كلية الطف الجامعة
قسم هندسة تقنيات الحاسوب

نظرة عامة على القسم:

يُعنى قسم هندسة تقنيات الحاسوب بإعداد كوادر هندسية تطبيقية متخصصة في تصميم وتطوير وتشغيل الأنظمة الحاسوبية بمختلف مكوناتها المادية والبرمجية. ويجمع القسم بين علوم الحاسوب والهندسة الإلكترونية وتقنيات الاتصالات والأنظمة الذكية، ليمنح الطلبة أساساً علمياً رصيناً مدعوماً بمهارات عملية متقدمة، بما يواكب التطورات المتسارعة في تكنولوجيا المعلومات والتحول الرقمي يركز القسم على التكامل بين العتاد (Hardware) والبرمجيات (Software)، ويؤهل الطلبة للتعامل مع الأنظمة المدمجة، الشبكات، أمن المعلومات، الذكاء الاصطناعي، وإنترنت الأشياء، بما يلبي احتياجات سوق العمل المحلي والإقليمي

الرؤية:

الريادة والتميز في مجال هندسة تقنيات الحاسوب من خلال تقديم برامج تعليمية عالية الجودة تُسهم في إعداد مهندسين تقنيين مبدعين وقادرين على تطوير حلول حاسوبية متكاملة تلبي متطلبات التنمية المستدامة والتحول الرقمي

الرسالة:

إعداد خريج مؤهل علمياً وعملياً في مجال هندسة تقنيات الحاسوب، يمتلك القدرة على تصميم وتطوير وصيانة الأنظمة الحاسوبية والأنظمة الذكية، مع تعزيز مهارات البحث العلمي والابتكار والعمل بروح الفريق، والالتزام بأخلاقيات المهنة والمعايير الأكاديمية العالمية

الأهداف:

يسعى القسم إلى تحقيق الأهداف الآتية:

- تزويد الطلبة بأساس علمي رصين في هندسة الحاسوب يشمل تصميم الأنظمة الرقمية، المعالجات الدقيقة، وهندسة البرمجيات.
- تمكين الطلبة من تصميم وتطوير الأنظمة الحاسوبية المتكاملة التي تجمع بين العتاد والبرمجيات.
- إكساب الطلبة مهارات برمجة متقدمة باستخدام لغات وتقنيات حديثة لتطوير التطبيقات والأنظمة الذكية.

- تأهيل الطلبة للتعامل مع الأنظمة المدمجة (Embedded Systems) وإنترنت الأشياء (IoT) وتطبيقاتها المختلفة.
- تعزيز مفاهيم أمن المعلومات وحماية الأنظمة الحاسوبية من التهديدات السيبرانية.
- تطوير مهارات البحث العلمي والتحليل وحل المشكلات الهندسية بأساليب مبتكرة.
- إعداد خريجين قادرين على مواكبة التطورات التقنية من خلال التعلم المستمر والتطوير الذاتي.

المميزات الرئيسية للقسم:

- تخصص شامل ومواكب للتطور: يغطي مختلف مجالات هندسة تقنيات الحاسوب من الأنظمة الرقمية إلى الذكاء الاصطناعي.
- تركيز قوي على التطبيق العملي: مختبرات متخصصة تدعم الجانب العملي في مجالات البرمجة، الأنظمة الرقمية، المعالجات الدقيقة، الشبكات، والأنظمة الذكية.
- اعتماد نظام تعليمي حديث: تطبيق نظام بولونيا بما ينسجم مع المعايير الأكاديمية العالمية ويعزز جودة المخرجات التعليمية.
- كادر تدريسي كفوء: يضم القسم نخبة من التدريسيين ذوي الخبرة الأكاديمية والعملية في تخصصات هندسة الحاسوب المختلفة.
- مخرجات تعليمية متميزة: تخريج دفعات مؤهلة للعمل في القطاعين العام والخاص، مع إمكانية متابعة الدراسات العليا داخل العراق وخارجه.
- فرص عمل واسعة: تأهيل الخريجين للعمل في مجالات تطوير البرمجيات، تصميم الأنظمة الحاسوبية، الأمن السيبراني، الذكاء الاصطناعي، الأنظمة المدمجة، وإدارة مشاريع تقنية المعلومات.

نموذج وصف البرنامج الأكاديمي

الكلية/ المعهد: كلية الطف الجامعة

القسم العلمي: قسم هندسة تقنيات الحاسوب

اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة تقنيات الحاسوب

اسم الشهادة النهائية: بكالوريوس في هندسة تقنيات الحاسوب

النظام الدراسي: سنوي / بولونيا

تاريخ اعداد الوصف: 15. 9. 2025

تاريخ ملء الملف: 16. 9. 2025

التوقيع:

اسم رئيس القسم: أ. م. د. قاسم عبود مهدي

التاريخ: 17 / 9 / 2025

التوقيع:

اسم المعاون العلمي: م. د. رواد موسى حسين

التاريخ: 20 / 9 / 2025

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: م. د. احمد مظهر

التاريخ: 21 / 9 / 2025

التوقيع:

مصادقة السيد العميد

أ. د. كريم مزعل شبي

24. 9. 2025

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET1101 / Digital Fundamentals
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• To be able to deal with the number systems and codes. • To understand the functionality of logic gates. • To have a skill to use the logic gates in designing logic circuit. • To have a skill to simplify the digital circuits. • To learn the simplification process, Boolean expression, Demorgans law, and Karnaugh map • To understand the principles for designing logic circuit. • To understand adder, subtractor, decoder, encoder, multiplexer, demultiplexer, and comparator circuits.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Recognize each type of number systems. • Identify the process of converting between number systems. • Summarize the types of logic gates. • Discuss the use of each gate. • Describe design of logic circuit by using logic gats. • Explain the simplification processes. • Explain Boolean expression and Demorgan’s law. • Explain the Karnaugh map for different numbers of bits. • Discuss the design of logic circuit before and after simplification. • Explain the combinational logic circuit .

	• Identify the adder, subtractor, decoder, encoder, multiplexer, demultiplexer, comparator circuits, and code conversion. • Identify the basic circuit elements and their applications
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Students will be able to convert and perform arithmetic operations between decimal, binary, and octal systems.	Number systems (decimal, binary, octal, conversions, operations)	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4	Students will be able to convert and perform operations using hexadecimal and BCD representations.	Number systems (hexadecimal, BCD, conversions, operations)	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4	Students will be able to convert between Excess-3, Gray, and binary codes and apply complements.	Number systems (excess-3, gray code, conversions, operations, complements)	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4	Students will be able to identify and implement basic and universal logic gates.	Logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4	Students will be able to simplify logic expressions using Boolean algebra theorems.	Logic simplification (Boolean theorem)	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4	Students will be able to simplify logic expressions using DeMorgan's theorems.	Logic simplification (Demorgan’s theorem)	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Karnaugh maps(2-variables,3-variables,)	Students will be able to simplify Boolean expressions using 2- and 3-variable Karnaugh maps.	4	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Karnaugh maps (4-variables (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 4-variable Karnaugh maps and don't-care condition.	4	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Karnaugh maps (5-variables, (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care conditions.	4	9
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.	4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Arithmetic operations	Students will be able to perform basic arithmetic operations using digital logic circuits.	4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Arithmetic operations (decoder, encoder)	Students will be able to analyze and implement basic decoder and encoder circuits.	4	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Arithmetic operations (Multiplexer, Demultiplexer)	Students will be able to analyze and implement multiplexer and demultiplexer circuits.	4	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Arithmetic operations (comparators)	Students will be able to analyze and design digital comparator circuits.	4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Arithmetic operations (code conversion)	Students will be able to design and implement basic digital code conversion circuits.	4	15

11. البنية التحتية

الكتب المقررة المطلوبة	Digital Fundamentals by Floyed
المراجع الرئيسية	Digital circuit analysis and design with Simulink modeling by Steven T. Karris
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET1102 / Electrical Engineering Fundamentals
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• To develop problem solving skills and understanding of circuit theory through the application of techniques. • To understand voltage, current and power from a given circuit. • This course deals with the basic concept of electrical circuits. • This is the basic subject for all electrical and electronic circuits. • To understand Kirchhoff's current and voltage Laws problems. • To perform Thevenin's Norton's Theorem.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Recognize how electricity works in electrical circuits. • List the various terms associated with electrical circuits. • Summarize what is meant by a basic electric circuit. • Discuss the reaction and involvement of atoms in electric circuits. • Describe electrical power, charge, and current. • Define Ohm's law. • Identify the basic circuit elements and their applications . • Discuss the operations of DC circuits in an electric circuit. • Discuss the various properties of resistors. • Explain the two Kirchhoff's laws used in circuit analysis . • Identify the basic circuit elements, Maximum Power Transfer Theorem and Reciprocity Theorem. • Describe Thevenin's theorem and Norton's theorem and how they

work	
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Students will be able to identify electrical symbols, units, circuit elements, and basic circuit configurations	Symbols And Abbreviations, Units, Electric Circuit & It's Element.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
2	4	Students will be able to analyze basic DC circuits using Ohm's Law.	The Direct Current Network, Ohms low.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
3,4	4	Students will be able to analyze series circuits and apply the voltage divider rule.	Series Circuits (Resistance in Series) Voltage Divider Rule.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
5	4	Students will be able to analyze parallel circuits and apply the current divider rule.	Parallel Circuits (Resistances in Parallel) Current Divider Rule.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
6	4	Students will be able to analyze open and short circuits and perform source transformations.	Open and Short Circuits, Source Transformation.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
7	4	Students will be able to simplify and analyze series-parallel circuits.	Series-Parallel Circuits Transformation	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
8	4	Students will be able to analyze circuits using Kirchhoff's Current Law.	Kirchhoff's Laws (KCL)	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Kirchhoff's Laws (KVL)	Students will be able to analyze circuits using Kirchhoff's Voltage Law.	4	9
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.	4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Conversion Delta to Star Connection and Conversion Star to Delta Connection	Students will be able to transform circuits between delta and star configurations.	4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Superposition Method	Students will be able to analyze linear circuits using the superposition principle.	4	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Thevenin’s Theorem, Norton’s Theorem	Students will be able to simplify circuits using Thevenin's and Norton's theorems.	4	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Maximum Power Transfer Theorem	Students will be able to determine the conditions for maximum power transfer in a circuit.	4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Reciprocity Theorem	Students will be able to analyze linear circuits using the reciprocity theorem.	4	15

11. البنية التحتية	
Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	الكتب المقررة المطلوبة
DC Electrical Circuit Analysis: A Practical Approach .Copyright Year: 2020, dissidents	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي

إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET1103 / Mathematics I
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• This course deals with differential and integral calculus. • To develop problem solving skills and understanding of preliminaries to differential calculus. • To understand differentiation, and differentiation methods. • To perform applications using the derivative. • To get a good grasp of Integrals, and Integration methods. • To understand the relationship between differentiation and integration.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Recognize Line and Circle Equation and related evaluating formulas. • List the various terms associated with Functions and their Types. • Discuss the Limit and Continuity of a Function. • Describe the Definition of a derivative as a limit, Differentiation Rules, and various types of Function’s Derivatives. • Identify when to use different Differentiation Methods . • Discuss the Curve Sketching process, and the L'Hospital's Rule. • Analyze Taylor and Maclaurin Series . • Identify the Indefinite Integrals. • Explain the Integration Methods u-substitution, By parts. • Explain the Integration Methods Involving Trigonometric

Functions, Trigonometric substitution. • Explain the Integration Method Rational Functions by Partial Fractions. • Explain the Integration Methods Functions Involving Roots, and Functions Involving Quadratics. • Recognize the Definite Integral and its Application Area Under a Curve. • Discuss e the Definite Integral Applications Arc Length, Average Value of a Function. • Discuss the Definite Integral Applications Areas Between Two Curves.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، حلقات نقاشية، محاضرات الكترونية، حل تمارين	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3	Students will be able to determine line and circle equations and analyze basic properties of functions.	Line and Circle Equation. Functions (Domain, Range, Odd, Even, Types.)	محاضرة + نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments
2	3	Students will be able to evaluate limits and determine the continuity of functions.	The Limit and Continuity of a Function (Laws, At Infinity, Special Limits, Continuity Conditions.)	محاضرة + نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments
3	3	Students will be able to calculate derivatives using the definition and basic differentiation rules.	Differentiation (Definition as limit, Differentiation Rules, Function-Derivative Table.)	محاضرة + نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments
4	3	Students will be able to differentiate functions using implicit differentiation, logarithmic differentiation, and	Differentiation Methods (Implicit, Logarithmic, The Chain Rule.)	محاضرة + نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments

			the chain rule.		
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–4.	3	5
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية حل تمارين	Applications of Differentiation (Curve Sketching, L'Hospital's Rule.), Applications of Differentiation (Taylor and Maclaurin Series.)	Students will be able to analyze and sketch curves and evaluate limits using L'Hospital's Rule.	3	6
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية حل تمارين	Introduction to Indefinite Integrals, Integration Methods	Students will be able to evaluate indefinite integrals using basic integration rules and methods.	3	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية حل تمارين	Integration Methods	Students will be able to evaluate integrals using appropriate integration techniques.	3	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية حل تمارين	Integration Methods (Integration of Rational Functions by Partial Fractions.)	Students will be able to integrate rational functions using partial fraction decomposition.	3	9
Mid exam		Midterm exam	Students will be assessed on the integration topics covered in Weeks 8–10.	3	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية حل تمارين	Integration Methods (Functions Involving Roots, Functions Involving Quadratics.)	Students will be able to integrate functions involving roots and quadratic expressions.	3	11
Mid exam		Midterm exam	Students will be assessed on the integration methods covered in Weeks 8–12.	3	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية حل تمارين	Definite Integral and Applications (Definite Integral, Area Under a Curve.)	Students will be able to evaluate definite integrals and calculate areas under curves.	3	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية حل تمارين	Definite Integral and Applications (Arc Length, Average Value of a Function.)	Students will be able to calculate arc lengths and the average value of functions using	3	14

			definite integrals.		
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + حل تمارين	Definite Integral and Applications (Areas Between two Curves)	Students will be able to calculate the area between two curves using definite integrals.	3	15

11. البنية التحتية	
Joel R. Hass, Christopher E. Heil, Maurice D. Weir, "Thomas' Calculus: Early Transcendentals", Pearson Education, 14th Edition, (January 1, 2017), ISBN-13 : 978-0134439020.	الكتب المقررة المطلوبة
Anthony Croft, Robert Davison, "Mathematics for Engineers: A Modern Interactive Approach", Prentice Hall, 3rd edition, (January 1, 2008), ISBN-13 : 978-0132051569.	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
https://www.khanacademy.org/math/differential-calculus	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET1104 / Engineering Drawing
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• To develop spatial visualization skills: Enhance your ability to visualize and mentally manipulate objects in three-dimensional space based on two- dimensional drawings. • Strengthen your spatial awareness and improve your understanding of complex engineering design • Learn sketching and taking field dimensions. • Take data and transform it into graphic drawings. • Learn basic engineering drawing formats. • Learn basic AutoCAD skills. • Learn who draw 2D drawings in AutoCAD.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Identify the basic of AutoCAD • Explain Drawing settings • How to drawing: Point, Line, Multiline, P line, Spline, X line, Rectangle. • How to drawing: Donut, Polygon, Circle, Arc, Ellipse • List Modify Tools • Identify: Erase, Undo, Redo, Explode, Move, Copy, Rotate, Mirror , • Identify Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet.

• Explain Zoom, Pan. • How to assign: Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Jogged radius, Ordinate dimensions. • Dealing with: Text, Style, M text, Scale text, Spell, • Knowing the Hatching Objects. • Drawing 3d modeling . • Drawing the Exercises.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
• Familiarize with the Software: Before diving into engineering drawing concepts, it's important to become familiar with the AutoCAD software. This includes understanding the user interface, basic tools, and commands. with introductory tutorials or online resources that cover the basics of AutoCAD. • Step-by-Step Instructions: Break down complex drawing tasks into smaller, manageable steps. Provide step-by-step instructions and demonstrations using AutoCAD, showing students how to execute each step effectively. This approach helps students understand the workflow and build their confidence. • Visual Aids and Examples: Utilize visual aids, such as slides, diagrams, and examples, to reinforce concepts. Show real-world engineering drawings and explain how they were created using AutoCAD. Visual representations can enhance understanding and make abstract concepts more tangible. • Group Activities and Collaboration: Promote collaboration among students by assigning group activities or projects. This allows them to work together, share knowledge, and learn from one another. Encourage students to discuss their approaches and problem-solving techniques related to engineering drawing in AutoCAD. • Provide Feedback: Regularly provide constructive feedback on students' drawings. Highlight areas for improvement, suggest alternative methods, and point out common mistakes. This feedback loop is crucial for students to refine their skills and	طرائق التعليم والتعلم

develop a deeper understanding of engineering drawing principles	
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3	Students will be able to explain the basic principles and conventions of engineering drawing.	Introducing of Engineering Drawing	محاضرة نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments
2	3	Students will be able to configure AutoCAD settings for engineering drawings.	Drawing settings of AutoCAD	محاضرة نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments
3	3	Students will be able to create basic geometric objects using AutoCAD drawing tools.	Drawing Tools Point, Line ,Multiline, P line, Spline, X line.	محاضرة نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments
4	3	Students will be able to create and modify rectangular, polygonal, and donut shapes in AutoCAD.	Rectangle, Donut, Polygon	محاضرة نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments
5	3	Students will be able to create circles, arcs, and ellipses using AutoCAD.	Circle, Arc, Ellipse		Mid exam
6	3	Students will be able to modify, edit, and navigate drawings using AutoCAD tools.	Modify Tools Erase, Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet. Display Control Zoom, Pan, Redraw, Clean Screen.	محاضرة نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments
7	3	Students will be assessed on the topics covered in Weeks 1–6.	Mid exam		
8	3	Students will be able to apply appropriate dimensions and	Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension	محاضرة نظرية + حل تمارين	Reports, Projects, Quizzes, Assignments

		Space, Dimension Break, Jogged radius, Ordinate dimensions	tolerances to engineering drawings.		
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + حل تمارين	Annotation Tools Text, Style, M text, Scale text, Spell	Students will be able to create and format text annotations in AutoCAD drawings.	3	9
Mid exam		Hatching Objects	Students will be able to apply and edit hatch patterns in engineering drawings.	3	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + حل تمارين	3D modeling	Students will be able to create basic three-dimensional models using AutoCAD.	3	11,12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + حل تمارين	Convert 2D To 3D	Students will be able to convert two-dimensional drawings into three-dimensional models.	3	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + حل تمارين	Solid Editing	Students will be able to modify and edit 3D solid objects using AutoCAD tools.	3	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + حل تمارين	Exercises drawing	Students will be able to apply AutoCAD tools to produce engineering drawings.	3	15

11. البنية التحتية	
الكتب المقررة المطلوبة	Introduction to AutoCAD 2010, By Alf Yarwood, Copyright 2009
المراجع الرئيسية	An Introduction to Autodesk Inventor 2010 and AutoCAD 2010 Unbnd Edition by Randy Shih
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET1105 / Engineering Workshops
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• The objective of studying Electrical, Electronic, and Mechanical workshops is to enable students to acquire the necessary skills and knowledge to deal with electrical, electronic, and mechanical systems and devices. This subject aims to teach students how to diagnose faults, repair systems, and perform maintenance on these systems and devices. • By studying Electrical, Electronic, and Mechanical workshops, students can understand the principles of electricity, electronics, and mechanics, as well as how to read engineering diagrams and use various tools and equipment to work on them. They also learn how to diagnose faults, repair them, and properly maintain different devices in a safe manner. • In general, studying this subject aims to prepare students to become skilled technicians in the field of electrical, electronic, and mechanical engineering. They can work in areas such as industrial maintenance and repair, electrical and electronic installations, automation and robotics, medical devices, and other modern technologies

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Acquisition of diagnostic and repair skills: Students learn how to

analyze problems, identify faults in electrical, electronic, and mechanical systems, and implement appropriate repair procedures.

