources connected in series.
10. Mesh Analysis:
    - Determinants: Introduction to determinants and their application in mesh analysis.
    - Branch Current Method: Using the branch current method to analyze circuits and calculate mesh currents.
    - Mesh Analysis (General Approach): Applying the general approach to mesh analysis in complex circuits.
11. Mesh and Nodal Analysis:
    - Mesh Analysis (Format Approach): Using the format approach for mesh analysis in circuits with specific configurations.
    - Nodal Analysis (General Approach): Understanding the general

	approach to nodal analysis and its application in circuit analysis. • Nodal Analysis (Format Approach): Applying the format approach to nodal analysis in circuits with specific configurations. 12. Bridge Networks: • Bridge Network: Understanding bridge networks and their applications in circuit analysis. • Delta to Star and Star to Delta Conversion: Learning how to convert circuits between delta and star configurations for analysis purposes. 13. Superposition: • Network Theorems: Introduction to network theorems and their applications in circuit analysis. • Superposition: Applying the superposition theorem to analyze circuits with multiple sources. 14. Thevenin's Theorem, Norton's Theorem: • Norton's Theorem: Understanding Norton's Theorem and its application in circuit analysis. • Maximum Power Transfer Theorem: Exploring the concept of maximum power transfer and its significance in circuit design and efficiency. • Thevenin's Theorem: Applying Thevenin's
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	he learning and teaching strategies for this course will focus on a combination of theoretical knowledge and practical application. The course will employ a variety of teaching methods such as lectures, demonstrations, and hands-on exercises to ensure a comprehensive understanding of the topics. Students will be encouraged to actively participate in discussions, ask questions, and engage in problem-solving activities. The use of visual aids, simulations, and real-world examples will help illustrate the concepts and make them more relatable. Additionally, collaborative learning and group projects will be incorporated to promote teamwork and critical thinking skills. Regular assessments and feedback will be provided to monitor the progress of students and address any challenges they may encounter. The course will aim to create a supportive and interactive learning environment that fosters curiosity, encourages exploration, and equips students with the necessary knowledge and skills in electrical circuit analysis.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction:** Systems of Units, Current, Voltage, Resistance
Week 2	**Resistors:** Color Coding, Ohm's Law, Power, Efficiency, Energy
Week 3	**DC Circuits:** D.C. Series Circuits, Kirchhoff's Voltage Law, Series Circuits Relations
Week 4	**Voltages laws:** Voltage Divider Rule, Voltage Sources in Series
Week 5	**Voltage source:** Internal Resistance of Voltage Sources, Voltage Regulation
Week 6	**Parallel circuits:** Parallel Circuits analysis
Week 7	**Current laws:** Kirchhoff's Current Law, Current Divider Rule, Voltage Sources in Parallel, Open and Short Circuits
Week 8	**Series-Parallel:** Series-Parallel Circuits
Week 9	**Source Conversions:** Ladder Network, Methods of Analysis, Current Sources, Source Conversions, Current Sources in Parallel, Current Sources in Series

Week 10	**Mesh Analysis:** Determinants, Branch Current Method, Mesh Analysis (General Approach)
Week 11	**Mesh and Nodal Analysis:** Mesh Analysis (Format Approach), Nodal Analysis (General Approach), Nodal Analysis (Format Approach)
Week 12	**Bridge Networks:** Bridge Network, Delta to Star and Star to Delta Conversion
Week 13	**Superposition:** Network Theorems, Superposition
Week 14	**Thevenin's Theorem, Norton's Theorem:** Norton's Theorem, Maximum Power Transfer Theorem
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Robert L. Boylested, **Introduction circuit analysis 5th Ed.**, Columbus Merrill Pub. Co., 1982	
Recommended Texts		
Websites		

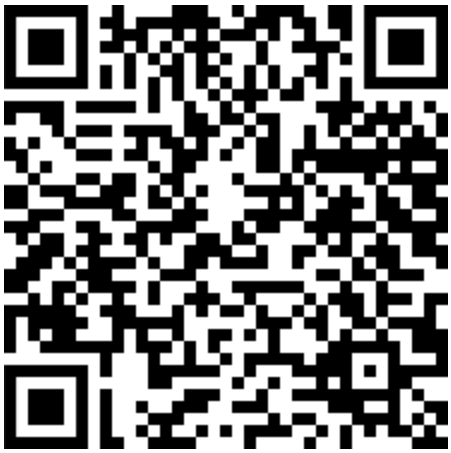
APPENDIX:

GRADING SCHEME
مخطط الدرجات

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

Note:

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



وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Drawing**			**Module Delivery**	
Module Type	**BASIC**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PCS115**				
ECTS Credits	**5**				
SWL (hr/sem)	125				
Module Level		1	**Semester of Delivery**		1
Administering Department		PCS	**College**		PPE
Module Leader	Yasin Kh. Yasin		**e-mail**		Yaseen.k@tu.edu.iq
Module Leader's Acad. Title		Asst. Lecturer	**Module Leader's Qualification**		MSc
Module Tutor	N/A		**e-mail**		N/A
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To emphasize the importance of drawing as a language for engineers 2. To develop skills in engineering drawing and drafting. 3. To develop skills in interpretation of engineering drawings 4. To develop skills in computer aided drafting and design.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of this course, students should be able to: 1. Translate physical objects into paper and computer drawings and models. 2. Produce orthographic and three dimensional drawings of engineering components. 3. Use freehand, technical instruments and computer techniques for engineering drawing. 4. Apply the skills learnt in a modern, technology-intensive industry. Apply latest developments and current practices in all areas of graphic communication, CAD, functional drafting, material representation, shop processes, geometric tolerancing, electronic drafting and metrication. 5. Understand the expression of technical ideas or ideas of a practical nature. Interpret drawings that describe an objects physical shape completely and accurately, communicating engineering concepts to manufacturing. 6. Translate the ideas, rough sketches, specifications and calculations of engineers and designers into working plans that are used in making a product. Use both computer aided drafting and design (CADD) systems or manual drafting techniques as well as Engineering handbooks, tables and calculators to assist in solving technical problems. 7. Use preliminary information provided by engineers to prepare design layouts and make drawings of any part shown on the layout, giving dimensions, material, and any other information necessary to make the detailed drawing clear and complete.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **<u>Part A – Introduction to engineering drawing (4 Hours)</u>** • Drafting as a language of industry • Application of drawing in various fields • Engineering drawing in the production process • Drawing equipment including computer aided tools **<u>Part B – Basic Drafting Skills (6 Hours)</u>** • Standard drawing sizes and filing • Drawing format • Lines, circles and arc drawing • Freehand sketching • Computer aided drafting **<u>Part C – Pictorial Drawings (8 Hours)</u>** • Isometric Projection • Oblique Projection

	• Perspective projection • Computer aided drafting **Part D – Theory of shape descriptions(6 Hours)** • Orthographic Representations • One-, two- and three view drawings • Representation of common features • Computer aided drafting techniques **Part E – Dimensioning principles(6 Hours)** • Basic dimensioning • Dimensioning common features • Limits and tolerances • Fits and allowances • Surface texture • Computer aided drafting **Part F – Sections, auxiliary views and revolutions (8 hours)** • Sectional views • Primary and secondary auxiliary views • Revolutions • Computer aided drafting **Part G – Surface development and intersections (4 hours)** • Sheet metal development • The packaging industry • Development of flat, cylindrical, conical, spherical surfaces etc .

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategies that will be adopted in delivering this module are summarized as follows: 1- Encourage the student's participation in the lecture explanation and solving exercises by rewarding those who answer correctly with bonus marks. 2- Encourage the students to pay high attention to the lecture explanation provided by the lecturer by making intentional simple mistakes during the lecture and reward those who find those mistakes and correct them quickly with bonus marks. 3- Acquiring feedback from students by stopping the explanation every 15 minutes to ask if there is any question or obscure part of the explanation. Then, ask a sample of the students to ensure that the explanation is understood and well received. 4- Instilling the spirit of competition among students by giving them extra assignments and asking them to complete those assignments in a given time. Those who complete the assignments before the deadline will be discussed to ensure there is no cheating. If no cheating is spotted, the students will be rewarded handsomely with extra marks.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	80	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Excises in drawing hall**	14	20% (20)	Continuous	All
	Home Work	7	10% (10)	Continuous	All
	Midterm Exam	2hr	20% (20)	7	LO # 1,2,6 and 7
Summative 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 engineering drawing
Week 2	Primary elements of drawings
Week 3	Geometrical Construction
Week 4	Dimensioning
Week 5	Tangency
Week 6	Loci applications
Week 7	Tangency and loci applications
Week 8,9	Introduction; Engineering Graphics as a language, Board Drawing vs. Computer- Aided Drawing, BIM- Revit, Introduction to AutoCAD Mechanical Environment.
Week 10	Layer creation in AutoCAD, Geometrical Constructions, View drawing in AutoCAD and

	sketching in Inventor, Drawing/Sketching and Editing Commands,
Week 11	Creating solid model of structures in Inventor, assembly modelling
Week 12,13	Exercises on Solid Model creation, Inspection tools of AutoCAD and Inventor Environments
Week 14,15	Building Information Modelling in Autodesk Revit, Architectural drawings, walls, doors, windows, lightening fixtures, roofs, floors, view creation in Revit, Animated 3D walkthrough of a model, creating 3D view camera perspective
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1.The fundamentals of engineering drawing /Thomas E. F. & Charles J.	Yes (Electronic Copy)
Recommended Texts	**الرسم الهندسي / عبد الرسول الخفاف**	No (Electronic Copy)
Websites	https://www.amazon.com/Engineering-Drawing-2nd-M-B-Shah/dp/8131710564	