- Understanding of electrical, electronic, and mechanical principles: Students gain knowledge of engineering and technical fundamentals related to electricity, electronics, and mechanics, including reading engineering diagrams and practical understanding of circuits, electronic devices, and mechanical components.
- Development of practical work skills: Students have the opportunity to learn hands-on and practice using various tools and equipment used in electrical, electronic, and mechanical workshops.
- Ability to perform preventive maintenance: Students learn how to maintain systems and devices and carry out preventive maintenance to ensure proper and sustainable performance.
- Enhancement of teamwork and communication skills: Studying Electrical, Electronic, and Mechanical workshops promotes collaboration among students and the ability to work as a team in problem-solving and executing practical projects.
- Knowledge and Understanding: a. Demonstrate a comprehensive understanding of the principles and concepts related to electrical and mechanical workshop operations. b. Identify and explain the safety measures and regulations applicable to electrical and mechanical workshops.
- Describe the different tools, machines, and materials used in electrical and mechanical workshops.
- Practical Skills: a. Apply safe working practices and use appropriate personal protective equipment (PPE) in electrical and mechanical workshop environments. b. Demonstrate proficiency in using various tools and equipment for turning, filing, drilling, welding, and assembly .
- Perform practical tasks related to electrical and mechanical workshop operations accurately and efficiently. d. Apply problem-solving techniques to troubleshoot and rectify common issues encountered in electrical and mechanical workshop activities.
- Critical Thinking and Analysis: a. Analyze and evaluate different turning processes, instrumentation measures, and cutting tools used in the workshop. b. Assess the quality of filing processes and choose appropriate rasps and tools for different filing tasks .
- Evaluate the drilling processes and select suitable drilling tools based on specific requirements. d. Analyze welding processes, including oxy-acetylene and arc welding, and determine safety precautions and best practices.
- Communication and Collaboration: a. Effectively communicate

and collaborate with peers in group projects and workshop activities. b. Present findings, results, and recommendations related to electrical and mechanical workshop tasks in a clear and concise manner. • Professional and Ethical Responsibility: a. Demonstrate ethical behavior and responsibility in adhering to safety regulations, environmental considerations, and industry standards in electrical and mechanical workshop practices • Overall, studying this subject prepares students to enter the job market in various technical and engineering fields, such as industrial maintenance, electrical and electronic installations, automation and robotics, medical devices, and other modern technologies.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، حلقات نقاشية، محاضرات الكترونية، حل تمارين	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1,2	4	Students will be able to use basic measuring devices safely and perform basic soldering and welding operations.	Use different measuring devices in the workshop Principles of Industrial Safety in Electrical Workshops. Different Types of Welding Irons (with different capacities) and Spot Welding	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
3,4	4	Students will be able to perform basic soldering and wiring operations and explain transformer operation.	How to use irons, types of soldering used, and how to use absorbent soldering irons Electric Circuits and Transformer Operation Electrical Installations and Types of Wiring (Surface and Concealed)	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
5,6,7	4	Students will be able to identify basic electronic components and construct simple lamp and switch circuits.	Electronic components (resistor, inductors, capacitors) ONE LAMP CONTROLLED BY ONE SWITCH Parallel Wiring of Two Lamps with a Switch and Socket	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments

		Mid exam	Students will be assessed on the topics covered in Weeks 1–7.	4	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Electronic components (resistor, inductors, capacitors) Drawing a Staircase Lamp (Two-Way Switch) Circuit	Students will be able to identify passive components and construct a two-way staircase lamp circuit.	4	9,10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Electronic components (Battery, jumper, fuse, push button, switch, rotary switch) Introduction to Workshop Safety. Turning Process and Instrumentation Measures	Students will be able to identify common electronic components and apply basic workshop safety and turning practices.	4	11,12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Electronic components (Diode , Transistor, Transformer) Cutting Tools Practical Exercise Horizontal Turning	Students will be able to identify basic electronic components and perform basic cutting and turning operations.	4	13,14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	using bread board and Vero board, building a Circuit on Breadboard, building a Circuit on Vero board Turning Different Shapes Introduction to Filing Process (practical Exercise)	Students will be able to build basic circuits on breadboards and Vero boards and perform basic turning and filing operations.	4	15

11. البنية التحتية	
Encyclopedia of Electronic Components Volume 1 (Charles Platt).	الكتب المقررة المطلوبة
J. Smith and E. Johnson, "Electrical Engineering Workshop: Theory and Practice	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	MTU1002 / English Language I
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	50 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• know students with essential information in the English language in association with reading, writing and speaking skills, and knowing more English vocabulary. • To understand pronouns, questions and short answers, tenses (present, past and future), adjective, adverb, prepositions of place, punctuation marks and practicing writing. • This module works towards enhancing students' English language competencies along with their technical or professional knowledge. • Enhance students' communication skills in English can result in better job opportunities in the future

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Know the English skills of reading, and writing. • Recognize other English language skills such as: grammar, vocabulary. • Understand and appreciate the importance of grammar aspects and vocabulary to increase the ability of communicating ideas about the English language. • Understand pronouns, questions and short answers. • Understand tenses present, past and future. • Understand adjectives, adverbs, prepositions of place, and

punctuation marks. • Practicing reading and writing . • Enhance students' communication skills in English.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، حلقات نقاشية، محاضرات الكترونية، حل تمارين	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2	Students will be able to use basic pronouns and plural forms in everyday contexts.	Grammar: Types of Pronouns Vocabulary: Everyday objects, Plurals Reading and Writing Skill	محاضرة نظرية	Reports, Quizzes, Assignments
2	2	Students will be able to use pronouns and describe people and places using basic vocabulary.	Grammar: Pronoun, Questions Vocabulary: Countries, Adjective and Nouns Reading and Writing Skill	محاضرة نظرية	Reports, Quizzes, Assignments
3	2	Students will be able to form basic questions and negative sentences and exchange personal information.	Grammar: Negatives, Questions and short answer Vocabulary: Jobs, Personal Information Reading and Writing Skill	محاضرة نظرية	Reports, Quizzes, Assignments
4	2	Students will be able to use possessive forms and common verbs to describe family and personal relationships.	Grammar: Possessive adjectives, Possessive 's, common verbs (1): has/have, love, like, work. Vocabulary: The family, the alphabet Reading and Writing Skill	محاضرة نظرية	Reports, Quizzes, Assignments
5	2	Students will be able to use the present simple to describe routines, preferences, and general facts.	Present Simple, Questions Vocabulary: Sport, Food and Drink, Verb phrase, Languages and nationalities, Adjective + noun. Reading and Writing Skill	محاضرة نظرية	Reports, Quizzes, Assignments
6	2	Students will be able to use adverbs of frequency and time expressions to	Grammar: Adverbs of frequency (sometimes, always, never), Questions and Negatives. Vocabulary: The Time, Word	محاضرة نظرية	Reports, Quizzes, Assignments

		that go together Reading and Writing Skill	describe daily routines.		
Reports, Quizzes, Assignments	محاضرة نظرية	Grammar: Question words, Pronouns (subject, object, possessive), that and this. Vocabulary: Adjectives Reading and Writing Skill Grammar: There is/There are, Prepositions of place Vocabulary: Rooms and furniture, Place of town Reading and Writing Skill	Students will be able to form questions and use pronouns and adjectives in basic communication.	2	7
		Mid exam	Students will be assessed on the topics covered in Weeks 1–7.	2	8
Reports, Quizzes, Assignments	محاضرة نظرية	Grammar: Past Simple Tense - regular verbs Vocabulary: years, have, do, go Reading and Writing Skill	Students will be able to use the past simple with regular verbs to describe past events	2	9
Reports, Quizzes, Assignments	محاضرة نظرية	Grammar: Past Simple Tense - irregular verbs, Questions and Negatives, Time expression, ago Vocabulary: Weekend activities, Sport and leisure Reading and Writing Skill	Students will be able to use irregular past-tense verbs to describe past activities and events.	2	10
Reports, Quizzes, Assignments	محاضرة نظرية	Grammar: can/can't, Adverbs, Request and offers. Vocabulary: Verb + noun, Adjective + noun, Opposite adjective Reading and Writing Skill	Students will be able to express ability and make basic requests and offers.	2	11
Reports, Quizzes, Assignments	محاضرة نظرية	Grammar: Would like, some and any, like and would like Vocabulary: Places and town, In cafe Reading and Writing Skill	Students will be able to use expressions for preferences, requests, and ordering in everyday situations.	2	12
Reports, Quizzes, Assignments	محاضرة نظرية	Grammar: Present Continuous Tense Vocabulary: Colors, Clothes, Opposite verbs Reading and Writing Skill	Students will be able to use the present continuous to describe ongoing actions and situations.	2	13
Reports, Quizzes, Assignments	محاضرة نظرية	Grammar: Future Tense, going to Vocabulary: Forms of transport Reading and Writing Skill	Students will be able to use going to to describe future plans and intentions.	2	14

Reports, Quizzes, Assignments	محاضرة نظرية	Grammar: Punctuation Marks, Grammar revision Vocabulary: Vocabulary revision Reading and Writing Skill	Students will be able to apply basic grammar, vocabulary, and punctuation rules in reading and writing.	2	15

11. البنية التحتية	
New Headway Plus/ Beginner, John and Liz Soars, Oxford University Press	الكتب المقررة المطلوبة
Understanding and Using English Grammar, 5th Edition, Betty S. Azar Stacy A. Hagen.	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

COURSE DESCRIPTION: DIGITAL SYSTEMS (CET1201)

1. Educational Institution	Al-Taf University College
2. Scientific Department / Centre	Department of Computer Techniques Engineering
3. Course Name / Code	Digital Systems / CET1201
4. Available Attendance Forms	Weekly (In-person lectures and practical laboratory)
5. Semester / Year	Semester-based / Second Semester (First Year)
6. Total Study Hours	150 Hours
7. Date of Preparation	2026-09-06
8. Course Objectives	This course aims to enable students to acquire basic, theoretical, and practical knowledge related to the subject of Digital Systems in accordance with approved academic and practical plans.

9. Course Outcomes, Teaching, Learning and Assessment Methods

• Cognitive Objectives (Learning Outcomes):

- Understand and assimilate the working principles of Flip-Flops and logic Latches, and distinguish between their characteristics and operational mechanisms.
- Comprehend the structure of integrated logical systems and circuits and how to employ them in designing modern digital systems.
- Know and understand the operating mechanisms of counter circuits and structurally distinguish between synchronous and asynchronous counters.
- Understand and identify the operating principles of various types of Shift Registers and their control methods.
- Comprehend the basic theoretical principles and design models of Analog-to-Digital Converters (ADC) and Digital-to-Analog Converters (DAC).

• Course-Specific Skills:

- Acquire the practical ability to design and analyze logic circuits, systems, and synchronous and asynchronous counter circuits practically.
- Apply technical skills to convert and connect between different types of logic flip-flops and employ them in electronic circuits.
- Build, develop, and test various types of Shift Registers (SISO, SIPO, PISO, PIPO) in addition to shift register counters such as Johnson counter and Ring counter.
- Design, build, and test data converter circuits (ADC & DAC) and compare their efficiency practically in the laboratory.

• Affective and Value Objectives:

- Enhance critical and analytical thinking skills of students to enable them to solve design challenges in complex digital systems environments.
- Appreciate the precision of measurements and scientific standards and commit to professional occupational safety and security rules inside the Digital Systems Laboratory.
- Develop self-learning motivation and keep pace with rapid technical development in the fields of microprocessors and advanced digital technology.

• General and Transferable Skills:

- Enhance teamwork and interactive skills by working as a single team to conduct laboratory experiments and discuss them.
- Develop scientific and engineering communication skills by writing weekly technical reports, presenting experimental results, and discussing them with supervisors.
- Ability to use modern technologies and electronic library resources to conduct individual research and continuous cognitive development.

• Teaching and Learning Methods:

- Interactive theoretical lectures to explain engineering concepts, mathematical equations, and the structure of digital systems.
- Practical and laboratory experiments to provide direct applied training that allows students to build and test logic circuits practically.
- Discussion groups and directed classroom exercises to solve problems, expand critical thinking skills, and activate students' active participation.
- Interactive practical activities and simplified experiments to stimulate students' interest in the subject and deepen their understanding.

• Assessment Methods:

- Quizzes to measure students' direct comprehension of basic concepts as they go.
- Weekly homework assignments to evaluate the student's ability to research, analyze, and solve engineering problems independently.
- Laboratory reports and practical performance to evaluate applied skills and the quality of results obtained practically and document them.
- Midterm Exam to evaluate the level of cognitive attainment of students in the topics of the first half of the semester.
- Comprehensive Final Exam (theoretical and practical) to ensure that all targeted learning outcomes of the course are achieved.

10. Course Structure

Week	Hours	Learning Outcomes	Topic Name	Learning Method	Assessment Method
1	4 hrs	Understand and explain the working principle of latches and flip-flops and distinguish between them	Latches and Flip-Flops: SR Latch, D Latch	Interactive lectures and applied experiments	Quiz, assignment, and report evaluation
2	4 hrs	Understand the operation of T and JK flip-flops and analyze their timing behavior	Flip-Flops: T Latch, JK Flip-Flop	Interactive lectures and applied experiments	Assignments and report evaluation
3	4 hrs	Understand and describe edge-triggering mechanisms	Flip-Flops: Edge-triggering mechanisms, Master-Slave	Interactive lectures and	Quiz, report evaluation,

		and the master-slave principle in flip-flops	Flip-Flop	applied experiments	and participation
4	4 hrs	Acquire the ability to convert between different types of flip-flops and employ them	Flip-Flops: Conversion mechanism between different types and their practical applications	Interactive lectures and applied experiments	Assignments and lab report evaluation
5	4 hrs	Understand and design asynchronous counters and discuss their types	Asynchronous Counter	Interactive lectures and applied experiments	Quiz and lab performance evaluation
6	4 hrs	Understand and design synchronous counters and distinguish between them and asynchronous ones	Synchronous Counter	Interactive lectures and applied experiments	Assignments, circuit design, and evaluation
7	4 hrs	Design and analyze decade counters and up-down counters	Decade, Up-Down Counter	Interactive lectures and applied experiments	Quiz and lab report evaluation
8	4 hrs	Design cascade counters and use counter decoding techniques	Cascade Counter and Counter Decoding Process	Interactive lectures and applied experiments	Assignments and lab report evaluation
9	4 hrs	Identify and understand basic shift registers and their different operating mechanisms	Shift Registers (SISO, SIPO, PISO, PIPO)	Interactive lectures and applied experiments	Quiz and practical performance evaluation
10	2 hrs	Evaluate cognitive achievement level of the mid-semester	Midterm Exam	Formal written theoretical exam	Written theoretical exam (10%)
11	4 hrs	Understand bidirectional shift registers and design ring and Johnson counters	Bidirectional Shift Registers and their counters (Johnson & Ring)	Interactive lectures and applied experiments	Homework and report evaluation
12	4 hrs	Understand the working principle of astable and bistable multivibrators and their applications	Multivibrators (Astable & Bistable)	Interactive lectures and applied experiments	Quiz and lab performance evaluation
13	4 hrs	Understand monostable multivibrators and design circuits using the 555 Timer	Multivibrators (Monostable, 555 Timer)	Interactive lectures and applied experiments	Homework and report evaluation

14	4 hrs	Understand principles, designs, and models of analog-to-digital converters	Analog-to-Digital Signal Converters (ADC Models)	Interactive lectures and applied experiments	Assignments and lab report evaluation
15	4 hrs	Understand principles, designs, and models of digital-to-analog converters	Digital-to-Analog Signal Converters (DAC Models)	Interactive lectures and applied experiments	Final evaluation of reports, homework, and participation

11. Infrastructure

• Required Textbooks:

- Digital Fundamentals by Floyd (recent edition, available in the college library).

• Main References:

- Digital circuit analysis and design with Simulink modeling by Steven T. Karris.

• Recommended References:

- A collection of papers and application designs of modern digital systems.

• Electronic Resources & Websites:

- Coursera Website - Electrical Engineering and Digital Systems Section.

12. Course Development Plan

Update the Digital Systems Laboratory by introducing field-programmable tools and components (FPGAs) and employing advanced simulation software such as Multisim to enable students to design and inspect complex logic systems and test their timing behavior efficiently.

COURSE DESCRIPTION: ELECTRICAL CIRCUITS (CET1202)

1. Educational Institution	Al-Taf University College
2. Scientific Department / Centre	Department of Computer Techniques Engineering
3. Course Name / Code	Electrical Circuits / CET1202
4. Available Attendance Forms	Weekly (In-person lectures and practical laboratory)
5. Semester / Year	Semester-based / Second Semester (First Year)
6. Total Study Hours	150 Hours
7. Date of Preparation	2026-09-06
8. Course Objectives	This course aims to enable students to acquire basic, theoretical, and practical knowledge related to the subject of Electrical Circuits in accordance with approved academic and practical plans.

9. Course Outcomes, Teaching, Learning and Assessment Methods

• Cognitive Objectives (Learning Outcomes):

- Understand and determine voltage, current, and power values in alternating current (A.C) circuits and compare them with direct current.
- Comprehend the representation of various electrical elements (resistor, inductor, capacitor) in the phasor domain and vector diagram.
- Comprehend and process complex numbers and their arithmetic operations applied in analyzing alternating current circuits.
- Understand and calculate instantaneous, active, reactive, and apparent power in electrical systems.
- Comprehend three-phase alternating current systems (3-Phase Systems), star and delta connections, electrical transformers, and their losses.

• Course-Specific Skills:

- Apply mathematical skills and techniques to analyze and solve single-phase and two-phase alternating current circuits.
- Design, build, and test series and parallel AC circuits for RLC practically in the laboratory.
- Employ various electrical network theorems (Superposition, Thevenin, Norton) to solve complex alternating current networks.
- Operate and inspect measuring instruments dedicated to AC circuits such as the oscilloscope, ammeter, and voltmeter.

• Affective and Value Objectives:

- Develop analytical and systematic thinking of students in facing and solving problems of electrical circuits and complex networks.
- Absolute commitment to professional safety and security rules and responsible handling of alternating current sources and inspection devices in the laboratory.

- Appreciate the importance of efficiency measurements and reducing losses in engineering systems and transformers.

• General and Transferable Skills:

- Work efficiently and productively within laboratory work teams to conduct experiments and write technical reports.
- Develop effective engineering documentation and communication skills to present and discuss experimental results with scientific accuracy.
- Time management and organized analysis to solve mathematical, engineering, and programming problems.

• Teaching and Learning Methods:

- Interactive theoretical lectures to explain electrical circuit theories and laws and solve mathematical equations.
- Direct applied laboratory practices and experiments in building and testing AC circuits.
- Guided exercises and homework assignments to deepen students' understanding of various network analysis methods.

• Assessment Methods:

- Quizzes (5%)
- Weekly homework assignments (5%)
- Projects and practical laboratory performance (20%)
- Weekly laboratory report (10%)
- Mid-semester exam (10%)
- Comprehensive final exam (50%)

10. Course Structure

Week	Hours	Learning Outcomes	Topic Name	Learning Method	Assessment Method
1	4 hrs	Understand and acquire the definition of AC waves, their generation mechanism, and definitions associated with sinusoidal waves	Alternating Current (AC) waves, their generation, and definitions associated with sinusoidal waves	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
2	4 hrs	Calculate and understand mean values of current and voltage in AC networks	Mean Values of current and voltage (Mean Values)	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
3	4 hrs	Calculate and understand effective/RMS values of current and voltage and their applications	Effective/RMS Values of current and voltage (Effective/RMS Values)	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
4	4 hrs	Represent and discuss circuit elements in the phasor domain	Electrical circuit elements in the Phasor Domain	Interactive lectures and applied experiments	Quiz and lab report evaluation

5	4 hrs	Draw and describe phasor vector diagrams of voltage and current	Phasor Vector Diagram (Vector Diagram)	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
6	4 hrs	Master complex number representation and their use in electrical calculations	Review of complex numbers and mathematical operations on them	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
7	4 hrs	Analyze and design series and parallel RLC AC circuits	Series and Parallel AC Circuits (RLC Circuits)	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
8	2 hrs	Evaluate achievement level in the first half of the material	Mid-semester exam	Theoretical written exam	Written exam (10%)
9	4 hrs	Calculate and analyze active, reactive, and apparent electrical powers	Instantaneous, active, reactive, and apparent power in AC	Interactive lectures and applied experiments	Quiz and lab report evaluation
10	4 hrs	Apply Kirchhoff's laws in the AC domain	Using Kirchhoff's laws to solve AC circuits	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
11	4 hrs	Apply the superposition theorem in AC circuit analysis	Using the Superposition method to solve AC circuits	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
12	4 hrs	Apply Thevenin's theorem to solve AC networks	Using Thevenin's Theorem to solve AC circuits	Interactive lectures and applied experiments	Quiz and lab report evaluation
13	4 hrs	Apply Norton's theorem to solve AC networks	Using Norton's Theorem to solve AC circuits	Interactive lectures and applied experiments	Evaluation of lab performance and assignment
14	4 hrs	Understand and analyze three-phase systems and their various connections	Three-phase Systems (3-Phase Systems), Star and Delta connections	Interactive lectures and applied	Evaluation of lab performance

				experiments	and assignment
15	4 hrs	Understand transformer working principles and calculate hysteresis and eddy current losses	Electrical Transformers and their losses	Interactive lectures and applied experiments	Final evaluation of reports, homework, and participation

11. Infrastructure

• Required Textbooks:

- Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education (available in the college library).

• Main References:

- DC/AC Electrical Circuit Analysis: A Practical Approach.

• Recommended References:

- Sources and practical applications in AC circuit analysis.

• Electronic Resources & Websites:

- https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering

12. Course Development Plan

Integrate digital simulation practices using MATLAB Simulink and Multisim within homework assignments and laboratory activities to enable students to compare electrical laws and practical results with software simulations and develop their engineering thinking.

COURSE DESCRIPTION: PROGRAMMING ESSENTIALS (CET1203)

1. Educational Institution	Al-Taf University College
2. Scientific Department / Centre	Department of Computer Techniques Engineering
3. Course Name / Code	Programming Essentials / CET1203
4. Available Attendance Forms	Weekly (In-person lectures and practical laboratory)
5. Semester / Year	Semester-based / Second Semester (First Year)
6. Total Study Hours	150 Hours
7. Date of Preparation	2026-09-06
8. Course Objectives	This course aims to enable students to acquire basic, theoretical, and practical knowledge related to the subject of Programming Essentials in accordance with approved academic and practical plans.

9. Course Outcomes, Teaching, Learning and Assessment Methods

• Cognitive Objectives (Learning Outcomes):

- Understand and assimilate the history of computers, software classification, and programming language levels and differences between them.
- Understand and assimilate the role of compilers and interpreters, and recognize the program lifecycle and types of programming errors.
- Ability to logically represent solutions using algorithms and flowcharts before writing programming instructions.
- Understand data types, variables, constants, arithmetic, logical, and relational operators, decision-making structures, repetition, arrays, and functions in C++.

• Course-Specific Skills:

- Formulate mathematical algorithms and flowcharts accurately to solve various programming problems.
- Write complete software in C++, debug, and test programs in the development environment practically.
- Design and build user-defined programming functions and employ pre-built functions to solve engineering problems.
- Write advanced programming code capable of processing, reading, and exporting data from and to text files in C++.

• Affective and Value Objectives:

- Develop students' systematic logical and mathematical analytical abilities to solve complex problems.
- Appreciate the importance of accuracy, avoiding errors, and building clear, organized, maintainable, and scalable programming code.
- Promote self-learning motivation and keep pace with continuous developments in programming languages and software development technology.

• General and Transferable Skills:

- Develop teamwork and interactive skills by designing and discussing joint programming projects in the laboratory.
- Develop oral presentation and technical writing skills by preparing and discussing weekly programming experiment reports.
- Ability to organize time and solve engineering problems systematically and independently.

• Teaching and Learning Methods:

- Interactive theoretical lectures to explain programming structures, algorithms, and C++ programming concepts.
- Practical training and development inside the computer laboratory to enable students to write and test code directly.
- Programming assignments and small projects guided to apply studied concepts in the context of solving real-world engineering problems.

• Assessment Methods:

- Quizzes designed to measure direct cognitive understanding of concepts, weighted at (10%).
- Continuous programming homework assignments weighted at (10%).
- Evaluation of practical performance and laboratory projects weighted at (10%).
- Weekly laboratory report weighted at (10%).
- Midterm exam to evaluate cognitive and skill progress weighted at (10%).
- Comprehensive final exam weighted at (50%).

10. Course Structure

Week	Hours	Learning Outcomes	Topic Name	Learning Method	Assessment Method
1	4 hrs	Understand and clarify computer history, programming language levels, compilers, and components	Historical introduction to computers, their languages, and software classification	Interactive lectures and program applications in the lab	Evaluation of report and lab participation
2	4 hrs	Understand the role of compilers and interpreters, and identify types of programming errors and program lifecycle	Compilers, Interpreters, program files and errors, and program lifecycle	Interactive lectures and program applications in the lab	Programming assignments and lab performance evaluation
3	4 hrs	Acquire the ability to formulate algorithms and draw programming flowcharts	Algorithms and Flowcharts (Flowcharts)	Interactive lectures and program applications in the lab	Quiz and flowchart drawing evaluation
4	4 hrs	Understand and use variables, data types, declarations, and arithmetic operators	Variables, data types, variable declaration, constants, and operators	Interactive lectures and program applications in the lab	Assignments and lab report evaluation
5	4 hrs	Understand and apply decision structures and	Decision-making and (if, if-else) statements and their	Interactive lectures and	Quiz and programming

		statements (if, if-else)	flowcharts	program applications in the lab	code writing evaluation
6	4 hrs	Understand and apply multi-selection statements and use of break	Decision-making and (switch statement) and use of break statement	Interactive lectures and program applications in the lab	Programming assignments and lab report evaluation
7	2 hrs	Evaluate students' programming achievement level for the first half	Midterm Exam	Comprehensive theoretical and practical exam	Formal theoretical and practical exam (10%)
8	4 hrs	Understand and apply loop structures (while, do-while) and use of break and continue	Loop structures (while, do-while) and their flowcharts	Interactive lectures and program applications in the lab	Quiz and loop writing performance evaluation
9	4 hrs	Understand and design one-dimensional arrays, declare them, and handle their elements	One-Dimensional Arrays (1D Arrays)	Interactive lectures and program applications in the lab	Programming assignments and lab report evaluation
10	4 hrs	Understand and design two-dimensional arrays, declare them, and retrieve data from them	Two-Dimensional Arrays (2D Arrays)	Interactive lectures and program applications in the lab	Quiz and practical performance evaluation in arrays
11	4 hrs	Understand and design user-defined functions, pass variables, and declare them	Functions: Pre-built and user-defined functions and their declarations	Interactive lectures and program applications in the lab	Homework and design of integrated programming functions
12	4 hrs	Understand return-value functions, passing parameters by value and by reference, and the difference between them	Return-value functions, void functions, and passing parameters by value and by reference	Interactive lectures and program applications in the lab	Quiz and experiment reports evaluation
13	4 hrs	Understand and master character strings and use ASCII table in text processing	Character strings and text handling (String Handling)	Interactive lectures and program applications in the lab	Homework and practical text-processing applications
14	4 hrs	Acquire the skill of processing, reading, and	Handling and processing text files in C++	Interactive lectures and	Evaluation of the final lab

		exporting data from and to text files		program applications in the lab	report and applications
15	2 hrs	Dedicated week for review and preparation before starting the major final exams	Preparatory week before final exams	General review discussion sessions and solving additional exercises	Final evaluation of activity and class participation

11. Infrastructure

• Required Textbooks:

- C++ How to Program, 6th Edition 2007 by P. J. Deitel & H. M. Deitel (available in the college library).

• Main References:

- Starting Out with Programming Logic and Design, 5th Edition 2018 by Tony Gaddis.

• Recommended References:

- Additional programming and design references dedicated to C++.

• Electronic Resources & Websites:

- GeeksforGeeks Academic Platform - C++ Programming Language Section.

12. Course Development Plan

Update the programming laboratory with modern, open-source integrated development environments (such as VS Code or CLion) and introduce small applied programming projects linked to engineering, physical, and mathematical subjects to enhance students' ability to employ programming in solving engineering problems.

COURSE DESCRIPTION: MATHEMATICS II (CET1204)

1. Educational Institution	Al-Taf University College
2. Scientific Department / Centre	Department of Computer Techniques Engineering
3. Course Name / Code	Mathematics II / CET1204
4. Available Attendance Forms	Weekly (In-person theoretical and practical/tutorials)
5. Semester / Year	Semester-based / Second Semester (First Year)
6. Total Study Hours	125 Hours
7. Date of Preparation	2026-09-06
8. Course Objectives	This course aims to enable students to acquire basic, theoretical, and practical knowledge related to the subject of Mathematics II in accordance with approved academic and practical plans.

9. Course Outcomes, Teaching, Learning and Assessment Methods

• Cognitive Objectives (Learning Outcomes):

- Understand and assimilate concepts of vectors, graphical representation, and basic and advanced operations of vectors in space.
- Understand linear algebra and matrices of various types and arithmetic operations associated with them.
- Comprehend and know mechanisms for solving systems of linear equations and applying linear transformations and structural analysis of matrices.
- Understand and find eigenvalues and eigenvectors (Eigenvalues & Eigenvectors), matrix diagonalization, and apply the Cayley-Hamilton theorem.

• Course-Specific Skills:

- Conduct calculations and algebraic operations on vectors (addition, subtraction, dot product, cross product, orthogonality).
- Apply elimination and solving algorithms for systems of linear equations such as Gaussian elimination, Gauss-Jordan elimination, and Cramer's rule.
- Find determinants and inverses of non-singular matrices and employ them engineering-wise.
- Apply characteristic polynomials and the Cayley-Hamilton theorem to extract and calculate eigenvalues and eigenvectors, and apply diagonalization for complex matrices.

• Affective and Value Objectives:

- Develop rigorous, systematic, and analytical mathematical thinking of students to face technical and engineering problems.
- Appreciate computational accuracy and patience in following and solving long multi-step mathematical problems.
- Appreciate and understand the role of precise mathematical modeling as an indispensable foundation in all engineering and applied sciences.

• General and Transferable Skills:

- Ability for logical-deductive systematic thinking and mathematical analysis of complex problems.
- Develop self-learning and engineering problem-solving skills, formulation, and applying appropriate programming solutions.
- Ability to work collectively in interactive groups to solve and discuss mathematical and engineering problems.

• Teaching and Learning Methods:

- Academic theoretical lectures to explain concepts and theories and clarify methods of mathematical proof and solution.
- Weekly review sessions and additional exercises (Tutorials) dedicated to discussing and solving difficult worksheets and expanding understanding.
- Group classroom discussions and continuous interaction to develop students' critical thinking skills.

• Assessment Methods:

- Quizzes dedicated to measuring direct cognitive understanding, weighted at (20%).
- Weekly homework assignments to evaluate student's independent solving ability weighted at (15%).
- Reports and small applied projects weighted at (5%).
- Midterm exam weighted at (10%).
- Comprehensive final written exam weighted at (50%).

10. Course Structure

Week	Hours	Learning Outcomes	Topic Name	Learning Method	Assessment Method
1	3.2 hrs	Understand and acquire vector definition, representation, direction, and basic operations on them	Vectors: Definition, representation, unit vectors, and basic operations (addition, subtraction, and multiplication)	Theoretical lectures, classroom interaction, and solving weekly exercises	Weekly homework and participation evaluation
2	3.2 hrs	Calculate and understand dot product, cross product, and orthogonal and homogeneous vectors	Vectors: Advanced operations (dot and cross products), orthogonal vectors	Theoretical lectures, classroom interaction, and solving weekly exercises	Quiz and evaluation of solving additional exercises
3	3.2 hrs	Understand matrices of various names and classifications and transpose of a matrix	Matrices: Definition, names (diagonal, triangular, symmetric, square), and transpose	Theoretical lectures, classroom interaction, and solving weekly exercises	Weekly homework and participation evaluation
4	3.2 hrs	Master arithmetic operations on matrices and finding their determinants and inverses	Matrices: Linear algebra operations, determinants, and inverses for non-singular matrices	Theoretical lectures, classroom interaction,	Quiz and evaluation of solving homework

				and solving weekly exercises	assignments
5	3.2 hrs	Evaluate students' level in the topics of the first half of the first semester	Midterm Exam	Comprehensive and unified theoretical written exam	Theoretical written exam (10%)
6	3.2 hrs	Understand systems of linear equations, represent them in an augmented matrix, and the concept of solutions	Systems of Linear Equations: Definition, solutions, and representing a system of equations in a matrix	Theoretical lectures, classroom interaction, and solving weekly exercises	Weekly homework and classroom participation evaluation
7	3.2 hrs	Understand and apply elementary row operations, matrix rank, and augmented matrix	Elementary row operations, matrix rank, and augmented matrix	Theoretical lectures, classroom interaction, and solving weekly exercises	Evaluation of solving complex mathematical problems
8	3.2 hrs	Apply Gaussian elimination algorithm to solve electrical and engineering systems of linear equations	Systems of Linear Equations: Gaussian elimination method and solving using matrix inverse	Theoretical lectures, classroom interaction, and solving weekly exercises	Quiz and weekly homework evaluation
9	3.2 hrs	Apply Gauss-Jordan algorithm and Cramer's rule in solving complex systems of equations	Systems of Linear Equations: Gauss-Jordan method and Cramer's rule	Theoretical lectures, classroom interaction, and solving weekly exercises	Evaluation of student's performance in solving exercises
10	3.2 hrs	Evaluate students' progress and level of comprehension of post-midterm topics	Midterm Exam	Comprehensive theoretical written exam	Theoretical written exam (included in evaluation)
11	3.2 hrs	Understand vector spaces, linear combination, span, and linear transformations	Vector spaces, linear combination, span, and linear transformations	Theoretical lectures, classroom interaction, and solving weekly exercises	Weekly homework and participation evaluation

12	3.2 hrs	Review and solve complex exercises to reinforce understanding and analytical capabilities of students	Review exam and additional evaluation of complex topics	General review discussion sessions and solving additional exercises	Evaluation of activity and classroom participation
13	3.2 hrs	Understand and calculate matrix rank and identify basis spaces, dimension, and linear independence	Vector spaces: Linear independence and dependence, basis spaces, and dimension	Theoretical lectures, classroom interaction, and solving weekly exercises	Weekly homework and participation evaluation
14	3.2 hrs	Apply characteristic polynomials, Cayley-Hamilton theorem, and matrix diagonalization	Matrix Diagonalization: Cayley-Hamilton theorem and characteristic polynomials	Theoretical lectures, classroom interaction, and solving weekly exercises	Evaluation of report and simplified programming project
15	3.2 hrs	Calculate eigenvalues and eigenvectors of matrices and apply diagonalization practically	Eigenvalues, eigenvectors, and matrix diagonalization method	Theoretical lectures, classroom interaction, and solving weekly exercises	Final evaluation of homework and classroom activities

11. Infrastructure

• Required Textbooks:

- Linear Algebra and Its Applications, 6th Edition by David C. Lay (available in the college library).

• Main References:

- Linear Algebra and Its Applications by Gilbert Strang (recent edition).

• Recommended References:

- Worksheets and advanced additional problems in linear algebra and its engineering applications.

• Electronic Resources & Websites:

- Udemy Platform - Linear Algebra and its engineering and programming applications section.

12. Course Development Plan

Integrate programming applications and solve long calculations for matrices and linear systems using Python (NumPy library) or MATLAB to enhance students' efficiency in linking mathematical aspects with modern technological applications.

COURSE DESCRIPTION: ARABIC LANGUAGE I (MTU1001)

1. Educational Institution	Al-Taf University College
2. Scientific Department / Centre	Department of Computer Techniques Engineering
3. Course Name / Code	Arabic Language I / MTU1001
4. Available Attendance Forms	Weekly (In-person theoretical and practical)
5. Semester / Year	Semester-based / Second Semester (First Year)
6. Total Study Hours	50 Hours
7. Date of Preparation	2026-09-06
8. Course Objectives	This course aims to enable students to acquire basic, theoretical, and practical knowledge related to the subject of Arabic Language I in accordance with approved academic and practical plans.

9. Course Outcomes, Teaching, Learning and Assessment Methods

• Cognitive Objectives (Learning Outcomes):

- Recognize common linguistic errors, clarify their causes, and how to avoid them in academic writing.
- Comprehend spelling rules related to 'Ta' Marbutah' (tied t), 'Ta' Maftuhah' (open t), and 'Ta' Tawilah' (long t), and write them correctly.
- Understand the rules of writing 'Alif Mamdudah' (extended alif), 'Alif Maqsurah' (shortened alif), 'Dad' (ض), 'Tha' (ظ), hamzas, and punctuation marks, and apply them.
- Understand sentence structure (nominal and verbal sentences), objectives/complements (mafa'eel), nun and tanween, prepositions, and official administrative formulas.

• Course-Specific Skills:

- Formulate sound technical and engineering reports and correspondences completely free from common linguistic errors.
- Write official administrative letters and communications in a coordinated, professional style and precise formal rules.
- Use punctuation marks correctly to organize scientific papers, proposals, and research.
- Quick and precise spelling and grammatical distinction, and correcting linguistic texts and technical reports from an engineering perspective.

• Affective and Value Objectives:

- Pride in the Arabic language and awareness of the importance of sound expression as an essential part of the academic and professional identity of the engineer.
- Appreciate precision and objectivity in linguistic formulation and expressing technical ideas clearly and professionally.
- Commitment to administrative, ethical rules, and etiquette in official correspondence.

• General and Transferable Skills:

- Written communication skills with high clarity and accuracy in academic and professional environments.
- Ability for technical documentation, writing official reports, and formulating minutes and engineering documents.
- Develop critical and analytical thinking skills through examining, reviewing, and correcting written texts.

• Teaching and Learning Methods:

- Theoretical and interactive lectures to explain and clarify grammatical and spelling rules and letter formulation.
- Applied workshops and practical linguistic exercises in correcting and formulating official texts.
- Collaborative small projects to write technical reports and correspondences and discuss them in class.

• Assessment Methods:

- Quizzes weighted at (20%).
- Language homework and exercises weighted at (10%).
- Evaluation of reports and technical proposals weighted at (10%).
- Written midterm exam weighted at (10%).
- Written final exam weighted at (50%).