Grading Scheme
مخطط الدرجات

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

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**English Language**			**Module Delivery**	
Module Type	**Basic learning activities**			☒**Theory** ☐**Lecture** ☐**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**PCS116**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	PCS		**College**	PCSE	
Module Leader	Firas Layth Khaleel		**e-mail**	Firas_Layth@tu.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Develop Proficiency: The main objective of the course is to help students develop proficiency in all four language skills: speaking, listening, reading, and writing. The aim is to enhance their overall communicative competence in English. 2. Improve Speaking Skills: The course should focus on improving students' speaking abilities, including pronunciation, fluency, and accuracy. Students should be able to express themselves effectively in various real-life situations. 3. Enhance Listening Comprehension: The course should provide ample opportunities for students to practice their listening skills. They should be able to understand different accents, follow complex conversations, and extract key information from spoken materials. 4. Expand Vocabulary and Idiomatic Usage: An important objective is to expand students' vocabulary and teach them idiomatic expressions commonly used in English. This will enable them to express themselves more effectively and develop a more natural speaking style. 5. Develop Reading Skills: The course should focus on improving students' reading comprehension skills. They should be able to understand different types of texts, including academic articles, news articles, and literary works. They should also develop strategies for skimming, scanning, and understanding the main ideas and supporting details. 6. Enhance Writing Skills: The objective is to improve students' writing abilities, including grammar, vocabulary, sentence structure, and organization. Students should be able to produce clear, coherent, and well-structured written pieces, such as essays, reports, and emails. 7. Cultural Awareness: The course should promote cultural awareness and understanding of English-speaking countries. This includes exploring cultural norms, customs, and values to develop cross-cultural competence and effective communication in diverse contexts. 8. Develop Independent Learning Strategies: Students should be encouraged to become independent learners by providing them with strategies and resources to continue improving their English language skills outside the classroom. This includes recommending self-study materials, online resources, and language-learning apps. 9. Foster Interpersonal Communication: The course should provide opportunities

	for students to engage in group activities, discussions, and presentations to enhance their interpersonal communication skills. This will help them develop confidence in expressing their ideas and opinions in English. 10. Assess Progress and Provide Feedback: Regular assessments and feedback should be provided to monitor students' progress and identify areas for improvement. This will allow for targeted instruction and individualized support.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Proficiency: Students will demonstrate improved overall proficiency in the English language, with enhanced abilities in speaking, listening, reading, and writing. 2. Speaking Skills: Students will be able to express themselves confidently and accurately in various real-life situations, demonstrating improved pronunciation, fluency, and conversational skills. 3. Listening Comprehension: Students will develop the ability to understand different accents, follow complex conversations, and extract key information from a variety of spoken materials. 4. Vocabulary and Idiomatic Usage: Students will expand their vocabulary and incorporate idiomatic expressions into their speech, enabling them to communicate more effectively and naturally. 5. Reading Skills: Students will demonstrate improved reading comprehension skills, including the ability to understand different types of texts, identify main ideas, and extract supporting details. 6. Writing Skills: Students will exhibit enhanced writing abilities, including improved grammar, vocabulary usage, sentence structure, and organization in their written work. 7. Cultural Awareness: Students will gain a deeper understanding of the culture and customs of English-speaking countries, fostering cross-cultural competence and effective communication in diverse contexts. 8. Independent Learning Strategies: Students will develop effective strategies for self-study, including utilizing recommended resources and tools to continue improving their English language skills outside the classroom. 9. Interpersonal Communication: Students will demonstrate improved interpersonal communication skills through active participation in group activities, discussions, and presentations. 10. Assessment and Feedback: Students will receive regular assessments and feedback, allowing them to monitor their progress, identify areas for improvement, and make targeted adjustments to their learning strategies.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Theory Part A & B class</u> Learning during attendance class for 15 weeks. [60 hrs] 1. Language Skills Development: [20 hrs] Emphasis on developing proficiency in speaking, listening, reading, and writing. Activities and exercises targeting pronunciation, conversational skills, listening comprehension, reading comprehension, and writing abilities. Integration of vocabulary expansion, idiomatic usage, and grammar review throughout the course. 2. Cultural Awareness and Communication: [20 hrs] Exploration of the cultural aspects of English-speaking countries. Promotion of cross-cultural competence for effective communication in diverse contexts. Incorporation of literature and media from English-speaking cultures to foster cultural understanding. 3. Independent Learning and Assessment: [20 hrs] Encouragement of independent learning strategies through recommended resources and self-study materials. Regular assessments and feedback to monitor progress and identify areas for improvement. Opportunities for self-reflection and goal setting to enhance individual language learning journeys.

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	1	20% (20)	5	LO #1 - #3
	Assignments	1	10% (10)	5	LO #4 - #7
	Projects / Lab.				
	Report	2	10% (10)		
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	1 Getting to know you
Week 2	2 The way we live
Week 3	3 It all went wrong
Week 4	4 lets go shopping
Week 5	5 What do you want to do
Week 6	6 Tell me! What's it like
Week 7	7 Famous couples
Week 8	8 Dos and Donts
Week 9	9 Going Place

Week 10	10 Scared to Death and Exam
Week 11	11 things that changed the world
Week 12	Dreams and reality
Week 13	Earning a living
Week 14	Love you and leave you
Week 15	Oral Exam
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	New Headway, Pre-Intermediate	Yes
Recommended Texts		
Websites		

Grading Scheme
مخطط الدرجات

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

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وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTOR
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ARABIC LANGUAGE (لغة عربية)**			**Module Delivery**	
Module Type	**BASIC**			**محاضرات نظرية**	
Module Code	**PCS207**				
ECTS Credits	4				
SWL (hr/sem)	28				
Module Level	1		**Semester (s) offered**	1	
Administering Department	PCS		**College**	PPE	
Module Leader	Nawal Salih Mahdi		**e-mail**	nawal.s.mahdi@tu.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	MSc	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name	None		**e-mail**	None	
Review Committee Approval			**Version Number**	1.0	