10. Course Structure

Week	Hours	Learning Outcomes	Topic Name	Learning Method	Assessment Method
1	2.2 hrs	Identify common linguistic errors and 'Ta's' and write them correctly	Introduction to common linguistic errors - Ta' Marbutah, Ta' Tawilah, and Ta' Maftuhah	Lectures, practical exercises, and workshops	Quiz and classroom participation evaluation
2	2.2 hrs	Understand and apply rules for writing Alif and solar and lunar letters	Rules of writing Alif Mamdudah and Alif Maqsurah - Solar and Lunar Letters	Lectures, practical exercises, and workshops	Homework and practical training evaluation
3	2.2 hrs	Correct spelling and written distinction between letters Dad (ض) and Tha (ظ)	Rules and applications of writing letters Dad and Tha and distinguishing between them	Lectures, practical exercises, and workshops	Evaluation of participation and experimental performance
4	2.2 hrs	Write Hamza correctly according to its diverse linguistic rules	Learning to write Hamza correctly according to linguistic rules	Lectures, practical exercises, and workshops	Quiz and spelling activity report evaluation
5	2.2 hrs	Use punctuation marks correctly to organize and understand texts	Study of punctuation marks and learning to use them correctly in texts	Lectures, practical exercises, and workshops	Weekly homework and writing evaluation
6	2.2 hrs	Understand grammatical and parsing differences between verbal and nominal sentences and complements	Identifying noun and verb and differentiating between them grammatically -	Lectures, practical exercises, and	Evaluation of performance in classifying sentences

		(mafa'eel)	Complements (Mafa'eel)	workshops	grammatically
7	2 hrs	Evaluate students' comprehension and level in the first half material	Mid-semester Exam (Midterm Exam)	Unified and formal theoretical written exam	Theoretical written exam (10%)
8	2.2 hrs	Understand rules of numbers and counted objects and their grammatical and written effects	Numbers and counted objects and their grammatical and expressive use in sentences	Lectures, practical exercises, and workshops	Quiz and homework evaluations
9-10	4.4 hrs	Apply grammatical and spelling rules in correcting common technical and administrative text errors	Study of common linguistic errors and their practical applications in texts	Lectures, practical exercises, and workshops	Evaluation of formulating and correcting long texts
11	2.2 hrs	Rules of writing Nun and Tanween, and understand prepositions and their applications	Nun and Tanween and their writing rules, and meanings of prepositions and their uses	Lectures, practical exercises, and workshops	Quiz and evaluation of students' direct understandin g
12	2.2 hrs	Recognize organizational and formal aspects of administrative correspondence and its formulation	Identifying formal and organizational aspects of administrative letters and their rules	Lectures, practical exercises, and workshops	Evaluation of formal formulation of official letters
13-14	4.4 hrs	Master formulation and approved linguistic methods for administrative correspondences and reports	Language of administrative correspondence and formal professional formulation methods	Lectures, practical exercises, and workshops	Evaluation of formulating a complete technical and administrativ e report
15	2.2 hrs	Study and simulate models of approved official administrative correspondences	Study models of administrative correspondences and their practical applications	Lectures, practical exercises, and workshops	Final evaluation of classroom works and activities
16	2 hrs	Preparatory week for review and solving previous questions before exams	Preparation for final exam and comprehensive review of the material	Discussion groups and solving review exercises and questions	Evaluation of attendance, interaction, and general participation

11. Infrastructure

• Required Textbooks:

- Arabic Language Booklet (circularized by the Iraqi Ministry of Higher Education and Scientific Research) (available in the college).

• Main References:

- Booklet of grammatically and spelling-approved rules.

• Recommended References:

- A collection of booklets and administrative models for drafting letters and correspondences.

• Electronic Resources & Websites:

- Al-Taf University College Digital Library (The College E-Library).

12. Course Development Plan

Prepare a joint specialized workshop focusing on technical engineering report drafting and writing skills, and updating and integrating the curriculum with interactive electronic training packages that simulate modern engineering correspondence via email and project technical proposals.

COURSE DESCRIPTION: DEMOCRACY AND HUMAN RIGHTS (MTU1006)

1. Educational Institution	Al-Taf University College
2. Scientific Department / Centre	Department of Computer Techniques Engineering
3. Course Name / Code	Democracy and Human Rights / MTU1006
4. Available Attendance Forms	Weekly (In-person theoretical and practical)
5. Semester / Year	Semester-based / Second Semester (First Year)
6. Total Study Hours	50 Hours
7. Date of Preparation	2026-09-06
8. Course Objectives	This course aims to enable students to acquire basic, theoretical, and practical knowledge related to the subject of Democracy and Human Rights in accordance with approved academic and practical plans.

9. Course Outcomes, Teaching, Learning and Assessment Methods

• Cognitive Objectives (Learning Outcomes):

- Understand and assimilate the historical development of the concept of human rights and its origin across civilizations and divine laws, particularly in Islam.
- Know international and regional human rights treaties and charters and the role of non-governmental organizations in protecting and supporting them.
- Understand classifications and forms of human rights and their constitutional, judicial, and political guarantees at national and international levels.
- Understand and analyze concepts of democracy and public freedoms (personal, intellectual, cultural, economic, and social) and their role in promoting active citizenship.

• Course-Specific Skills:

- Ability to analyze and evaluate contemporary human rights and civil issues and conflicts systematically and scientifically.
- Employ national and international legislation and treaties (particularly the Iraqi Constitution) in drafting human rights research papers and reports.
- Use constructive dialogue and discussion tools to express human rights views and values in a persuasive academic style.
- Propose and develop peaceful and social solutions to promote and spread public freedoms and defend rights in professional and social environments.

• Affective and Value Objectives:

- Promote and develop values of justice, equality, tolerance, and respect for the rights and freedoms of others as a value priority.
- Deepen active citizenship, social responsibility, and commitment to rights and duties towards the homeland and society.

- Develop civic awareness, professional moral conscience, and commitment to peaceful defense of public rights and freedoms.

• General and Transferable Skills:

- Effective dialogue and open group discussion skills and respecting different opinions and viewpoints.
- Ability to work collectively and make joint decisions through interactive workshops and practical activities.
- Scientific research skills, conducting social and human rights studies, and drafting and presenting human rights recommendations and reports.

• Teaching and Learning Methods:

- Theoretical and academic lectures to explain and clarify theories and the history of human rights and democracy.
- Directed research projects and study of practical human rights cases to link theory to practical reality.
- Interactive workshops, discussion circles, and role-playing activities to activate active participation and value awareness.
- Use modern technologies and illustrative visual and technological presentations to enhance student interaction.

• Assessment Methods:

- Quizzes designed to measure immediate understanding of concepts, weighted at (10%).
- Homework and research projects weighted at (20%).
- Evaluation of activities, workshops, and classroom role-playing weighted at (10%).
- Human rights report and minor research weighted at (10%).
- Midterm exam weighted at (10%).
- Comprehensive written final exam weighted at (50%).

10. Course Structure

Week	Hours	Learning Outcomes	Topic Name	Learning Method	Assessment Method
1	2.2 hrs	Analyze and describe historical development of the emergence of human rights and the impact of ancient civilizations on it	Historical development of human rights and human rights in ancient civilizations (Mesopotamian Civilization)	Interactive lectures, classroom dialogues, and discussions	Quiz and active participation evaluation
2	2.2 hrs	Interpret human rights in Islam and how they were included in Sharia and developed historically	Human rights in divine laws (Human rights in Islam) and their development in Middle Ages and Modern Era	Interactive lectures, classroom dialogues, and discussions	Evaluation of homework and practical training
3	2.2 hrs	Comprehensive understanding of regional recognition of human rights on European, American, African, Islamic, and Arab levels	Regional recognition of human rights (European, American, African, Islamic, Arab)	Interactive lectures, classroom dialogues, and discussions	Quiz and evaluation of participation report and activity
4	2.2 hrs	Evaluate and understand the role of non-	Non-governmental organizations and their role	Interactive lectures,	Evaluation of minor

		governmental international organizations in protecting human rights and spreading awareness of them	(Red Cross, Amnesty International, Human Rights Watch)	classroom dialogues, and discussions	research papers and homework
5	2.2 hrs	Study and analyze human rights in international charters such as the Universal Declaration and the two International Covenants	Human rights in international and regional charters and national legislation (Universal Declaration and the two Covenants)	Interactive lectures, classroom dialogues, and discussions	Quiz and evaluation of activities and review report
6	2.2 hrs	Study and analyze regional charters to promote rights and freedoms and differences between them	Human rights in regional charters (European Convention, American Convention, African and Arab Charters)	Interactive lectures, classroom dialogues, and discussions	Evaluation of performance in workshops and discussion circles
7	2 hrs	Evaluate students' progress and level of comprehension of the first half topics	Midterm Exam	Unified and comprehensive theoretical written exam	Theoretical written exam (10%)
8	2.2 hrs	Understand and analyze how human rights are translated in national legislation, particularly the Iraqi Constitution	Human rights in national legislation (Iraqi Constitution as an applied model)	Interactive lectures, classroom dialogues, and discussions	Evaluation of homework, participation, and discussion
9	2.2 hrs	Understand and classify forms of individual and collective human rights and their generations, and the impact of water and environmental awareness	Forms and generations of human rights (civil and political, economic and social, and modern environmental rights)	Interactive lectures, classroom dialogues, and discussions	Quiz and evaluation of writing human rights reports performance
10	2.2 hrs	Analyze constitutional, judicial, and political guarantees dedicated to protecting rights at the national level	Guarantees of human rights and their protection at national level (constitutional, judicial, and political guarantees)	Interactive lectures, classroom dialogues, and discussions	Evaluation of report and minor research project
11	2.2 hrs	Understand international and regional guarantees for human rights, the role of the United Nations, and the crime of genocide	Guarantees and protection of rights regionally and internationally (role of the United Nations and the crime of genocide)	Interactive lectures, classroom dialogues, and discussions	Quiz and evaluation of students' direct understanding
12	2.2 hrs	Understand and classify	Classification of public	Interactive	Weekly

		basic and individual public freedoms, freedom of security, movement, and personal freedom	freedoms: basic and individual freedoms, freedom of security and movement, and personal freedom	lectures, classroom dialogues, and discussions	homework and classroom participation evaluation
13	2.2 hrs	Understand and apply intellectual and cultural freedoms, freedom of opinion, expression, belief, and education to promote awareness	Intellectual and cultural freedoms: freedom of opinion, expression, belief, and freedom of education	Interactive lectures, classroom dialogues, and discussions	Evaluation of formulation and discussion of applied workshops
14	2.2 hrs	Understand rules of collective freedoms of expression such as freedom of press, peaceful assembly, and forming associations and unions	Freedoms of expression and assembly: freedom of press, peaceful assembly, and forming associations and unions	Interactive lectures, classroom dialogues, and discussions	Evaluation of report and weekly human rights activity
15	2.2 hrs	Understand and apply economic and social freedoms such as freedom of work, property, trade, and industry and their applications	Economic and social freedoms: freedom of work, freedom of property, and freedom of trade and industry	Interactive lectures, classroom dialogues, and discussions	Final evaluation of activities, homework, and comprehensive scientific report

11. Infrastructure

• Required Textbooks:

- "Human Rights in the Arab World: Issues and Challenges", Ali Hijazi and Jamal Sha'at (2017);
- "Principles of Human Rights: Modern Concepts and Issues", Ahmed Al-Majali and Ghassan Hamdan (2019) (available in the college library).

• Main References:

- "Human Rights and Democracy", Mustafa Kamel Mahmoud (2015).

• Recommended References:

- History of Human Rights in Ancient and Middle Ages, Nabil Rizq (2012);
- Human Rights in Iraq, Muhammad Al-Samarrai and Liqaa Al-Harbi (2020).

• Electronic Resources & Websites:

- Al-Taf University College Digital Library (The College E-Library).

12. Course Development Plan

Activate periodic discussion circles and dialogue seminars in which students participate to review and discuss contemporary challenges of democracy and human rights, and activate interactive discussion platforms and groups on the internet to exchange opinions and deepen legal and civic awareness.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET2101
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي 1/ سنة 2
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	1. To develop problem solving skills and understanding of probability theory. 2. To distinguish aspects of probability terminology. 3. This course deals with the basic concept of Statistics. 4. To understand graphical representation of data measures. To perform Simple Linear Regression.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. Recognize Basic terminology. 2. Describe Axioms for probability. 3. Discuss Conditional probabilities and independent events. 4. Explain random variable, Expectation and variance. 5. understand Bayes Theorem, PDF and CDF. 6. Define Expectation and variance of continuous random variables. 7. Identify Binomial, Poisson and Normal Distribution. 8. Discuss Joint and Marginal distributions aspects. 9. Discuss the Distributions of sums of independent random variables. 10. Explain Expectation and variance of sums of random variables, in addition to Covariance and correlation. 11. Describe Conditional expectation and Prediction. 12. Discuss Graphical Representation of frequency tables and charts, Measures of Central Tendency, and Dispersion. 13. Get acquainted with Relationship Modelling, Pearson's Correlation Coefficient. 14. Explain Significance of the correlation co-efficient and Simple Linear Regression. Describe Chi Square test for association, Chi Square test of goodness of fit.

الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3		Basic terminology, Populations and Samples..	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	3		Sample spaces and events. Axioms for probability and their consequences.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	3		Conditional probabilities. Bayes' formula. Independent events.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	3		Definition of random variable. Discrete random variables. Expectation and variance.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	3		Bayes Theorem, Discrete Probability Distributions, The cumulative distribution function.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	3		Probability density function. Expectation and variance of continuous	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

		random variables.			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Binomial Distribution, Poisson Distribution, The Normal Distribution		3	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**		3	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Joint distribution functions. Marginal distributions. Independent random variables. Distributions of sums of independent random variables.		3	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Expectation and variance of sums of random variables. Covariance and correlation.		3	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Conditional expectation. Prediction.		3	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Graphical Representation - frequency tables and charts, Measures of Central Tendency, and Dispersion.		3	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Relationship Modelling, Pearson's Correlation Co-efficient		3	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Significance of the correlation co-efficient, Simple Linear Regression		3	14

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Chi Square test for association, Chi Square test of goodness of fit		3	15

11. البنية التحتية	
الكتب المقررة المطلوبة	"Probability & Statistics for Engineers & Scientists", Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying E. Ye, Pearson Education, 9th edition, (August 19, 2016), ISBN-13:978-1292161365.
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	"Essential Mathematics and Statistics for Science", Graham Currell, Antony Dowman, Wiley, 2nd edition (June 22, 2009), ISBN-13:978-0470694480.
المراجع الالكترونية (مواقع الانترنت)	https://users.cs.utah.edu/~jeffp/teaching/cs3130.html

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET2102
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي 1/ سنة 2
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	1. Understand and apply object-oriented programming principles. 2. Design and implement object-oriented solutions to programming problems. 3. Utilize C++ libraries and frameworks for application development. 4. Implement data abstraction and encapsulation for secure and efficient code. 5. Plan and execute testing strategies for reliable programs. 6. Debug and optimize program performance for efficient execution.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. Demonstrate a clear understanding of object-oriented programming principles, including inheritance, polymorphism, and encapsulation. 2. Design and implement classes and objects to represent real-world entities, applying appropriate inheritance and encapsulation. 3. Utilize C++ libraries and frameworks effectively to develop robust and scalable applications. 4. Implement data abstraction and encapsulation techniques

to ensure secure and efficient code. 5. Plan and execute comprehensive testing strategies to validate the functionality and reliability of object-oriented programs. 6. Identify and debug program errors using appropriate tools and techniques, enhancing program robustness. 7. Evaluate and optimize program performance through code analysis and profiling, improving execution efficiency. 8. Collaborate effectively with peers to develop object-oriented solutions to complex programming challenges. 9. Apply exception handling techniques to handle errors and ensure program stability. 10. Demonstrate proficiency in utilizing debugging tools to identify and fix program errors. 11. Apply object-oriented design patterns and principles to analyze and solve programming problems. Evaluate the efficiency and effectiveness of object-oriented solutions through critical analysis and optimization techniques.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	5		Introduction to Object-Oriented Programming	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	5		Classes, Objects, and Relationships	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	5		Inheritance and Polymorphism principles	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	5		Encapsulation and Data Abstraction	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Problem Analysis and Requirements Gathering		5	5
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Object-Oriented Design Principles and Patterns		5	6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Mid-term Exam**		5	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	C++ Language Essentials and Advanced Topics		5	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Implementing Classes and Objects in C++		5	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Implementing Inheritance and Polymorphism in C++		5	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Handling Exceptions in C++		5	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Utilizing C++ Libraries and Frameworks		5	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Testing Methodologies and Strategies in C++		5	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Debugging Techniques and Tools in C++		5	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Optimization and Performance Analysis in C++		5	15

11. البنية التحتية	
الكتب المقررة المطلوبة	

المراجع الرئيسية	"Design Patterns: Elements of Reusable Object-Oriented Software" by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	https://www.w3schools.com/cpp/cpp_oop.asp

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	**CET2103**
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي 2/1سنة
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	1. Understand the basic components and organization of a computer system. 2. Explain the function and operation of the CPU, memory, and I/O devices. 3. Analyze and evaluate different computer architectures and their trade-offs. 4. Design and implement basic computer systems using appropriate hardware and software components. 5. Demonstrate an understanding of the relationship between computer organization and computer performance. 6. Apply knowledge of computer organization principles to solve real-world computing problems. 7. To develop essential skills in creating, saving, and opening documents in Microsoft Word, including formatting text and paragraphs and working with styles and themes. 8. To explore advanced features in Microsoft Word, such as page layout options, working with headers, footers, and page numbers, and incorporating tables, images, and objects. 9. To introduce spreadsheets and worksheets in Microsoft Excel, and develop students' skills in data entry, manipulation, and basic formulas and functions. 10. To delve into advanced Microsoft Excel features, including working with ranges and cells, sorting and filtering data, and creating charts and graphs. 11. To guide students in creating and editing slides in Microsoft PowerPoint, applying themes and templates, and adding text, images, and multimedia elements. 12. To explore advanced PowerPoint features, such as slide transitions, animations, using SmartArt and shapes, and utilizing presenter tools and slide show options.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. Understand the basic components and organization of a computer system. 2. Explain the function and operation of the CPU, memory, and I/O devices. 3. Analyze and evaluate different computer architectures and their trade-offs. 4. Design and implement basic computer systems using appropriate hardware and software components. 5. Demonstrate an understanding of the relationship between computer organization and computer performance. 6. Apply knowledge of computer organization principles to solve real-world computing problems. demonstrate the ability to evaluate and compare different computer
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction to Computer Organization ,Familiarization with the lab environment and tools	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		hardware components: CPU, memory, and I/O devices	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Introduction to Assembly Language Programming,	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

		microprocessor instruction set			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	register and memory transfer instructions		4	4
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic instructions		4	5
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Logical Instructions		4	6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Stack instructions		4	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Loop and Subroutine programs		4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Writing and executing simple assembly language programs		4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Introduction to Lab Environment and Office Suite: Microsoft Word Lab - Creating, editing, and formatting documents. Inserting and formatting images and tables.		4	10
Reports, Projects, Quizzes,	محاضرة نظرية + عملية	Microsoft Excel Lab - Creating		4	11

Assignments		spreadsheets and entering data. Formulas and functions for calculations.			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Data Analysis Lab with Excel - Advanced formula and function exercises. Sorting, filtering, and analyzing data.		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Microsoft PowerPoint Lab - Creating, editing, and designing slides. Adding multimedia elements and animations.		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Dealing with google form, customized the design, control the access, presents answers.		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Interrupt and subroutines		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	"Computer Architecture and Organization " by Moris Mano
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	"8085 Microprocessor and Programming "by Ramesh S. Gaonkar

المراجع الالكترونية (مواقع الانترنت)	https://www.tutorialspoint.com/computer_organization/index.asp

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	**MTU1007**
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي 1/ سنة2
6. عدد الساعات الدراسية (الكلي)	50 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	يهدف هذا المقرر الدراسي إلى تعزيز فهم الطلاب للجرائم والانتهاكات التي وقعت خلال فترة نظام البعث في العراق وتأثيرها على الأفراد والمجتمع، وتشجيع التحليل والنقاش حول هذه القضايا المهمة. ومن ابرز الأهداف للمادة الدراسية هي اني يكون الطالب قادراً على أن : 1. فهم مفهوم الجرائم وأقسامها. 2. دراسة جرائم نظام البعث والقوانين المتعلقة بها. 3. التعرف على الجرائم النفسية والاجتماعية وآثارها على الفرد والمجتمع. 4. تحليل الانتهاكات القانونية في العراق، بما في ذلك الانتهاكات لحقوق الإنسان والجرائم ذات الصلة. 5. فهم الجرائم البيئية وآثارها، بما في ذلك التلوث وتدمير المدن والقرى وتجفيف الأهوار. دراسة جرائم المقابر الجماعية وفهم أحداث المقابر والتصنيف الزمني لها في العراق.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	مخرجات التعلم للمادة الدراسية هي: 1. فهم مفهوم الجرائم وقدرة الطلاب على تصنيف الجرائم وفقًا لأقسامها. 2. تحليل جرائم نظام البعث وفهم القوانين المتعلقة بها، بما في ذلك الجرائم الدولية. 3. القدرة على التعرف على الجرائم النفسية لنظام البعث وفهم الآثار النفسية لجرائم نظام البعث على الأفراد والمجتمع. 4. القدرة على التعرف على الجرائم الاجتماعية لنظام البعث الآثار الاجتماعية لجرائم نظام البعث على الأفراد والمجتمع. 5. التعرف على الانتهاكات القانونية لنظام البعث في العراق وفهم أنواع

	الانتهاكات ومكان احتجاز الأفراد. 6. التعرف على صور انتهاكات حقوق الإنسان وجرائم السلطة التي وقعت خلال فترة نظام البعث 7. التعرف على الانتهاكات السياسية والعسكرية لنظام البعث 8. فهم الجرائم البيئية لنظام البعث والقدرة على تحليل تأثيرها على البيئة والمجتمع. 9. دراسة جرائم المقابر الجماعية لنظام البعث فهم الأحداث المرتبطة بجرائم المقابر الجماعية وتصنيفها زمنيًا.
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2		تعريف الجريمة لغة واصطلاحًا، مفهوم الجريمة، اقسام الجريمة	نظري	
2	2		جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا عام 2005	نظري	
3	2		الجرائم النفسية لنظام البعث وفهم الآثار النفسية لجرائم نظام البعث على الأفراد والمجتمع.	نظري	
4	2		الجرائم الاجتماعية لنظام البعث وفهم الآثار الاجتماعية لجرائم نظام البعث على الأفراد والمجتمع	نظري	
5	2		انتهاكات القوانين العراقية	نظري	
6	2		بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث	نظري	
7	2		الجرائم البيئية لنظام البعث في العراق (التلوث الحربي وسياسة الأرض المحروقة)	نظري	
8	2		تجفيف الاهوار و تجريف بساتين النخيل والأشجار والمزروعات	نظري	

9	2		تجفيف الاهوار و تجريف بساتين النخيل والأشجار والمزروعات	نظري	
10	2		تجفيف الاهوار و تجريف بساتين النخيل والأشجار والمزروعات	نظري	
11	2		جرائم المقابر الجماعة واحداث مقابر الإبادة الجماعية المرتكبة من النظام البعث في العراق	نظري	
12	2		التصنيف الزمني لمقابر الإبادة الجماعية في العراق للمدة من (1963-2003) م	نظري	
13	2		التصنيف الزمني لمقابر الإبادة الجماعية في العراق للمدة من (1963-2003) م	نظري	
14	2		التهيئة للامتحان النهائي	نظري	
15	2		التهيئة للامتحان النهائي	نظري	

11. البنية التحتية	
الكتب المقررة المطلوبة	منهاج وزارة التعليم العالي والبحث العلمي العراقية - جرائم نظام البعث في العراق 2023
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	The Collage E-Library

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	**كلية الطف الجامعة**
2. القسم العلمي / المركز	**هندسة تقنيات الحاسوب**
3. اسم / رمز المقرر	**CET2104**
4. أشكال الحضور المتاحة	**اسبوعي**
5. الفصل / السنة	**فصلي**
6. عدد الساعات الدراسية (الكلي)	**125 ساعة**
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	13. To understand materials conductivity, semiconductor materials, and types 14. This is the basic subject for all electronic circuits and devices. 15. This course deals with first and the simplest semiconductor device, diode, diode physical construction, biasing, characteristics, application circuits and Zener 16. Mathematical derivation and implementation of the load line analysis, and Q point with in diode characteristics curve to develop problem solving skills and understanding of diode circuits 17. This course deals with second semiconductor device, BJT This course deals with BJT physical construction, biasing, configuration methods, input and output characteristics 18. To understand the D.C biasing of BJT and circuit types , analysis and calculations of BJT parameters 19. To understand and construct re model for BJT circuits To deal with small signal analysis of BJT

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	7. Recognize classifications of materials according to its conductivity. 8. Identify the semiconductor material characteristics and classifications 9. Recognize the physical structure and properties of P and N layers 10. Identify diode as a first example of semiconductor devices. 11. Discuss diode physical construction, biasing, and characteristics 12. Identify the variable parameters of diodes, and V threshold 13. Summarize what is meant by Load line analysis , and Q point 14. Identify the applications of diodes in electrical circuits using AC. And DC. Power supplies

15. To understand the concept of Zener region and the differences between zener and original diodes 16. To solve zener circuits and calculate its voltage current with different cases 17. To understand and discuss the second semiconductor device which is Transistor (Bipolar Junction Transistor)(BJT) 18. To discuss BJT physical construction, Operation, and configuration methods 19. To understand and implement input and output Characteristics of each configuration method and load line and Q point implementations 20. To implement and solve BJT biasing circuit types and calculations of important parameters of BJT in DC. Biasing state 21. Design BJT circuit types by using Quesent point parameters 22. Understand and construct re model for BJT circuits 23. Derive and calculate Zi, Zo Av and AI from re model of BJT circuits 24. Understand and calculate small signal analysis of BJT	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
	طرائق التعليم والتعلم
	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction, Semiconductor Materials, Energy Levels , Extrinsic Materials—n- and p-Type	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Semiconductor Diode construction, biasing, characteristics, Zener region	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Load-Line Analysis, RESISTANCE LEVELS, DIODE EQUIVALENT CIRCUITS	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Series Diode	محاضرة نظرية	Reports,

Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Configurations with DC Inputs , Parallel and Series- Parallel Configurations			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Sinusoidal Inputs; Half-Wave Rectification, Full-Wave Rectification		4	5
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**		4	6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Clipper's series and parallel ,Clampers , Zener Diodes, Introduction , Transistor Construction		4	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Transistor Operation, Common-Base Configuration Transistor, Amplifying Action , Common-Emitter Configuration , Limits of Operation	Students will be assessed on the topics covered in Weeks 1–9	4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Operating Point, Fixed-Bias Circuit ,Emitter-Stabilized Bias Circuit ,	Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care .conditions	4	9
Reports, Projects,	محاضرة نظرية + عملية	Voltage-	Students will be able to	4	10

Quizzes, Assignments		Divider Bias , DC Bias with Voltage Feedback , Miscellaneous Bias Configurations	simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care .conditions		
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Design Operations , Transistor Switching Networks	Students will be able to perform basic arithmetic operations using digital logic circuits	4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Amplification in the AC Domain, BJT Transistor Modeling ,The Important Parameters: Zi, Zo, A v, A The re Transistor Model	Students will be able to design and implement basic digital code conversion circuits	4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Small signal analysis	Students will be able to analyze and implement multiplexer and demultiplexer .circuits	4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Common-Emitter Fixed-Bias Configuration Voltage-Divider Bias	Students will be able to analyze and design digital comparator .circuits	4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	CE Emitter-Bias Configuration Emitter-Follower Configuration Common-Base Configuration	Students will be able to design and implement basic digital code conversion circuits	4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	Electronic devices and circuit theory Poylested
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	**CET2105**
4. أشكال الحضور المتاحة	**اسبوعي**
5. الفصل / السنة	**فصلي 1/سنة2**
6. عدد الساعات الدراسية (الكلي)	**125 ساعة**
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	1. Understanding the communication systems and signals. 2. Viewing and knowledge block diagram communication system 3. Analyzing the advantage and disadvantage of each type of signals and systems. 4. Analyzing signals in Fourier series and Fourier transform. 5. To develop problem solving skills and understanding of filters types and design

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. Recognize Basic Principles of Communication. 2. Explain the Block Diagram of a Communication System. 3 Identify essential parts that must be present in communication systems. 4. List the different types of media used in a communication system. 5. Describe the measured effect of noise on a communication system. 6. Define modulation over some carriers to make it suitable for transmission over a long distance. 7. Discuss Principles of Signals in Communication and shows examples of signals of various types. 8. Identify the difference between Analog and Digital Signals. 9. List the various types of continuous-time signals 10. Discuss the classification of signals based on their characteristics and nature of availability. 11. Define the advantages and disadvantages of each type of signal in communications.

	12. Explain the two the Fourier Series in the Continuous Domain is associated with the important classes of Fourier series methods and Trigonometric Fourier series. 13. Summarize by various magnitudes or coefficients of Exponential Fourier Series on Determination for different harmonic signals. 14.Definition A major disadvantage of the Fourier series is on account of its periodicity, by means of the limitation of the Fourier series 15. Identify Fourier transform representation for the non-periodic signals 16. Describe the Inverse Fourier transform as a mathematical transformation technique that transforms signals from the continuous-frequency domain to the corresponding time domain and vice-versa 17. Definition Filters, four basic types of filters: Passive or Active depending on the Construction of filters. 18. Describe the filter depending on the design of filters: Low Pass Filter (LPF), High Pass Filter (HPF), Band Pass Filter (BPF) and Band Stop Filter (BSF). 19. Summarize the design formula for a passive filter LPF and HPF consisting of coils, capacitors, and resistors. 20. Identify the design formula for a passive filter Constant-K: LPF , HPF, and BPF consisting of coils, capacitors, and resistors . 21. Definition active filters, listing the advantage of active filter over disadvantage of passive filter. 22. Identify the design formula for active filter first order LPF, HPF and BPF
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Basic Principles of Communication: Introduction to Communication, The Block Diagram of a Communication System	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Signals: Principles of	محاضرة نظرية + عملية	Reports, Projects,

Quizzes, Assignments		Signals & Definition, Difference between Analog and Digital Signals			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Types of continuous-time signals: (Unit–Step Function, Unit –Ramp Function, Impulse Function, Unit – Parabola Function, Signum Function, Rectangular Function, Triangular Function, Real Exponential Signal, Sinusoidal Function &Sampling Function)		4	3
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Classification of Signals , Continuous – Time Signal, Discrete- Time Signals ,Even Signals, Odd Signals , Deterministic Signals, Random Signals, Sinusoidal Signals, Complex Exponential Signals		4	4
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Solved Problems: Periodic Signals, Aperiodic ,Solved Signals Problems: Energy Signals		4	5

		,Power Signals			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Fourier series: The Fourier Series in Continuous Domain, Trigonometric Fourier series and Solved Examples , Exponential Fourier series and Solved Examples . Fourier Transform : Fourier Transform Examples		4	6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**		4	7
Reports, Projects, Quizzes, Assignments		The Inverse Fourier Transform Example: Inverse Fourier Transform		4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Filters : Types of filters : Classification Based on Construction and Design RC-LPF, RC-HPF BPF (Low Pass Filter Stage and High Pass Filter Stage) (Type 1& Type 2) Band Stop Filter		4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Passive Filters : Formula and Procedure of Design RL-LPF, RL-HPF		4	10

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	LC- LPF, Constant-K-(T& π Section) LC- HPF, Constant-K-(T& π Section) LC- BPF, Constant-K-(T& π Section)		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Band Pass Filter Stage) (Type 1& Type 2)		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Active Filters Comparison Between Passive & Active Filters		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	First- Order LPF First- Order HPF		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	BPF Active Filter & Band reject or Notch Filter		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	Principles of Communication Systems By J.S.Chitode, First Edition-2007 Modern Digital and Analog Communication Systems ,By B.P.Lathi OXFORD
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	Analog and Digital Communications, By Schaum Second Edition Data Communications and Networking, By Behrouz A. Forouzan, Fifth Edition
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET2101
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي 1/ سنة 2
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	5. To develop problem solving skills and understanding of probability theory. 6. To distinguish aspects of probability terminology. 7. This course deals with the basic concept of Statistics. 8. To understand graphical representation of data measures. To perform Simple Linear Regression.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	15. Recognize Basic terminology. 16. Describe Axioms for probability. 17. Discuss Conditional probabilities and independent events. 18. Explain random variable, Expectation and variance. 19. understand Bayes Theorem, PDF and CDF. 20. Define Expectation and variance of continuous random variables. 21. Identify Binomial, Poisson and Normal Distribution. 22. Discuss Joint and Marginal distributions aspects. 23. Discuss the Distributions of sums of independent random variables. 24. Explain Expectation and variance of sums of random variables, in addition to Covariance and correlation. 25. Describe Conditional expectation and Prediction. 26. Discuss Graphical Representation of frequency tables and charts, Measures of Central Tendency, and Dispersion. 27. Get acquainted with Relationship Modelling, Pearson's Correlation Coefficient. 28. Explain Significance of the correlation co-efficient and Simple Linear Regression. Describe Chi Square test for association, Chi Square test of goodness of fit.

الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3		Basic terminology, Populations and Samples..	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	3		Sample spaces and events. Axioms for probability and their consequences.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	3		Conditional probabilities. Bayes' formula. Independent events.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	3		Definition of random variable. Discrete random variables. Expectation and variance.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	3		Bayes Theorem, Discrete Probability Distributions, The cumulative distribution function.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	3		Probability density function. Expectation and variance of continuous	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

		random variables.			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Binomial Distribution, Poisson Distribution, The Normal Distribution		3	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**		3	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Joint distribution functions. Marginal distributions. Independent random variables. Distributions of sums of independent random variables.		3	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Expectation and variance of sums of random variables. Covariance and correlation.		3	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Conditional expectation. Prediction.		3	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Graphical Representation - frequency tables and charts, Measures of Central Tendency, and Dispersion.		3	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Relationship Modelling, Pearson's Correlation Co-efficient		3	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Significance of the correlation co-efficient, Simple Linear Regression		3	14

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Chi Square test for association, Chi Square test of goodness of fit		3	15

11. البنية التحتية	
الكتب المقررة المطلوبة	"Probability & Statistics for Engineers & Scientists", Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying E. Ye, Pearson Education, 9th edition, (August 19, 2016), ISBN-13:978-1292161365.
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	"Essential Mathematics and Statistics for Science", Graham Currell, Antony Dowman, Wiley, 2nd edition (June 22, 2009), ISBN-13:978-0470694480.
المراجع الالكترونية (مواقع الانترنت)	https://users.cs.utah.edu/~jeffp/teaching/cs3130.html

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	**MTU1003**
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي 1/ سنة2
6. عدد الساعات الدراسية (الكلي)	50 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	1. Provide students with essential information in the English language in association with reading, writing and speaking skills, and knowing more English vocabulary. 2. To understand sentences, tenses, and practicing writing. 3. This module works towards enhancing students' English language competencies along with their technical or professional knowledge. Enhancing students' communication skills in English can result in better job opportunities in the future

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	The student will have the ability to: 1. Know the English skills of reading, and writing. 2. Recognize other English language skills such as: grammar, vocabulary. 3. Understand and appreciate the importance of grammar aspects and vocabulary to increase the ability of communicating ideas about the English language. 4. Understand sentences with multiple clauses, and comparative and superlative. 5. Understand time expression in tenses, and active and passive voice. 6. Discuss distinguish words such as do and make, like and alike, and other and another. 7. Discuss the various skills of writing such as writing essays, developing supporting ideas, and writing a paragraph. Enhance students' communication skills in English.
الأهداف المهاراتية الخاصة بالمقرر	

الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	2		**Unit 1**: Grammar: Tenses (Present, Past, and Future), Questions, Questions word Vocabulary: Parts of speech, adjective, preposition, word with more than one meaning Reading and writing Skill, Everyday English (Social Expression)	ننظري	Reports, Projects, Quizzes, Assignments
2	2		**Unit 2**: Grammar: Present Tenses (Present Simple, Present Continuous) Tens, have/have got Vocabulary: Description countries, Collection Reading and writing Skill,	ننظري	Reports, Projects, Quizzes, Assignments

		make conversation, Asking question			
Reports, Projects, Quizzes, Assignments	ننظري	**Unit 3**: Grammar: Past Tenses (Past Simple, Past Continuous) Vocabulary: Irregular verbs, making connections, nouns, verbs, and adjectives, Making negatives Reading and writing Skill, Everyday English (Time Expression)		2	3
Reports, Projects, Quizzes, Assignments	ننظري	**Unit 4**: Grammar: Quantity, Articles, and some and Any Vocabulary: Buying Things Reading and writing Skill, Everyday English (Prices and shopping)		2	4
Reports, Projects, Quizzes, Assignments	ننظري	**Midterm Exam**		2	5
Reports, Projects, Quizzes, Assignments	ننظري	**Unit 5**: Grammar: Verb Patterns 1, Future intentions Vocabulary:		2	6

		Hot verbs Reading and writing skills, Everyday English (How do you feel?) **Unit 6**: Grammar: What's it like?, Comparative and superlative adjectives. Vocabulary: Talking about towns, Money, Synonyms and antonyms Reading and writing Skill, Everyday English (Directions)			
Reports, Projects, Quizzes, Assignments	ننظري	**Unit 7**: Grammar: Present Perfect and Past Simple, for and since, Tense revision Vocabulary: Past participles, Adverbs, Word pairs. Reading and writing Skill, Everyday English (short answers)		2	7
Reports, Projects, Quizzes, Assignments	ننظري	**Unit 8**: Grammar: Have (got) to, Should, Must Vocabulary:		2	8

		Jobs, Traveling abroad, Words that go together, Compound nouns Reading and writing Skill, Everyday English (At the doctor's)			
Reports, Projects, Quizzes, Assignments	ننظري	**Unit 9**: Grammar: Time and Conditional Clauses, What if? Vocabulary: Hot verbs, Hotels Reading and writing Skill, Everyday English (In a hotel)		2	9
Reports, Projects, Quizzes, Assignments	ننظري	**Unit 10**: Grammar: Verb Patterns 2, Infinitives, Purpose, (What, etc.+ infinitive), (something, etc.+ infinitive) Vocabulary: Shops, describe feelings and situations. Reading and writing Skill, Everyday English (Exclamations)		2	10
Reports, Projects, Quizzes,		**Unit 11**: Grammar: Active and		2	11

Assignments		Passive Voice Vocabulary: Verbs and past participles, verbs and nouns that go together Reading and writing Skill, Everyday English (Notices)			
Reports, Projects, Quizzes, Assignments	نضري	**Unit 12**: Grammar: Second conditional, might Vocabulary: Phrasal verbs Reading and writing Skill, Everyday English (Social expression 2)		2	12
Reports, Projects, Quizzes, Assignments	ننظري	**Unit 13**: Grammar: Present Perfect Continuous, Present Perfect Simple versus Continuous Vocabulary: Job and the alphabet game, Word formation, Adverb Reading and writing Skill, Everyday English (Telephoning)		2	13
Reports, Projects, Quizzes,	ننظري	**Unit 14**: Grammar: Past Perfect,		2	14

Assignments		Reported statements Vocabulary: Word in context Reading and writing Skill, Everyday English (Saying goodbye)			
Reports, Projects, Quizzes, Assignments	ننظري	Grammar: Distinguish make and do, will and would, like, alike, unlike, and dislike, and other, another, and others Vocabulary Reading and writing Skill		2	15

11. البنية التحتية	
الكتب المقررة المطلوبة	New Headway Plus/ Pre-Intermediate, John and Liz Soars, Oxford University Press
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	Understanding and Using English Grammar, 5th Edition, Betty S. Azar Stacy A. Hagen.
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Advanced Engineering Mathematics - CET2201
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026-09-07
8. أهداف المقرر	9. To develop problem solving skills complex analysis. 10. To understand power series. 11. To the way around Fourier series. 12. To get the grip on using Laplace transform. 13. To develop a good understanding of ODEs.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. Describe Complex environment. 2. Discuss derivative of Analytic Function. 3. Describe Exponential, Trigonometric and Hyperbolic Functions. 4. Explain Line Integral in the Complex Plane and Cauchy's Integral Formula. 5. Using power Series and how to expand a function 6. Identify elements of Fourier Series. 7. Identify elements of Laplace Transform. 8. Discuss different aspects of First-Order ODEs.