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

Module Aims, Learning Outcomes, Indicative Contents and Brief Description أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر	
Module Aims أهداف المادة الدراسية	• **تخريج كوادر مؤهلة تأهيلاً كافياً في اللغة العربية وآدابها بالمستويات المختلفة، وفق فلسفة الجامعة ورسالتها.** • **الحفاظ على اللغة العربية، والإعلاء من شأنها، والحرص على استعمالها وتوظيفها توظيفاً صحيحاً في مناحي حياتنا المختلفة.** • **اكتشاف المواهب الأدبية وتنميتها لدى الطلبة، لتمكينهم من الإبداع في مجال اللغة العربية.** • **اتصال المتعلم بتراث أمته وحضارتها، لا سيما في مجال اللغة والأدب، واطلاعه على ما أنتجه الفكر العربي قديماً و حديثاً في هذا الإطار.** • **الإفادة من معطيات العلم والتكنولوجيا الحديثين في مجال تعلم اللغة واكتسابها.** • **نشر اللغة العربية والاعتزاز بها، في إطار الجمع بين الأصالة والمعاصرة.** • **تلبية احتياجات المجتمع المحلي والعربي والإقليمي من المتخصصين في اللغة العربية، للعمل في المجالات العلمية والتربوية والتعليمية والإعلامية والإدارية.** • **اكتساب الطلبة معارف والمعلومات المناسبة في اللغة العربية وآدابها ومهاراتها الأربع.** • **تنمية الذائقة اللغوية والأدبية لدى الطلبة، بما يمكنهم من الحكم الصحيح على ما يسمعون أو يقرؤون.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	١. **تزويد الطالب بثقافة عامة فضال عن دراستهم اللغوية** ٢. **ابعاد الطالب عن التحدث باللهجات المحلية.** ٣. **تزويد الطالب بمفردات علوم اللغة العربية** ٤. **متابعة قراءة الطالب على وفق القراءات السليمة.** ٥. **التعرف إلى مستويات نظام اللغة العربية.** ٦. **ممارسة الكتابة والكلام باللغة العربية الفصيحة.**
Indicative Contents المحتويات الإرشادية	**يتضمن المحتوى الارشادي مايأتي:** ١. **أنواع الهمزات (٢ ساعة)** ٢. **الجملة الاسمية وعلاماتها (٢ ساعة)** ٣. **سورة الرحمن (٢ ساعة)** ٤. **الميزان الصرفي (٢ ساعة)** ٥. **الشاعر عمرو بن كلثوم (٢ ساعة)** ٦. **النواسخ كان واخواتها وإن واخواتها (٢ ساعة)** ٧. **الجملة الفعلية والمنصوبات (٢ ساعة)** ٨. **الشاعر الرصافي (٢ ساعة)** ٩. **الفعل الصحيح والفعل المعتل (٢ ساعة)** ١٠. **المنقوص والمقصور والممدود (٢ ساعة)** ١١. **المشتقات (٢ ساعة)** ١٢. **علامات الترقيم (٢ ساعة)** ١٣. **العدد (٢ ساعة)** ١٤. **علم البلاغة (٢ ساعة)**
Course Description	**إعداد كوادر تعليمية وبحثية متخصصة في اللغة العربية وآدابها، للإسهام في تلبية الحاجة المحلية والعربية والعالمية. يتطلع القسم الى اعداد جيل متمكن علميا وثقافيا مرتبطا بتراث الامة حريصا على الارتقاء باللغة نطقا وكتابة قادرا على تعزيز مكانتها بين لغات العالم المتحضر فاللغة آلة الفكر التي**

	تؤمّن التعبير عنها وتطويره. ولما كان الفكر متجددا كان على اللغة كذلك ان تكون قادره على تنميها قدراتها والارتقاء بأدائها لتكون مؤهلة لنقل الافكار الجديدة وتطويرها. إجراء البحوث والدراسات الجادة خدمة للغة العربية والمعرفة الإنسانية. خدمة المجتمع المحلي فيما يتعلق باللغة العربية وآدابها من خلال النشاطات، والمحاضرات، والندوات، والمؤتمرات التي يعقدها القسم، أو يشارك فيها.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	تقوية ملكة الابداع لدى دارسي اللغة العربية فلا يقتصر استخدامها على الاغراض الحياتية العامة بل يتعداه الى تنشئة اجيال من المبدعين في المجالات اللغوية والادبية كافه يحاكي ما لدى الامم المتحضرة من ابداع.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

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

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

APPENDIX:

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

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

Note:

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS II			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PCS123				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	1		**Semester of Delivery**	2	
Administering Department	PCS		**College**	PPE	
Module Leader	Ali H. Mhmood		**e-mail**	ali.h.mhmood@tu.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PCS113	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To understand and apply the concepts of volumes using cross-sections and cylindrical shells in the context of definite integrals. 2. To explore and calculate arc length and areas of surfaces of revolution using definite integrals. 3. To comprehend and utilize the properties and derivatives of inverse functions, natural logarithms, and the integrals of trigonometric functions such as $tan\ x, cot\ x, sec\ x, and\ csc\ x$. 4. To learn logarithmic differentiation, study exponential functions, and understand the derivative and integral of exponential functions. 5. To grasp the laws of exponents, comprehend the general exponential function, and apply L'Hôpital's rule to evaluate indeterminate forms. 6. To become familiar with inverse trigonometric functions and hyperbolic functions. 7. To master the technique of integration by parts and solve trigonometric integrals. 8. To understand and apply trigonometric substitutions and the integration of rational functions by partial fractions. 9. To analyze and solve improper integrals. 10. To comprehend general first-order differential equations and their solutions. 11. To study first-order linear equations and their applications. 12. To understand the concept of sequences and explore infinite series. 13. To calculate geometric series and apply the integral test to determine convergence or divergence of series. 14. To utilize comparison tests, the ratio test, and the root test to determine the convergence or divergence of infinite sequences and series.
Module Learning	1. Understand and apply volume calculations using cross-sections and

Outcomes مخرجات التعلم للمادة الدراسية	cylindrical shells. 2. Calculate arc length and areas of surfaces of revolution using definite integrals. 3. Apply properties of inverse functions, natural logarithms, and trigonometric integrals to problem-solving. 4. Utilize logarithmic differentiation and evaluate derivatives and integrals of exponential functions. 5. Apply laws of exponents, L'Hôpital's rule, and evaluate indeterminate forms in calculus. 6. Demonstrate proficiency in inverse trigonometric functions and hyperbolic functions. 7. Apply integration by parts and solve trigonometric integrals effectively. 8. Utilize trigonometric substitutions and partial fraction decomposition for integration of rational functions. 9. Analyze and solve problems involving improper integrals. 10. Solve general first-order differential equations and interpret their solutions. 11. Solve first-order linear differential equations and apply them to real-life applications. 12. Understand the concept of sequences and demonstrate knowledge of infinite series. 13. Determine convergence or divergence of series using geometric series and the integral test. 14. Apply comparison tests, the ratio test, and the root test to evaluate convergence or divergence of infinite sequences and series.
Indicative Contents المحتويات الإرشادية	1. Contents include the application of definite integrals, such as the calculation of volumes using cross-sections and cylindrical shells, and the determination of arc length and areas of surfaces of revolution. [4 hrs] 2. Transcendental functions are covered, including the derivatives of

	inverse functions and natural logarithms, the integration of trigonometric functions such as $tan\ x, cot\ x, sec\ x, and\ csc\ x$, logarithmic differentiation, and the derivatives and integrals of exponential functions. The laws of exponents, the general exponential function, and indeterminate forms, along with L'Hôpital's rule, are also addressed. Inverse trigonometric functions and hyperbolic functions are explored. [8 hrs] 3. Techniques of integration are discussed, encompassing topics such as integration by parts, trigonometric integrals, trigonometric substitutions, the integration of rational functions by partial fractions, and the analysis and solution of improper integrals. [6 hrs] 4. The focus is on first-order differential equations, including the study of general first-order differential equations and their solutions, as well as the exploration of first-order linear equations and their applications. [4 hrs] 5. Infinite sequences and series are examined, covering concepts such as sequences, infinite series, geometric series, the integral test, and comparison tests. The application of the ratio test and the root test to determine the convergence or divergence of infinite sequences and series is also discussed. [6 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The Learning and Teaching Strategies of the course on transcendental functions, techniques of integration, first-order differential equations, and infinite sequences and series employ a combination of active learning, problem-solving activities, and interactive discussions. The course aims to foster student engagement and critical thinking through a variety of instructional methods. These strategies include hands-on exercises, group work, real-world applications, and the use of technology such as graphing calculators and mathematical software. The instructors provide clear explanations, demonstrations, and examples to facilitate conceptual understanding and promote the application of mathematical principles. They encourage active participation and collaborative learning, fostering a supportive and inclusive learning environment. Assessments are used to gauge student progress and provide timely feedback, allowing for targeted interventions and adjustments in instruction. Overall, the course employs a learner-centered approach that emphasizes the development of mathematical reasoning skills, problem-solving abilities, and a deep understanding of the course content.

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

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	4, 11	LO #1, 2, 3, 7, 8, 9, and 10
	Assignments	5	15% (15)	Continuous	
	Projects / Lab.	-	-	-	-
	Report	1	5% (5)	14	All
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Applications of Definite Integrals: Volumes Using Cross-Sections; Volumes Using Cylindrical Shells
Week 2	Applications of Definite Integrals: Arc Length, Areas of Surfaces of Revolution
Week 3	Transcendental Functions: Inverse Functions and Their Derivatives; Natural Logarithms; The Integrals of $tan\ x, cot\ x, sec\ x, and\ csc\ x$
Week 4	Transcendental Functions: Logarithmic Differentiation; Exponential Functions; The Derivative and Integral of the exponential functions
Week 5	Transcendental Functions: Laws of Exponents; The General Exponential Function; Indeterminate Forms and L'Hôpital's Rule
Week 6	Transcendental Functions: Inverse Trigonometric Functions; Hyperbolic Functions
Week 7	Techniques of Integration: Integration by Parts; Trigonometric Integrals
Week 8	Techniques of Integration: Trigonometric Substitutions, Integration of Rational Functions by Partial Fractions
Week 9	Techniques of Integration: Improper Integrals
Week 10	First-Order Differential Equations: General First-Order Differential Equations and Solutions
Week 11	First-Order Differential Equations: First-Order Linear Equations; Applications

Week 12	Infinite Sequences and Series: Sequences; Infinite Series
Week 13	Infinite Sequences and Series: Geometric Series; The Integral Test
Week 14	Infinite Sequences and Series: Comparison Tests, The Ratio and Root Tests
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Thomas' calculus 11 ed. 2004	Yes
Recommended Texts	Solution Manual of Thomas' calculus 11 ed. 2004	No
Websites	https://cse.uotechnology.edu.iq/images/sj_univer/course%20specification/1/Mathametics%20II-Course%202-The%20First_year_compressed.pdf	

APPENDIX:

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

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS I			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PCS113				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**	1	
Administering Department	PCS		**College**	PPE	
Module Leader	Ali H. Mhmood		**e-mail**	ali.h.mhmood@tu.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To understand functions, their domains and ranges, and how to graph them. 2. To explore trigonometric functions, exponential functions, and piecewise-defined functions. 3. To distinguish between even and odd functions and become familiar with common functions. 4. To comprehend rates of change, tangents to curves, limit laws, the Sandwich Theorem, and one-sided and two-sided limits. 5. To grasp concepts of continuity, limits involving infinity, and asymptotes of graphs. 6. To investigate tangents, derivatives at a point, the derivative as a function, one-sided derivatives, and the relationship between differentiability and continuity on an interval. 7. To understand differentiation rules, second- and higher-order derivatives, and derivatives of trigonometric functions. 8. To learn the chain rule, implicit differentiation, and techniques for linearization and differentials. 9. To apply derivatives to find extreme values of functions and comprehend the Mean Value Theorem. 10. To analyze the graphical behavior of functions using derivatives and explore examples from mathematics and physics. 11. To further explore examples from mathematics and physics using derivative applications. 12. To understand the concept of area, estimation with finite sums, definite integrals, and integrable and nonintegrable functions. 13. To explore properties of definite integrals, the area under the graph of nonnegative functions, and the Fundamental Theorem of Calculus. 14. To master indefinite integrals and the substitution method, integrate trigonometric functions, and solve problems involving substitution and area between curves.
Module Learning	1. Define functions, determine domains and ranges, and graph various

Outcomes مخرجات التعلم للمادة الدراسية	functions accurately. 2. Apply understanding of functions to trigonometric, exponential, and piecewise-defined functions. 3. Differentiate between even and odd functions and recognize common functions. 4. Calculate rates of change, find tangents to curves, apply limit laws, use the Sandwich Theorem, and evaluate one-sided and two-sided limits. 5. Understand continuity, limits involving infinity, and identify asymptotes of graphs. 6. Define tangents, comprehend derivatives at a point, understand the derivative as a function, calculate one-sided derivatives, and establish the relationship between differentiability and continuity on an interval. 7. Apply differentiation rules, compute second- and higher-order derivatives, and differentiate trigonometric functions. 8. Utilize the chain rule, apply implicit differentiation, and employ linearization and differentials. 9. Find extreme values of functions and understand the Mean Value Theorem and its applications. 10. Analyze the graphical behavior of functions using derivatives and solve mathematical and physical problems. 11. Gain further insight into the application of derivatives in mathematics and physics through additional examples and problem-solving. 12. Estimate area using finite sums, understand the concept of the definite integral, and differentiate between integrable and nonintegrable functions. 13. Apply properties of definite integrals, calculate the area under the graph of nonnegative functions, and comprehend the Fundamental Theorem of Calculus. 14. Master the evaluation of indefinite integrals using the substitution method, integrate trigonometric functions, and solve problems related to substitution and finding the area between curves.
Indicative Contents المحتويات الإرشادية	1. Functions and Their Graphs: Functions; Domain and Range; Graphs of