9. Identify Bernoulli Equation and Population Dynamics. 10. Discuss different aspects of Second-Order Linear ODEs.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Complex Numbers. Polar Form of Complex Numbers. Powers and Roots. Complex .variables	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
2	4		Complex Function. Derivative. Analytic Function. Cauchy–Riemann and Laplace's .Equation	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
3	4		Exponential, Trigonometric and Hyperbolic Functions. Euler's Formula. .Logarithm	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
4	4		Line Integral in the Complex Plane. Cauchy's Integral Formula. Derivatives of Analytic Functions	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Power Series. Functions Given .by Power Series		4	5
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Fourier Series. Arbitrary Period. Even and Odd Functions. Fourier Analysis for Periodic Functions. Fourier series Formula of a function. Differentiation and Integration of Fourier Series		4	6
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Laplace Transform. Transforms of Derivatives and Integrals. Table of Laplace Transforms. inverse Laplace transform		4	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Midterm Exam		4	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	First-Order ODEs. Separable ODEs. Exact ODEs. Integrating Factors. Linear ODEs. Bernoulli Equation. Population .Dynamics		4	9
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Second-Order Linear ODEs. Homogeneous. Homogeneous with Constant .Coefficients		4	10

Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Nonhomogeneous ODEs. Solution by Variation of .Parameters		4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Higher Order Linear ODEs. Homogeneous Linear ODEs. Homogeneous Linear ODEs with Constant Coefficients. Nonhomogeneous .Linear ODEs		4	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Power Series .solution of ODE		4	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Fourier Series .solution of ODE		4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Laplace Transform .solution of ODE		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	Advanced Engineering Mathematics ", Erwin " Kreyszig, Wiley, 10th edition (August 16, 2011), ISBN-13: 978-0470458365.
المراجع الرئيسية	Differential Equations for Engineers and Scientists", " Yunus Cengel, William Palm, McGraw Hill, 1st edition (January 31, 2012), ISBN-13: 978-0073385907).
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	https://www.coursera.org/learn/differential-equations-engineers

12. خطة تطوير المقرر الدراسي
This module will primarily focus on encouraging students to participate in the activities, as well as refining and developing their critical thinking skills. This will be achieved through lectures, tutorials, discussions, and grading activities.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Analog Communications - CET2204
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	6. Understanding the modulation and de-modulation 7. Viewing and knowledge Amplitude modulation and Frequency modulation. 8. Analyzing the advantage and disadvantage of AM over FM. 9. Analyzing the generation and detection each of AM and FM. 5. To develop problem solving skills and understanding of PM equations

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1.Recognize Basic Principles of modulation and de-modulation 2. Explain the Need for Modulation. 3. Define a Carrier Wave, Radio Frequency Spectrum, Sound and Radio Broadcasting 4. Identify Amplitude Modulation, Percent Modulation, Upper and Lower Sidebands 5. Explain Methods of Modulation. 6. Mathematical Analysis of a Modulated Carrier Wave 7. Discuss forms of Amplitude Modulation and Methods of

Amplitude Modulation. 8. Describe the Power Relation in an AM Wave. 9. Identify modulating Amplifier Circuit: AM- Transmitter & Radio Receiver Essential Parameter 10. Explain the AM generation of SSB, DSB-SC balanced modulators (Cowan &Ring).	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		MODULATION AND DEMODULATION: Forms of Amplitude Modulation , Methods of Amplitude Modulation	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Carrier Wave, Radio Frequency Spectrum, Sound, Radio Broadcasting	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Need for Modulation,	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Methods of Modulation:	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		Amplitude Modulation Percent Modulation, Upper and Lower Sidebands,	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		Mathematical Analysis of a Modulated Carrier Wave. Power Relation in an AM Wave,	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**		4	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Modulating Amplifier Circuit: AM- Transmitter		4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Radio Receiver Essential Parameter		4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Generation of SSB, DSB-SC Balanced Modulators :(Cowan &Ring) Demodulation of AM Signal: AM- Detector (Envelope & Synchronous		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Frequency Modulation: Modulation Index, Deviation Ratio , Percent Modulation, FM Side bands FM Receiver :FM Discriminator (Foster –Seeley &Ratio Detector),		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Modulation Index and Number of Side bands, Demodulation or Detection, Comparison between AM and FM, The Four Fields of FM		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	FM Generation (Direct& Indirect Method)		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Phase modulation (PM) Definition		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	PM equation and PM wave forms		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	Principles of Communication Systems By J.S.Chitode, First Edition-2007 Modern Digital and Analog Communication Systems ,By B.P.Lathi OXFORD
المراجع الرئيسية	Analog and Digital Communications, By Schaum Second Edition Data Communications and Networking, By Behrouz A. Forouzan, Fifth Edition
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Arabic Language2 - MTU1009
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	1. يتعرف على ماهية التعبير القرآني. 2. يتعلم القواعد النحوية المستعملة في التعبير القرآني، والأثر البلاغي والفني

	الذي يترتب على كيفية التعبير القرآني، وأن يفهم الطالب كيفية التحليل للنصوص القرآنية. 3. يتعرف على شخصية من أهم شخصيات الأدب والشعر العربي والعراقي، بدر شاكر السياب ، ومعرفة شعره. 4. يتعرف على علامات الإعراب الأصلية والفرعية ، ويتعلم استعملها في اللغة العربية ، ويفهم الفرق بين علامات الإعراب الفرعية والاصلية. 5. يتعلم الفرق بين الجمل الأسمية والفعلية ، ويتعرف على أنواع المبتدأ، وأنواع الخبر، ويفهم الفرق بينهما . 6. يتعرف عل إن واخواتها ، ويتعلم القواعد الخاصة بها. 7. يفهم الفرق بين إنَّ و أنَّ، وأنْو أنْ ، ويطبق ذلك عند استعمال كل منها في النصوص. 8. .يتعرف عل كان وأخواتها ، ويتعلم عمل كل منها في اللغة ، ويتمكن من استعمالها الصحيح في اللغة . 9. يتعرف على عمل الأفعال الخمسة ، وعلامات إعرابها ، ويستطيع استعمالها بشكل صحيح في الخطاب ، أو النص. 10. يتعرف على الأخطاء اللغوية ، ويتعلم تجنبها أثناء الكتابة. 11. يدرس معلومات لغوية : الأضداد والمرادفات ، والفرق اللغوية ، والمعاملات النحوية ، ويفهم الفرق بينها ، ويتمكن من تحليلها . 12. يتعلم إعراب المثنى . 13. يتعرف على أنواع الجموع، ويتعلم التفريق بينها ، ويفهم كيفية إعرابها. 14. يتعلم كيفية كتابة قواعد اللغة العربية في لوحة بيانية ، ويتمكن من تصويب الأخطاء اللغوية .

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. قدرة الطالب على فهم التعبير القرآني ، وتحليل النصوص. 2. القدرة على استخدام القواعد النحوية ، وفهم الأساليب البلاغية والقدرة على استعمالها. 3. معرفة الطالب لشخصية الشاعر والأديب بدر شاكر السياب ، وأهم أشعاره وآثاره. 4. القدرة على التمييز بين علامات الإعراب الأصلية والفرعية ، والقدرة على استعمالها في الخطاب ، أو النص. 5. قدرة الطالب على التمييز بين الجمل الأسمية والفعلية ، وقدرته على التمييز بين أنواع المبتدأ، والخبر ، وكيفية استعمال الجمل وإعرابها. 6. فهم الطالب لعمل إنَّ وأخواتها ، وقدرته على استعمالها بشكل صحيح في الجمل. 7. القدرة على التفريق بين أنَّ وإنَّ، وإنْ وأنْ، واستعمالها في مواضعها الصحيحة في النصوص. 8. القدرة على فهم عمل كان وأخواتها ، واستعمالها بشكل صحيح. 9. التمكن من معرفة و أعراب الأفعال الخمسة ، وكيفية استعمالها في الجمل. 10. القدرة على معرفة وتجنب الأخطاء اللغوية عند الكتابة. 11. معرفة إعراب المثنى . 12. القدرة على التمييز بين الجموع ، وكيفية إعرابها ، واستعمالها في الجمل.
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية					
الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		التعبير القرآني، نحويا من حيث تركيب الجملة والنص. بلاغيا من حيث التأثير الفني، والرجوع إلى المصدر (كتاب التعبير القرآني) للدكتور فاضل السامرائي .	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		التعبير القرآني، نحويا من حيث تركيب الجملة والنص. بلاغيا من حيث التأثير الفني، والرجوع إلى المصدر (كتاب التعبير القرآني) للدكتور فاضل السامرائي .	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		الشاعر بدر شاكر السياب.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		علامات الإعراب الأصلية:(الفتحة والضمة، والكسرة)، وعلامات الإعراب الفرعية :(الألف ، والواو، والياء).	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		الجمل الأسمية – المبتدأ والخبر ، وانواع المبتدأ ، وأنواع الخبر.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		أنَّ وأخواتها	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7	4		الفرق بين إنَّ وأنَّ ، وأنْ وإنْ.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8	4		كان وأخواتها.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

9	4		الأفعال الخمسة .	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
10	4		الأخطاء اللغوية الجزء (2)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
11	4		معلومات لغوية : المرادفات والاضداد، وفروق لغوية. ومعادلات نحوية.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
12	4		المثنى وإعرابه.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
13	4		المثنى وإعرابه.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
14	4		أنواع الجموع : جمع المذكر السالم- جمع المؤنث السالم- جمع التكسير .	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
15	4		هندسة النحو: قواعد اللغة العربية في لوحة تعليمية ، وتصويبات لغوية	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

11. البنية التحتية

الكتب المقررة المطلوبة	ملزمة اللغة العربية (المعممة من وزارة التعليم العالي والبحث العلمي)
المراجع الرئيسية	التعبير القرآني للدكتور فاضل السامرائي.
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

استراتيجيات التعلم والتعليم المستخدمة في مادة اللغة تشمل مجموعة متنوعة من النهج والتقنيات التي تعزز عملية التعلم للطلاب. من بين هذه الاستراتيجيات:

1. التفاعل النشط: يتم تشجيع الطلاب على المشاركة والمشاركة الفعالة في الدروس من خلال المناقشات الجماعية والأنشطة التفاعلية.
2. التعلم التعاوني: يشجع التعاون والتعاون بين الطلاب من خلال العمل الجماعي والمشاريع الجماعية، حيث يتعاون الطلاب مع

بعضهم البعض لتحقيق أهداف التعلم المحددة.

3. التطبيق العملي: يتم توفير فرص للطلاب لتطبيق المفاهيم والمهارات المكتسبة في سياقات عملية وواقعية، مما يعزز التفاعل الفعال مع المادة.
4. استخدام التقنيات الحديثة: يستفيد الطلاب من استخدام التكنولوجيا في عملية التعلم، مثل استخدام الحواسيب والإنترنت للبحث والتعلم الذاتي.
5. توفير ردود فعل فورية: يتم توفير ردود فعل فورية وتقييم مستمر للطلاب، سواء عن طريق التقييمات الشفهية أو الكتابية، مما يساعدهم على تحسين أدائهم وتطوير مهاراتهم.
6. التنويع في وسائل التواصل: يتم استخدام مجموعة متنوعة من وسائل التواصل والتعليم، مثل المحاضرات التوضيحية، والمناقشات الجماعية، والأنشطة العملية، والعروض التقديمية، لتلبية احتياجات وأساليب التعلم المختلفة للطلاب.
7. باستخدام هذه الاستراتيجيات، يتم تعزيز التفاعل والتعلم الفعال للطلاب، و

تحفيزهم على المشاركة واكتساب المعرفة والمهارات بشكل شامل وشيق.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Electronic Circuits - CET2205
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	20. This course deals with Third semiconductor or device, FET physical construction, biasing, configuration s , output and transfer characteristics 21. To understand the D.C biasing of BJT and circuit types , analysis and calculations of FET parameters 22. To understand and construct re FET modeling, and circuits analysis 23. To deal with small signal analysis of FET 24. Deals with Depletion-Type MOSFET , and Enhancement-Type MOSFETs and Combination ,and Design 6. Deals with Operational amplifiers (OP_AMP) their advantages, classifications and types and application circuits

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم

الأهداف المعرفية	25. To understand and discuss the third semiconductor device which is Transistor (Field Effect Transistor)(FET), Construction and Characteristics of JFETs 26. To Identify and Calculate And implement Transfer Characteristics of FET 27. To Identify and discuss Important Relationships 227 5.7 Depletion-Type MOSFET 228 5.8 Enhancement-Type MOSFET , MOSFET Handling , VMOS CMOS 28. To understand Depletion-Type MOSFETs Enhancement-Type MOSFETs 29. To identify and implement Combination Networks , Design P-Channel FETs Universal JFET Bias Curve . 30. To understand FET small signal Model, 31. To Identify, Calculate and analyses JFET Fixed-Bias Configuration , JFET Self-Bias Configuration , JFET Voltage-Divider Configuration , 32. To understand JFET Source-Follower (Common-Drain) Configuration , JFET Common-Gate Configuration , 33. To identify Depletion-Type MOSFETs, Enhancement-Type MOSFETs E-MOSFET Drain-Feedback Configuration, 34. To Understand and implement E-MOSFET Voltage-Divider Configuration, Designing FET Amplifier Networks. 35. To understand and identify Operational amplifiers (Introduction) , Differential and Common-Mode Operation 36. To understand Op-Amp, Practical Op-Amp Circuits , and Op-Amp Specifications 37. To identify DC Offset Parameters, Op-Amp Specifications and Frequency Parameters 38. To understand and identify OP AMP applications circuits. 39. To Analyze, calculate and implement Constant-Gain Multiplier, Voltage Summing , Voltage Buffer, Controller Sources Instrumentation Circuits ,and Active Filters
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction ,Field effect transistor FET, Introduction , CONSTRUCTION AND CHARACTERISTICS	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	TRANSFER CHARACTERISTICS, Applying Shockley's Equation, and short hand method		4	2
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	DEPLETION-TYPE MOSFET, Basic Construction, c Operation and Characteristics		4	3
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	p-Channel Depletion-Type MOSFET, ENHANCEMENT-TYPE MOSFET, Basic construction		4	4
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Enhancement MOSEFET Basic Operation and Characteristics, MOSFET HANDLING		4	5
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	FET DC. Biasing , FIXED-BIAS CONFIGURATION,		4	6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	FET SELF-BIAS CONFIGURATION, VOLTAGE-DIVIDER BIASING		4	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	DEPLETION-TYPE MOSFETs, ENHANCEMENT-TYPE MOSFETs. DESIGN		4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**		4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	FET SMALL-SIGNAL MODEL, Graphical Determination of gm, Mathematical Definition of gm		4	10

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	FET AC Equivalent Circuit, JFET VOLTAGE-DIVIDER CONFIGURATION, JFET SOURCE-FOLLOWER (COMMON-DRAIN) CONFIGURATION,		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	JFET COMMON-GATE CONFIGURATION, DEPLETION-TYPE MOSFETs, ENHANCEMENT-TYPE MOSFETs		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Operational amplifier, DIFFERENTIAL AND COMMONMODE OPERATIO, OP-AMP BASICS		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Operational amplifier applications		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Operational amplifier applications		4	15

11. البنية التحتية	
Electronic devices and circuit theory Poylested	الكتب المقررة المطلوبة
	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and

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

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Instrumentation and Measurement - CET2206
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	25. Identify and analyze factors affecting the performance of measuring systems and errors types and cause 26. Understand voltage and current measurements from a given circuit. 27. Choose appropriate instruments for the measurement of voltage, and current in ac and dc measurements 28. Describe the operating principle of DC and AC bridges 29. Identify Oscilloscopes, signal generators, and transducers

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	40. Explain the static characteristics of measuring systems. 41. Discuss problems related to measurement errors. 42. Explain the construction and working indicating Instruments. 43. Explain the principle of operation of the galvanometer. 44. Discuss the DC bridges- Wheatstone Bridge, Kelvin Bridge 45. Discuss the AC bridges, Capacitance Comparison Bridges, Maxwell's Bridge, Wein's bridge

46. Explain the Design of DC voltmeter and ammeter. 47. Describe Cathode Ray Tube Oscilloscope. 48. Identify High Bandwidth Digital Storage Oscilloscope. 49. Identify Spectrum Analyzer and BER Tester 50. Discuss Signal Generator. 51. Identify Arbitrary Waveform Generator Explain Transducers.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction - System of Units- Basics of Measurements	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Accuracy, Precision, Resolution	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Reliability, Repeatability, Validity	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Types of Errors	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		Errors analysis	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		Standard of Measurements	محاضرة نظرية + عملية	Reports, Projects, Quizzes,

Assignments					
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Bridge Measurement .DC bridges- Wheatstone Bridge, Kelvin Bridge		4	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	AC bridges, Capacitance Comparison Bridges, Maxwell's Bridge, Wein's bridge		4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**		4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Measuring of Basic Electrical Parameters- DC Voltmeter		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	DC Ammeter- Extension of DC Voltmeter and Ammeter Range		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Cathode Ray Tube Oscilloscope		4	12
Reports, Projects, Quizzes,	محاضرة نظرية + عملية	High Bandwidth		4	13

Assignments		Digital Storage Oscilloscope- Spectrum Analyzer - BER Tester			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Signal Generator - Arbitrary Waveform Generator		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Transducers		4	15

11. البنية التحتية	
Electronic Instrumentation and Measurements, David A Bell, PHI / Pearson Education.	الكتب المقررة المطلوبة
"Principles of measurement systems", John P. Beately, Pearson Education . Modern electronic instrumentation and measuring techniques", Cooper D & A D Helfrick, PHI	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
lecture and seminars will be used to explain the theory and principles of the module. Also, laboratory reports and mini-projects will be used. Quantitative instruments such as pre-test and post-test will be used to check students' conceptual knowledge

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Microprocessors - CET2203
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	30. To understand the basic operating concept of specific microprocessor. 31. To study the hardware architecture of specific microprocessor. 32. To encode programs based on the specific processor language. 33. To solve problems encountered in the architecture of a specific microprocessor

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	52. Identify the basic characteristic of specific processor 53. Define the processor signals and their functions 54. Explain the architecture from the hardware point of view 55. Identify various machine cycle. 56. Explain the memory different interfacing techniques with the microprocessor. 57. Explain the input output different interfacing techniques with the microprocessor. 58. Explain the concept of Stack memory. 59. List the addressing mode of the processor instruction. 60. Encode different program based on assembly. 61. Perform different arithmetic and logical operations using the processor instruction set. 62. Encode different problems associative with branching instructions. 63. Solve problem encountered with delay and counter.
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	

المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction - microprocessor evolution	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Basics specific microprocessor architecture and its specifications	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Microprocessor signals and machine cycle	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Memory organization, interfacing and memory map	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		Input devices interfacing, Output devices interfacing	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		**Midterm Exam**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7	4		Introduction to microprocessor assembly language and addressing mode	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8	4		Data transfer instruction	محاضرة نظرية + عملية	Reports, Projects, Quizzes,

Assignments					
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic instructions		4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	logical instruction		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Stack register , stack area and related instructions		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Branching instruction		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Delay and counters		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Interrupt concept and types		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Subroutine**		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	8085µp architecture and programming_Gonkar
المراجع الرئيسية	UNDERSTANDING 8085/8086 MICROPROCESSORS and PERIPHERAL ICs
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering

12. خطة تطوير المقرر الدراسي
The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Python Programming - CET2202
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 1 / سنة 1
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	34. Introduce students to the fundamental concepts and principles of Python programming language. 35. Develop students' proficiency in writing Python code and solving programming problems. 36. Familiarize students with essential programming constructs, such as variables, data types, control flow structures, and functions. 37. Provide students with a solid foundation in object-oriented programming (OOP) and its application in Python. 38. Enable students to work with various data structures and perform operations on them.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. Understand the fundamentals of Python programming language, including variables, data types, and basic operators. 2. Demonstrate proficiency in control flow structures, such as conditional statements and loops, to control program execution. 3. Develop functions and utilize function arguments to enhance code modularity and reusability. 4. Utilize exception handling techniques to effectively manage errors and ensure program robustness. 5. Gain familiarity with modules and packages to leverage existing code and extend Python's functionality. 6. Understand object-oriented programming (OOP) concepts and apply them to create classes, objects, and inheritance hierarchies. 7. Manipulate strings, lists, dictionaries, and sets to efficiently store and retrieve data.