	Functions; Trigonometric Functions; Exponential Functions; Piecewise-Defined Functions; Even Functions and Odd Functions; Common Functions. [6 hrs] 2. Limits and Continuity: Rates of Change and Tangents to Curves; Limit Laws; The Sandwich Theorem; Continuity; Limits Involving Infinity; Asymptotes of Graphs. [4 hrs] 3. Differentiation: Tangents and the Derivative at a Point; The Derivative as a Function; One-Sided Derivatives; Differentiability and Continuity on an Interval; Differentiation Rules; Second- and Higher-Order Derivatives; Derivatives of Trigonometric Functions; The Chain Rule; Implicit Differentiation; Linearization and Differentials. [6 hrs] 4. Applications of Derivatives: Extreme Values of Functions; The Mean Value Theorem; Graphical Behavior of Functions from Derivatives; Examples from Mathematics and Physics. [6 hrs] 5. Integration: Area and Estimating with Finite Sums; The Definite Integral; Integrable and Nonintegrable Functions; Properties of Definite Integrals; Area Under the Graph of a Nonnegative Function; The Fundamental Theorem of Calculus; Indefinite Integrals and the Substitution Method; The Integrals of Trigonometric Functions; Substitution and Area Between Curves. [6 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies of this course involve implementing active learning strategies that engage students in discussions, problem-solving, and group work. Visuals and graphical representations are utilized to enhance understanding, while real-world examples and applications make the content relevant. Technology tools are integrated to facilitate dynamic visualization and provide immediate feedback. The course content is structured progressively, with clear objectives and breakdown of complex topics. Formative assessments and timely feedback are used to gauge understanding. Application-based projects foster critical thinking and problem-solving skills. Collaborative learning is encouraged, and individualized support is provided to struggling students. Reflection activities promote metacognition and self-regulation. By employing these strategies, students actively engage with the material and develop a solid understanding of calculus concepts and their practical applications.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	4, 11	LO #1, 2, 3, 7, 8, 9, and 10
	Assignments	5	15% (15)	Continuous	
	Projects / Lab.	-	-	-	-
	Report	1	5% (5)	14	All
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Functions and Their Graphs: Functions; Domain and Range; Graphs of Functions
Week 2	Functions and Their Graphs: Trigonometric Functions; Exponential Functions; Piecewise-Defined Functions
Week 3	Functions and Their Graphs: Even Functions and Odd Functions; Common Functions
Week 4	Limits and Continuity: Rates of Change and Tangents to Curves; Limit Laws; The Sandwich Theorem; One-Sided and Two-Sided Limits
Week 5	Limits and Continuity: Continuity; Limits Involving Infinity; Asymptotes of Graphs
Week 6	Differentiation: Tangents and the Derivative at a Point; The Derivative as a Function; One-Sided Derivatives; Differentiability and Continuity on an Interval
Week 7	Differentiation: Differentiation Rules; Second- and Higher-Order Derivatives; Derivatives of Trigonometric Functions
Week 8	Differentiation: The Chain Rule; Implicit Differentiation; Linearization and Differentials
Week 9	Applications of Derivatives: Extreme Values of Functions; The Mean Value Theorem
Week 10	Applications of Derivatives: Graphical Behavior of Functions from Derivatives, Examples from Mathematics and Physics

Week 11	Applications of Derivatives: Examples from Mathematics and Physics
Week 12	Integration: Area and Estimating with Finite Sums; The Definite Integral; Integrable and Nonintegrable Functions
Week 13	Integration: Properties of Definite Integrals; Area Under the Graph of a Nonnegative Function; The Fundamental Theorem of Calculus
Week 14	Integration: Indefinite Integrals and the Substitution Method, The Integrals of Trigonometric Functions, Substitution and Area Between Curves
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas' calculus 11 ed. 2004	Yes
Recommended Texts	Solution Manual of Thomas' calculus 11 ed. 2004	No
Websites	https://ced.ceng.tu.edu.iq/electronic-lectures/381-%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA-%D9%85%D8%A7%D8%AF%D8%A9-%D8%A7%D9%84%D8%B1%D9%8A%D8%A7%D8%B6%D9%8A%D8%A7%D8%AA-%D8%A7%D9%84%D9%85%D8%B1%D8%AD%D9%84%D8%A9-%D8%A7%D9%84%D8%A3%D9%88%D9%84%D9%89.html	

APPENDIX:

GRADING SCHEME
مخطط الدرجات

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

Note:

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Physical Electronics**			**Module Delivery**	
Module Type	**BASIC**			☒Theory ☒Tutorial	
Module Code	**PCS114**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	PCS		**College**	PPE	
Module Leader	Omar Assi Hussein		**e-mail**	omar-assi81@tu.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	08/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of electronics through the application of techniques. 2. To understand voltage, current and power from a given circuit. 3. Objectives lie in three separate areas of physical electronics. 4. The first relates to the properties of semiconductors, the second to thermionic emission problems, and the third to the improvement of instrumentation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Ability to discuss Properties of Semiconductors: Electronic in solid , energy bands, and Conductivity. 2. Ability to discuss Diffusion and drift, basic equation of semiconductor device operation and PN Junction . 3. Ability to discuss Photonic Devices : Light absorption and emission in semiconductor , laser fundamentals, photo – detectors and Solar cell. 4. Ability to discuss Switching, (CE), (CB)and (CC) configuration. 5. Ability to discuss PIN detectors, thermal detectors, and spectral response.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. This course covers fundamentals of Properties of Semiconductors: Electronic in solid , energy bands, and Conductivity, mobility, life time recombination. [15 hrs] Diffusion and drift, basic equation of semiconductor device operation and PN Junction: Depletion region capacitance. [10 hrs] Also discuss Photonic Devices : Light absorption and emission in semiconductor , laser fundamentals, photo– detectors and Solar cell. [15 hrs] PIN detectors, thermal detectors, and spectral response and Switching, (CE), (CB)and (CC) configuration . [15 hrs] Revision problem classes [6 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time

	refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	52	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Charge carries in semiconductors, Transport mechanism
Week 2	Diffusion and drift, basic equation of semiconductor device operation
Week 3	-PN Junction: Depletion region capacitance -Current component in PN junction I-V characteristics

Week 4	Effect of temperature.. forward and reverse biasing
Week 5	Switching time, diode equivalent circuit, real diode
Week 6	Ideal diode , load diode
Week 7	Application of PN Junction : Rectification . half wave, full wave
Week 8	Clipping, zener diode, voltage regulation, tunnel, reactor
Week 9	-LED, photodiode, laser diode -Photovoltaic effect. The photoconductive effect
Week 10	Photonic Devices : Light absorption and emission in semiconductor
Week 11	-laser fundamentals, photo – detectors -Solar cell, PIN detectors, thermal detectors, and spectral response
Week 12	-Bipolar Junction Transistors: Construction -Current conduction mechanism, leakage currents -Static characteristic
Week 13	-Switching, (CE), (CB)and (CC) configuration -Biasing, D.C load line
Week 14	-FET and MOSFET: Construction, theory of operation -Static characteristics, transfer characteristics
Week 15	Biasing, D.C load line
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	Physics Electronic: Physics Electronic	Yes
Recommended Texts		
Websites		