8. Perform file handling operations, including reading from and writing to files. 9. Apply Python to practical tasks, such as web scraping, data manipulation, and analysis. 10. Demonstrate proficiency in working with files and directories, including navigating file systems and managing file permissions.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
	طرائق التعليم والتعلم
	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction to Python, Variables, Data Types, and Basic Operators	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Control Flow and Conditional Statements	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Loops and Iterations	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Strings and String Manipulation	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		Lists and List Manipulation	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		Dictionaries and Sets	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7	4		**Midterm Exam**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8	4		Functions and Function Arguments	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	File Handling and Input/Output Operations		4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Exception Handling and Error Management		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Modules and Packages		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Object-Oriented Programming (OOP) Concepts		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Classes and Objects		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Inheritance and Polymorphism		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Working with Files and Directories		4	15

11. البنية التحتية	
Title: "Python Crash Course: A Hands-On, Project-Based Introduction to Programming" Author: Eric Matthes	الكتب المقررة المطلوبة
Title: "Learning Python" Author: Mark Lutz	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
URL: https://realpython.com	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
Effective learning and teaching strategies involve creating an engaging and interactive learning environment. This can be achieved through a combination of various approaches, such as incorporating active learning techniques like group discussions, problem-solving activities, and hands-on experiments. Additionally, employing visual aids, multimedia resources, and real-world examples can enhance comprehension and retention. Encouraging student participation and providing timely feedback also play vital roles in fostering student engagement and understanding.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET3101/Operating Systems
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• This course includes the basic concepts of operating system components. • To develop problem-solving skills and understand process management, deadlocks, and synchronization. • To understand consists of memory management techniques. • This course deals with File system implementation. • It also includes a case study on the Linux operating system. • To understand the I/O device management principles. • To perform the disk Structure, Disk Scheduling (FCFS, SSTF, SCAN, CSCAN, LOOK, CLOOK), and Disk Formatting.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Should understand: hardware components that must be managed by an operating system. • Describe need and role of operating system. • The concept of a process, the process life cycle, process states and state transitions, process control blocks (PCBs)/process descriptors. • How processors transition between processes via context switching. How interrupts enable hardware to communicate with software. How processes converse with one another via interprocess communication (IPC). • The motivation for creating threads. The similarities and differences between processes and threads. The various levels of support for threads. The life cycle of a thread. Thread signaling and cancellation. • The challenges of synchronizing concurrent processes and threads. Critical sections and the need for mutual exclusion. how to implement mutual exclusion primitives in software • How monitors synchronize access to data. How condition variables

are used with monitors. Solutions for classic problems in concurrent programming such as readers and writers and circular buffer. • The problem of deadlock. The four necessary conditions for deadlock to exist. The problem of indefinite postponement. The notions of deadlock prevention, avoidance, detection and recovery. • Understand OS components such a scheduler, memory manager, file • System handlers and I/O device managers. • Analyze and criticize techniques used in OS components • Demonstrate and simulate algorithms used in OS components	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
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 An operating system that acts as an intermediary between the user of a computer and the computer hardware. The purpose of an operating system is to provide an environment in which a user can execute programs in a convenient and efficient manner.	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction to Operating Systems Operating System Architectures, Definition, Two views of operating system, Evolution of operating system, Types of OS	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
2	4		System Call, Handling System Calls, System Programs, Operating System Structures, The Shell, Open Source Operating Systems	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
3	4		Process vs Program, Multiprogramming, Process Model, Process States, Process Control	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments

		Block. Threads, Thread vs Process, User and Kernel Space Threads. Inter Process Communication, Race Condition, Critical Section			
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Implementing Mutual Exclusion: Mutual Exclusion with Busy Waiting (Disabling Interrupts, Lock Variables, Strict Alteration, Peterson's Solution, Test and Set Lock), Sleep and Wakeup, Semaphore, Monitors, Message Passing, Classical IPC problems: Producer Consumer, Sleeping Barber, Dining Philosopher Problem.		4	4
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Process Scheduling: Goals, Batch System Scheduling (First-Come First-Served, Shortest Job First, Shortest Remaining Time Next), Interactive System Scheduling (Round-Robin Scheduling, Priority Scheduling, Multiple Queues), Overview of Real Time System Scheduling.		4	5
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Introduction, Deadlock Characterization, Preemptable and Non-preemptable Resources, Resource – Allocation Graph, Conditions for Deadlock.		4	6
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	**Midterm Exam**	Midterm Exam	4	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Handling Deadlocks: Ostrich Algorithm, Deadlock		4	8

		prevention, Deadlock Avoidance, Deadlock Detection (For Single and Multiple Resource Instances), Recovery From Deadlock (Through Preemption and Rollback. Introduction, Monoprogramming vs. Multi-programming, Modelling Multiprogramming, Multiprogramming with fixed and variable partitions, Relocation and Protection. Memory management (Bitmaps & Linked-list), Memory Allocation Strategies.			
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Virtual memory: Paging, Page Table, Page Table Structure, Handling Page Faults, TLB's Page Replacement Algorithms: FIFO, Second Chance, LRU, Optimal, LFU, Clock, WS-Clock,		4	9
Mid exam	محاضرة + نظرية عملية	Concept of Segmentation: Need of Segmentation, its Drawbacks, Segmentation with Paging(MULTICS).		4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	File Overview: File Naming, File Structure, File Types, File Access, File Attributes, File Operations, Single Level, two Level and Hierarchical Directory Systems, File System Layout.		4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Implementing Files: Contiguous allocation, Linked List Allocation, Linked List Allocation using		4	12

		Table in Memory, Inodes. Directory Operations, Path Names, Directory Implementation, Shared Files			
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Free Space Management: Bitmaps, Linked List		4	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Classification of IO devices, Controllers, Memory Mapped IO, DMA Operation, Interrupts, Goals of IO Software, Handling IO(Programmed IO, Interrupt Driven IO, IO using DMA), IO Software Layers (Interrupt Handlers, Device Drivers) . Disk Structure, Disk Scheduling (FCFS, SSTF, SCAN, CSCAN, LOOK, CLOOK), Disk Formatting (Cylinder Skew, Interleaving, Error handling), RAID.		4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	History, Kernel Modules, Process Management, Scheduling, Inter-process Communication, Memory Management, File System Management Approaches, Device Management Approaches.		4	15

11. البنية التحتية	
Operating Systems (3rd Edition) 3rd Edition by Harvey M. Deitel (Author), Paul J. Deitel (Author), David R. Choffnes (Author)	الكتب المقررة المطلوبة
Operating System Concepts Essentials Tenth Edition Avi Silberschatz Peter Baer Galvin Greg Gagne	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)

المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET3102/Control Engineering Fundamentals
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	39. To define the control systems. 40. To develop mathematical models that accurately represent the behavior of the system 41. To simplify the representation of a control system. 42. To examine the system's behavior during the transient period and the steady state. 43. To design controllers that can manipulate the system or process to achieve desired objectives.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	64. Define the control system. 65. classify the different types of control systems. 66. Describe a physical system in terms of differential equations 67. Use Laplace Transform in solving differential equations of the Control System. 68. Derive Transfer Function for describing the work of servomotors. 69. Reduce a block diagram of multiple subsystems to a single block representing the Transfer Function of the system. 70. Understand steady state and transient time response analysis. 71. Find error Coefficients and steady-state error (e_{ss}) according to system type. 72. Find the time response of the 1st order system. 73. Find the time response of the 2nd order system. 74. Understand the effect of damping ratio ξ on 2nd order system. 75. Identify Transient response specifications. 76. Define PID controllers. 77. Reduce the effect of Steady-state error (e_{ss}) and settling time (T_s) on time response using PID controller.

الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	The main strategy that will be adopted in delivering this module focuses on fostering active student engagement during exercises, fostering the development of critical thinking skills, and encouraging participation. This will be accomplished through a combination of classroom instruction, interactive tutorials, and the inclusion of engaging experiments that involve sampling activities that capture students' interest. The aim is to refine and enhance students' critical thinking abilities while ensuring their active involvement in the learning process.
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction – Basics of Control Systems	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
2	4		Use of Laplace Transform in Control System	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
3	4		Mathematical Modelling of Control System: Electrical System	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
4	4		Mathematical Modelling of Control System: Translational Mechanical System	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
5	4		Mathematical Modelling of Control System: Rotational Mechanical System	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
6	4		Servomotors	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
7	4	Midterm Exam	Block Diagram Reduction	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
8	4		Mid-term Exam	محاضرة + نظرية عملية	Reports, Projects, Quizzes,

Assignments					
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Time Response Analysis of Control Systems		4	9
Mid exam	محاضرة + نظرية عملية	Analysis of Type 0, 1, and 2 systems		4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Transient Response Analysis		4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Analysis of 2^{nd} order system		4	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Transient response specifications		4	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	PID controllers		4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Rate feedback controller		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	• Control Systems Engineering, U.A. Bakshi and S.C. Goyal, 2007 Technical Publications. Modern Control Systems, R. Dorf and R. Bishop, 2011 Pearson Education
المراجع الرئيسية	Modern Control Engineering, K. Ogata, 2010 Pearson Education
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET3103/Digital Signal Processing
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	44. Demonstrate an understanding of basic discrete-time systems, linearity, time-invariance, stability, impulse response and discrete convolution. 45. Implement discrete time systems, recursive and nonrecursive realizations. 46. Perform Z transform and finding the inverse Z transform including its properties. 47. Demonstrate an understanding of frequency analysis of both continuous and discrete signals. 48. Demonstrate an understanding of frequency response of linear time invariant systems. 49. Demonstrate an understanding of discrete Fourier transform, its properties and applications. 50. Design FIR and IIR digital filters.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. State, prove and apply Shannon's sampling theorem 2. Relate signal to noise ratio (SNR) to number of samples averaged in signal sampling and averaging systems 3. Implement sampling of continuous time signals and reconstruct them from their samples by choosing appropriate parameters and functions. 4. Change the sampling rate of discrete-time signals, avoiding folding effects. 5. Describe the fundamental properties of linear time invariant systems. 6. Analyze signals and systems in the discrete time domain. 7. Compute the frequency response of linear and time-invariant discrete-time systems, implement decomposition into a minimum-phase system and an all-pass system, and describe generalized linear-phase systems. 8. Implement discrete-time systems using various structures.

9. Understand the importance of the discrete Fourier transform and algorithms for its fast computation. 10. Analyze discrete-time signals in the frequency domain, using the windowing method as well as the time-dependent discrete Fourier transform, and reconstruct the signal with the overlap-sum algorithm. 11. Write down, state the properties of, and apply Fourier Transforms in DSP systems 12. Analyze and implement systems in the field of Z transformation. 13. Design basic finite impulse response (FIR) and infinite impulse response (IIR) filters. 14.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
The main strategy that will be adopted in delivering this module focuses on fostering active student engagement during exercises, fostering the development of critical thinking skills, and encouraging participation. This will be accomplished through a combination of classroom instruction, interactive tutorials, and the inclusion of engaging experiments that involve sampling activities that capture students' interest. The aim is to refine and enhance students' critical thinking abilities while ensuring their active involvement in the learning process.	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Signals, Systems and signal processing Basic element of digital signal processing, Advantages of digital over analog signal processing, Classification of Signals	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		The Concept of frequency in Continuous and Discrete – time signals Continuous – time sinusoidal signals, Discrete – time sinusoidal signals, Harmonically related complex exponential.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Analog –to-digital and digital-to-analog conversions Sampling of analog signals,	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

		The sampling theorem, Quantization and conversion, Digital-to-analog conversion, Analog-to-digital conversion.			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Analysis of digital signals and systems.		4	4
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Convolution in discrete time systems		4	5
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Mid-term Exam		4	6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	DE convolution in discrete time systems		4	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Discrete-time systems Input/output description of systems, Block diagram representation of discrete-time systems, Classification of discrete-time system, Correlation of discrete-time signals, Properties of correlation.		4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Time domain to frequency domain conversion Discrete-Fourier transform		4	9
Mid exam	محاضرة نظرية + عملية	Fast-Fourier transform		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	The Z-transform Direct Z-transform		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Inverse Z-transform, Properties of the Z-transform.		4	12
Reports, Projects, Quizzes,	محاضرة نظرية + عملية	Analogue Filtering versus Digital filtering		4	13

Assignments					
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Design methods of FIR Filters		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Design Methods of IIR Filters		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	Sanjit K. Mitra, "Digital Signal Processing – A Computer Based Approach", Tata Mc Graw Hill, 2007.
المراجع الرئيسية	Digital Signal Processing by John Proakis & D. G. Manolakis, 4/E. Pearson, 2006.
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	https://www.youtube.com/watch?v=6dFnpz_AEyA&list=PL9567DFCA3A66F299

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET3104/Digital Controllers
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	51. To know the types of microcontrollers and its architecture 52. To understand the difference between the microcontroller and microprocessor 53. .dealing with the internal parts of microcontrollers 54. programming the PIC microcontrollers 55. connect the microcontrollers with peripherals to input and output the information 56. Implement interrupts in programs 57. Programming the PIC with the peripherals devices

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	15. Recognize how integrated circuits and microcontrollers works. 16. Known the advantages of using Microcontrollers and Microprocessors. 17. Summarize what is meant by a Peripheral Interface Controller. 18. Describe the PIC Microcontroller. 19. Known type and function of register and SFR in Microcontroller. 20. Explain the A/D (Analog-to-Digital) Converter. 21. Discuss Capture, Compare, and Pulse width modulation modules in PIC microcontrollers. 22. Define and implement interrupts in programs. 23. Explain serial communication systems. 24. Identify how the Oscillator works in an electric circuit. 25. Programming the microcontroller, outputting data/signals, reading data/signals, and character LCD. 26.Application projects of microcontrollers.

الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	The main strategy that will be adopted in delivering this module is to encourage students' participation in learning and developing their skills in microcontrollers and logic thinking, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and by considering the type of lab experiments involving assignments and project design activities that are interesting to the students.
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction to the microcontroller, the difference between MP and Microcontroller	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		The architecture of PIC Microcontroller	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		General Organization of PIC, Registers & Special Function registers	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Memory Units and CPU	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		I/O ports of the Microcontroller	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		Serial communication, Oscillator, and Timer/Counters	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7	4		Baud rate	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8	4		Programming the Microcontroller	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
9	4		**Midterm Exam**	محاضرة نظرية + عملية	Reports, Projects,

Quizzes, Assignments					
Mid exam	محاضرة نظرية + عملية	outputting data/signals, Reading data/signals , Character LCD		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	A/D converter & Analog Module		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	On-Chip CCP (Capture, Compare & PWM)		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Microcontroller Interrupts Programming		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	EEPROM Programming		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Application projects of Microcontroller		4	15

11. البنية التحتية	
PIC Microcontrollers: An Introduction to Microelectronics, Martin P. Bates. Teach Yourself PIC Microcontrollers, M. Amer Iqbal Qureshi	الكتب المقررة المطلوبة
Interfacing PIC Microcontrollers to Peripheral Devices:2011,	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET3105/Digital Communications
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	58. The aims to students in third stage to defined and understand the 59. Concepts and terminology used in digital communications 60. The advantage and disadvantage of each type of digital communication systems 61. Types of Digital modulation 62. Send multiple digital signals at the same time and how to retrieve it

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Describe of concepts and terminology used in digital communications • 2 -Explain the advantage and disadvantage of each type of digital communications systems • Identify types of digital modulation • Discuss the comparison between the types of digital systems and its advantages • work on digital systems and Describe the most suitable designs • Explain how can send more than a signal at the same time and how to retrieve it • analog signal into a digital signal converter (PCM) • Explain types of digital modulation ask , psk , fsk • Explain the modulation and demodulation of quadrature amplitude modulation

الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Signal types, General block diagram of digital communication	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Advantage and disadvantage of digital modulation, digital coding	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Sampling theorem, Pulse Amplitude Modulation (PAM),	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Pulse width and Pulse Position Modulation (PWM & PPM),	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		Time Division Multiplexing (TDM) , Pulse Code Modulation PCM),	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		Mid exam	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7	4		Noise Consideration in PCM, Limitation and Modifications of PCM	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8	4		Differential PCM (DPCM), Delta Modulation (DM),	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
9	4		Delta-Sigma Modulation	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Mid exam	محاضرة نظرية + عملية	Baseband modulation (Digital Modulation)		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Amplitude Shift Keying (ASK) [Modulation and demodulation].		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Frequency Shift Keying (FSK) [Modulation and demodulation],		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Phase Shift Keying (PSK) [Modulation, Coherent and Noncoherent Detection], Differential PSK.		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Quadrature Phase Shift Keying (QPSK)		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Signal types, General block diagram of digital communication		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	Haykin S., Introduction to Analog and Digital Communications, second edition, 2007. -
المراجع الرئيسية	Sarkar N., Elements of Digital Communications, first edition, 2003
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET3106/Real-Time Systems
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• To teach the students about Real-time scheduling and schedulable analysis. • To enable the students to Formally specify and verify the timing constraints • Design methods for real-time systems • Development and implementation of new techniques to advance the state-of-the-art real-time systems research.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• correctly and precisely reason about times, events, and action • list and reason about the sources of error and inexactitude in time interval measurement, execution time prediction, and scheduling • empirically estimate the accuracy of a real time clock • measure the execution time of a piece of code • empirically estimate the accuracy and overhead of a real-time scheduler • describe and apply commonly used abstract models and terminology for real-time scheduling and resource management • recognize, classify, and formulate the hard and soft timing requirements of a software system • select an appropriate software architecture and combination of scheduling techniques to satisfy a set of timing requirements • understand and apply the proofs of the fundamental theorems of deadline and fixed priority real-time scheduling • carry out schedulability analysis using deadline and fixed-priority approaches • implement a set of tasks with periodic and aperiodic timing requirements, using C threads and a

real-time variant of the Linux operating system • evaluate the suitability of an operating system for real-time applications • amplitude modulation	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
The main strategy that will be adopted in delivering this module focuses on fostering active student engagement during exercises, fostering the development of critical thinking skills, and encouraging participation. This will be accomplished through a combination of classroom instruction, interactive tutorials, and the inclusion of engaging experiments that involve sampling activities that capture students' interest. The aim is to refine and enhance students' critical thinking abilities while ensuring their active involvement in the learning process.	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		Introduction to RTs	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Hard Versus Soft Real-Time Systems	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		A Reference Model of Real-Time Systems	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Commonly Used Approaches to Hard Real-Time Scheduling	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		Clock-Driven Scheduling	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		Priority-Driven Scheduling of Periodic Tasks	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7	4		**Midterm Exam**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Scheduling Aperiodic and Sporadic Jobs in Priority-Driven Systems. Resources and Resource Access Control		4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Clock sync, timers, Kernels		4	9
Mid exam	محاضرة نظرية + عملية	RT in distributed Systems		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Scheduling in multi-processors		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Clock Sync.		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Hardware, timers, Kernels		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	RTOS		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Real Time data stores		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	Real-Time Systems, Jane W. S. Liu, 2000
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	• https://www.youtube.com/watch?v=yShUSwskUNA&list=PL1iLu2CSC9EU4mMByEhBp9CcYgAIiDs_v https://personal.utdallas.edu/~cxl137330/courses/fall13/RTS/RTS.html • http://www.cs.fsu.edu/~baker/realtime/syllabus.html#Objectives
12. خطة تطوير المقرر الدراسي	
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.	