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

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

وزارة التعليم العالي والبحث العلمي

جـــهاز الإشـــراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد

للعام الدراسي ٢٠٢٣-٢٠٢٤

الجامعة : : تكريت

الكلية/ المعهد: كلية هندسة العمليات النفطية

القسم العلمي : هندسة سيطرة المنظومات النفطية

تاريخ ملء الملف : ٢٠٢٣/١١/٢٥

التوقيع :

اسم رئيس القسم : م. ياسين خضر ياسين

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع :

اسم المعاون العلمي : ا.م.د.عمر ياسين ضايع

التاريخ : ٢٠٢٣/١٢/٣

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م.م أيوب إبراهيم محمد

التاريخ : ٢٠٢٣/١١/٢٨

التوقيع

مصادقة السيد العميد

أ.م.د غسان حمد عبد الله

٢٠٢٣/١٢/٣

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Principles of Petroleum Processes Engineering**			**Module Delivery**	
Module Type	**Support**			☒Theory ☐Lecture ☐Lab ☒Tutorial ☐Practical ☐Seminar	
Module Code	**PCS121**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	PSCE		**College**	PPE	
Module Leader	Ayoob Ibrahim Mohammed		**e-mail**		
Module Leader's Acad. Title	Assist Lecturer		**Module Leader's Qualification**	M.SC.	
Module Tutor	Omar Ibrahim Farhan		**e-mail**	omar.i.farhan@tu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	05/03/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Providing students the basics of scientific knowledge in the field of Petroleum Engineering and improving their professional abilities in the direction of analytical and creative thinking through the use of information technologies, data analysis and modern experimental methods in formulating and solving problems. 2. Preparing well-qualified engineers to advance the activities of Petroleum Systems Control Engineering and the ability to manage dealing with them in all aspects of life, especially in the field of petroleum industries. 3. Conducting scientific research of an academic nature to keep pace with the global scientific march and research of an applied nature to translate engineering knowledge and its theories into action by addressing the problems that the country suffers from in all fields. 4. Contribute in one way or another in terms of design, supervision, follow-up and advice for the reconstruction of the country in the various sectors of petroleum and petrochemical industries, with the provision of engineering consultancy, the preparation of economic feasibility studies, project designs and the provision of technical services. 5. Rooting scientific sobriety and making it a feature of this department in accordance with international controls and standards.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Broad-based education to understand the impact of engineering solutions globally and economically. 2. Ability to work in multidisciplinary teams. 3. The possibility of applying cognitive sciences such as mathematics and pure petroleum sciences. 4. The ability to use the techniques, skills and tools of contemporary engineering in the engineering field of the petroleum industries. 5. The ability to design petroleum and petrochemical systems to meet the required needs within realistic economic determinants. 6. The possibility of designing and implementing experiments, analyzing the results and translating them into reality.
Indicative Contents المحتويات الإرشادية	The indicative content includes the following: Part A – An introduction to crude oil and its origin. Reservoir characterization. [8 hrs.]. An introduction to petroleum exploration. Introduction to oil and gas drilling operations. [6 hrs.]. Part B – An introduction to production engineering and surface equipment. An introduction about all process that take place on oil field. [12 hrs.]. Introduction to natural gas. [10 hrs.] An introduction to oil storage and transportation. [10 hrs.]

	Part C – An introduction to units and dimensions and material balance and its application in petroleum and petroleum refining engineering [12 hrs.]

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	73	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	An introduction to crude oil and its origin.
Week 2	Reservoir characterization.
Week 3	An introduction to petroleum exploration.
Week 4	An introduction to oil and gas drilling operations.
Week 5	An introduction to production engineering and surface equipment.
Week 6	An introduction about all process that take place on oil field.
Week 7	An introduction to natural gas.
Week 8	An introduction to oil storage and transportation.
Week 9	An introduction to dimensions, units and their conversion.
Week 10	**Midterm exam.**
Week 11	An introduction to some concepts; density, moles, flow rate, temperature and pressure.
Week 12	An introduction to material balance.
Week 13	Application of material balance principles in petroleum engineering.
Week 14	**Preparatory week before the final Exam.**
Week 15	**Final Exam.**

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. Petroleum engineering. 2. Handbook of petroleum technology.	No No
Recommended Texts	1. An Introduction to petroleum Technology, Economics and politics by James G. Speight 2. Reservoir Engineering Hand book. 3. Petroleum production engineering. 4. Petroleum and Gas Field Processing, Second Edition, Hussein K. Abdel-Aal, Mohamed A. Aggour, and Mohamed A. Fahim 5. Basic Principles and Calculations in Chemical Engineering by David M. Himmelblau and James B. Riggs	Yes No No No Yes
Websites	https://www.arab-oil-naturalgas.com/	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** – Excellent	امتياز	90 – 100	Outstanding Performance
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