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET3107/Parallel Computing
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• To understand the basic principles of parallel computing. • To demonstrate different types of parallel algorithms • To deal with the basic concept of parallel programming. • To evaluate the performance of the parallel programs. • To apply parallel programming for solving different problems.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Understand the fundamental concepts of parallel computing and its importance in modern computing systems. • Demonstrate knowledge of different parallel computing architectures and their characteristics. • Develop an understanding of parallel algorithms for specific computational tasks, such as sorting or graph algorithms. • Demonstrate proficiency in using parallel computing libraries and tools, such as OpenMP or MPI. • Analyze and evaluate the performance of parallel algorithms and programs. • Design and implement parallel algorithms using parallel programming models and frameworks. • Identify and overcome common challenges in parallel computing, such as load balancing and synchronization. • Utilize parallel computing techniques to solve computationally intensive problems efficiently. • Apply parallelization strategies to different types of applications, such as numerical simulations or data processing tasks.

• Optimize parallel programs through techniques like data partitioning and task scheduling. • Understand the impact of parallel computing on energy consumption and efficiency. • Explore advanced topics in parallel computing, such as parallel I/O or GPU programming.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
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.	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4		introduction of parallel computing	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4		Parallel Architectures	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4		Parallel Algorithms and Techniques	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4		Programming shared-address space systems	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4		Programming scalable systems	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4		Performance Analysis and Optimization	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7	4		Mid Term Exam	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8	4		Analytical modeling of program performance	محاضرة نظرية + عملية	Reports, Projects,

Quizzes, Assignments					
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Collective communication		4	9
Mid exam	محاضرة نظرية + عملية	Synchronization		4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Non-numerical algorithms (sorting, graphs)		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Numerical algorithms (dense matrix algorithms, sparse matrix algorithms)		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Performance measurement and analysis of parallel programs		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	GPU Programming		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Emerging Trends and Technologies		4	15

11. البنية التحتية	
• Using OpenMP: Portable Shared Memory Parallel Programming - Barbara (2008) Chapman, Gabriele Jost, Ruud van der Pas • Using MPI: Portable Parallel Programming with the Message-Passing Interface, (2014) 3rd Ed - William Gropp, Ewing Lusk, Anthony Skjellum • Programming Massively Parallel Processors: A Hands-on Approach, (2016) 3rd Ed. - David B. Kirk, Wen-mei W. Hwu	الكتب المقررة المطلوبة
• An Introduction to Parallel Computing, Design and Analysis of Algorithms, 2/e. Ananth Grama, Vipin Kumar, Anshul Gupta, and George Karypis. Addison-Wesley, 2003. Parallel Programming in C with MPI and OpenMP. Michael J. Quinn. McGraw Hill, 2004	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)
12. خطة تطوير المقرر الدراسي	
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.	

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Advanced Control Systems /CET3201
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	63. To define the stability analysis techniques applicable to control systems. 64. To develop problem-solving skills and an understanding of different stability criteria. 65. To understand the principles and conditions under which a system is stable or unstable. 66. To introduce students to stability margins, such as gain margin and phase margin. 67. To emphasize the importance of stability in feedback control systems. 68. To highlight the relationship between stability and system performance.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. Define poles and zeros of a transfer function. 2. Analyze the stability of the control system from the pole-zero plot. 3. Analyze the stability of the control system using Routh-Hurwitz criteria. 4. Identify the special cases of Routh's criterion. 5. Sketch the locus of roots in the s-plane as a parameter is varied. 6. Obtain G(s) H(s) from characteristic equation 7. Comment on the stability of the system based on the complete Root Locus. 8. Solve Root Locus problems. 9. Define the frequency response of a system. 10. Use the logarithmic scales. 11. Identify the standard factors of G(JW)H(JW). 12. Plot a graph of the system's frequency response using a Bode plot. 13. Comment on the stability of the system based on the Bode plot. 14. Obtaining the Transfer function from the Bode plot
الأهداف المهاراتية الخاصة	

بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1		Students will be able to convert and perform arithmetic operations between decimal, binary, and octal systems.	Number systems (decimal, binary, octal, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2		Students will be able to convert and perform operations using hexadecimal and BCD representations.	Number systems (hexadecimal, BCD, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3		Students will be able to convert between Excess-3, Gray, and binary codes and apply complements.	Number systems (excess-3, gray code, conversions, operations, complements)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4		Students will be able to identify and implement basic and universal logic gates.	Logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5		Students will be able to simplify logic expressions using Boolean algebra theorems.	Logic simplification (Boolean theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6		Students will be able to simplify logic expressions using DeMorgan's theorems.	Logic simplification (Demorgan’s theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7		Students will be able to simplify Boolean expressions using 2- and 3-variable Karnaugh maps.	Karnaugh maps(2-variables,3-variables,)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (4-variables (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 4-variable Karnaugh maps and don't-care condition.		8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (5-variables, (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care conditions.		9
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.		10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations	Students will be able to perform basic arithmetic operations using digital logic circuits.		11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (decoder, encoder)	Students will be able to analyze and implement basic decoder and encoder circuits.		12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (Multiplexer, Demultiplexer)	Students will be able to analyze and implement multiplexer and demultiplexer circuits.		13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (comparators)	Students will be able to analyze and design digital comparator circuits.		14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (code conversion)	Students will be able to design and implement basic digital code conversion circuits.		15

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	Modern Control Engineering, K. Ogata, 2010 Pearson Education
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	• Control Systems Engineering, U.A. Bakshi and S.C. Goyal, 2007 Technical Publications. 2. Modern Control Systems, R. Dorf and R. Bishop, 2011 Pearson Education
المراجع الالكترونية (مواقع	

الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Computer Network Fundamentals /CET3202
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	69. Understand the Basics of Networking: The module aims to provide students with a solid foundation in the fundamental concepts, principles, and components of computer networking. 70. Understand the purpose and importance of computer networks, network architectures, and network protocols. 71. Explore Network Infrastructure: The module aims to familiarize students with different types of networks, such as Local Area Networks (LANs) and Wide Area Networks (WANs). 72. Explore various network devices and technologies used in building and managing networks. 73. Network Addressing and Subnetting Skills: The module aims to enable students to comprehend IP addressing, subnetting, and related concepts. 74. Network Standards and Protocols: The module aims to introduce students to network standards and protocols established by organizations such as IEEE, IETF, and ISO

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	27. Explain the data communications, networking, protocols and standards, and networking models and how to create a data flow. 28. Understand the Data communications between remote parties can be achieved through a process called networking. 29. Understand the fundamental concepts and principles of computer networks, including network architectures, protocols, and models (such as OSI and TCP/IP). 30. Identify and describe the different network components and their functions, including routers, switches, firewalls, access points, and network cables.

31. Explain the relationship between data, which are created by a device, and electromagnetic signals, which are transmitted over a medium. 32. Explain the basics of network addressing, including IP addressing, subnetting, and the use of subnet masks. 33. Demonstrate knowledge of commonly used network protocols, such as IP, TCP, UDP, ICMP, and DNS, and understand their roles in network communication. 34. Analyze and describe different network topologies and architectures, including star, bus, ring, and mesh networks. 35. Understand the fundamentals of network security, including common threats, encryption techniques, firewalls, and best practices for securing networks. 36. Configure and troubleshoot basic network settings, including IP addressing, subnetting, and network connectivity. 37. Explain the importance of network standards and protocols in ensuring interoperability and compatibility in network environments. 38. Demonstrate an understanding of network performance factors and techniques for optimizing network performance, including bandwidth management and Quality of Service (QoS) implementation. 39. Apply critical thinking and problem-solving skills to analyze and troubleshoot common network issues, such as network connectivity problems and network performance degradation. 40. Work effectively as a team member in network-related activities, demonstrating communication and collaboration skills. Demonstrate practical skills in configuring and managing network devices, such as routers, switches, and wireless access points.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1		Students will be able to convert and perform arithmetic operations between decimal, binary, and octal systems.	Number systems (decimal, binary, octal, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Number systems (hexadecimal, BCD, conversions, operations)	Students will be able to convert and perform operations using hexadecimal and BCD representations.		2
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Number systems (excess-3, gray code, conversions, operations, complements)	Students will be able to convert between Excess-3, Gray, and binary codes and apply complements.		3
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)	Students will be able to identify and implement basic and universal logic gates.		4
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Logic simplification (Boolean theorem)	Students will be able to simplify logic expressions using Boolean algebra theorems.		5
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Logic simplification (Demorgan’s theorem)	Students will be able to simplify logic expressions using DeMorgan's theorems.		6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps(2-variables,3-variables,)	Students will be able to simplify Boolean expressions using 2- and 3-variable Karnaugh maps.		7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (4-variables (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 4-variable Karnaugh maps and don't-care condition.		8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (5-variables, (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care conditions.		9
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.		10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations	Students will be able to perform basic arithmetic operations using digital logic circuits.		11

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (decoder, encoder)	Students will be able to analyze and implement basic decoder and encoder circuits.		12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (Multiplexer, Demultiplexer)	Students will be able to analyze and implement multiplexer and demultiplexer circuits.		13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (comparators)	Students will be able to analyze and design digital comparator circuits.		14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (code conversion)	Students will be able to design and implement basic digital code conversion circuits.		15

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	" TCP/IP Protocol Suite" Fourth Edition Behrouz A. Forouzan
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	"Data Communications and Networking", Fourth Edition by Behrouz A. Forouzan
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Database Systems /CET3203
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	75. To learn the theory of the database. 76. To understand The Entity Relationship Model. 77. To Introduce SQL and SQL and relational database concepts. 78. To understand the Constraints imposed in a database. 79. Learn about Boolean Operators in SQL. 80. Learn about Normalization of a database. 81. Learn about Storage and Query Processing, transaction, and recovery.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. To learn the theory of the database. 2. To understand The Entity Relationship Model. 3. To Introduce SQL and SQL and relational database concepts. 4. To understand the Constraints imposed in a database. 5. Learn about Boolean Operators in SQL. 6. Learn about Normalization of a database. Learn about Storage and Query Processing, transaction, and recovery.
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1		Students will be able to convert and perform arithmetic operations between decimal, binary, and octal systems.	Number systems (decimal, binary, octal, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2		Students will be able to convert and perform operations using hexadecimal and BCD representations.	Number systems (hexadecimal, BCD, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3		Students will be able to convert between Excess-3, Gray, and binary codes and apply complements.	Number systems (excess-3, gray code, conversions, operations, complements)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4		Students will be able to identify and implement basic and universal logic gates.	Logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5		Students will be able to simplify logic expressions using Boolean algebra theorems.	Logic simplification (Boolean theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6		Students will be able to simplify logic expressions using DeMorgan's theorems.	Logic simplification (Demorgan’s theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7		Students will be able to simplify Boolean expressions using 2- and 3-variable Karnaugh maps.	Karnaugh maps(2-variables,3-variables,)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8		Students will be able to simplify SOP and POS expressions using 4-variable Karnaugh maps and don't-care condition.	Karnaugh maps (4-variables (SOP, POS, don’t care))	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
9		Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and	Karnaugh maps (5-variables, (SOP, POS, don’t care))	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

			don't-care conditions.		
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.		10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations	Students will be able to perform basic arithmetic operations using digital logic circuits.		11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (decoder, encoder)	Students will be able to analyze and implement basic decoder and encoder circuits.		12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (Multiplexer, Demultiplexer)	Students will be able to analyze and implement multiplexer and demultiplexer circuits.		13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (comparators)	Students will be able to analyze and design digital comparator circuits.		14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (code conversion)	Students will be able to design and implement basic digital code conversion circuits.		15

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	Book#1: C. J. Date, "Introduction to Database Systems", 8th Ed. Publisher: Addison-Wesley, 2003 Book#2: Ramez Elmasri, Shamkant B. Navathe, " Fundamentals of Database Systems",7th Ed. Publisher: Pearson, 2016.
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	1. Reference#1: A. Silberschatz, H. F.Korth, and S. Sudarshan, "Database System Concepts", 5th Ed. McGraw-Hill (2006). • Reference#2: Database Systems the Complete Book by H. Garcia-Molina and et al. Prentice Hall; 2nd Edition
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Engineering Analysis /CET3204
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	This course aims to provide students with a fundamental understanding of basic and advanced engineering analysis techniques, including engineering components and systems.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	41. Introduce the students to the theory and application of Laplace transform. 42. Give students an understanding of the time and frequency domain with different functions. 43. Get better in powered circuit analysis with applications and practical examples of matrix in Matlab. 44. Introduce the z-transform, which is the generalisation of the Laplace transform to discrete-time systems. 45. Provide students with a fundamental understanding of basic and advanced statistical techniques. 46. Provide students with a fundamental understanding of statistical measurements and graphs. 47. Provide an introduction to the method, tools and ideas of numerical computation, including the bisection method, false position method, and Newton-Raphson method. 48. Use numerical methods for solving algebraic and transcendental equations and solutions of linear and non-linear simultaneous equations. 49. Understand the basic theory of the numerical solution of ordinary differential equations. 50. Be familiar with the theorem that is related to matrices and its applications to analysis of the electronic circuits. 51. Learning the method of solving complicated equations. 52. Applying all of the above outcomes practically using Matlab.
الأهداف المهاراتية الخاصة بالمقرر	

الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1		Students will be able to convert and perform arithmetic operations between decimal, binary, and octal systems.	Number systems (decimal, binary, octal, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2		Students will be able to convert and perform operations using hexadecimal and BCD representations.	Number systems (hexadecimal, BCD, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3		Students will be able to convert between Excess-3, Gray, and binary codes and apply complements.	Number systems (excess-3, gray code, conversions, operations, complements)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4		Students will be able to identify and implement basic and universal logic gates.	Logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5		Students will be able to simplify logic expressions using Boolean algebra theorems.	Logic simplification (Boolean theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6		Students will be able to simplify logic expressions using DeMorgan's theorems.	Logic simplification (Demorgan’s theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7		Students will be able to simplify Boolean expressions using 2- and 3-variable Karnaugh maps.	Karnaugh maps(2-variables,3-variables,)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8		Students will be able to simplify SOP and	Karnaugh maps (4-	محاضرة نظرية + عملية	Reports, Projects,

Quizzes, Assignments		variables (SOP, POS, don’t care))	POS expressions using 4-variable Karnaugh maps and don't-care condition.		
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (5-variables, (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care conditions.		9
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.		10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations	Students will be able to perform basic arithmetic operations using digital logic circuits.		11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (decoder, encoder)	Students will be able to analyze and implement basic decoder and encoder circuits.		12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (Multiplexer, Demultiplexer)	Students will be able to analyze and implement multiplexer and demultiplexer circuits.		13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (comparators)	Students will be able to analyze and design digital comparator circuits.		14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (code conversion)	Students will be able to design and implement basic digital code conversion circuits.		15

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	**Higher Engineering Mathematics by Dr. B.S. Grewal**
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	• **An introduction to Numerical analysis by David F. Mayers**
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	**Data Communications** /CET3205
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	The aims to students in third stage to defined and understand the Digital Modulation Synchronization Line Codes Spread Spectrum Systems Satellite Communication

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1- Describe digital communications modulation and Explain the modulation and demodulation of quadrature amplitude modulation 2 -Explain the advantage and disadvantage of each type of digital communications systems 4- Discuss the comparison between the types of digital systems and its advantages 5- Explain Synchronization 6- Describe Spread Spectrum Systems 7- Explain types Satellite Communication 8-Describe the Advantages and Applications of Microwaves 53. Applying all of the above outcomes practically using Matlab.
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

طريقة التقييم	طريقة التعلم	اسم الموضوع	مخرجات التعلم	الساعات	الاسبوع
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Number systems (decimal, binary, octal, conversions, operations)	Students will be able to convert and perform arithmetic operations between decimal, binary, and octal systems.		1
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Number systems (hexadecimal, BCD, conversions, operations)	Students will be able to convert and perform operations using hexadecimal and BCD representations.		2
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Number systems (excess-3, gray code, conversions, operations, complements)	Students will be able to convert between Excess-3, Gray, and binary codes and apply complements.		3
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)	Students will be able to identify and implement basic and universal logic gates.		4
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Logic simplification (Boolean theorem)	Students will be able to simplify logic expressions using Boolean algebra theorems.		5
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Logic simplification (Demorgan’s theorem)	Students will be able to simplify logic expressions using DeMorgan's theorems.		6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps(2-variables,3-variables,)	Students will be able to simplify Boolean expressions using 2- and 3-variable Karnaugh maps.		7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (4-variables (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 4-variable Karnaugh maps and don't-care condition.		8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (5-variables, (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care conditions.		9

Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.		10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations	Students will be able to perform basic arithmetic operations using digital logic circuits.		11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (decoder, encoder)	Students will be able to analyze and implement basic decoder and encoder circuits.		12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (Multiplexer, Demultiplexer)	Students will be able to analyze and implement multiplexer and demultiplexer circuits.		13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (comparators)	Students will be able to analyze and design digital comparator circuits.		14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (code conversion)	Students will be able to design and implement basic digital code conversion circuits.		15

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	**Sarkar N., Elements of Digital Communications, first edition, 2003**
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	**Data Communications and Networking, Fourth Edition by Behrouz A. Forouzan**
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Digital Image Processing /CET3206
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	1. To become familiar with digital image fundamentals 2. To get exposed to simple image enhancement techniques in Spatial and Frequency domain. 3. To learn concepts of degradation function and restoration techniques. 4. To study the image segmentation and representation techniques. To become familiar with image compression and recognition methods

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	54. Know and understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms. 55. describe features of images. 56. Have a good understanding of the mathematical foundations for digital manipulation of images. 57. Operate on images using the techniques of smoothing, sharpening and enhancement. 58. image acquisition; preprocessing; segmentation; Fourier domain processing, compression and 59. analysis. 60. Be able to write programs using Matlab language for digital manipulation of images; image 61. Understand the restoration concepts and filtering techniques. 62. Be able to understand the documentation for, and make use of, the MATLAB library and MATLAB. 63. Acquisition; preprocessing; segmentation; Fourier domain processing; and compression. 64. Learn and understand the Image Enhancement in the Spatial Domain. 65. Learn and understand the Image Enhancement in the Frequency Domain. 66. Learn the basics of segmentation, features extraction, compression and recognition methods for color models.
الأهداف المهاراتية الخاصة	

بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1		Students will be able to convert and perform arithmetic operations between decimal, binary, and octal systems.	Number systems (decimal, binary, octal, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2		Students will be able to convert and perform operations using hexadecimal and BCD representations.	Number systems (hexadecimal, BCD, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3		Students will be able to convert between Excess-3, Gray, and binary codes and apply complements.	Number systems (excess-3, gray code, conversions, operations, complements)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4		Students will be able to identify and implement basic and universal logic gates.	Logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5		Students will be able to simplify logic expressions using Boolean algebra theorems.	Logic simplification (Boolean theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6		Students will be able to simplify logic expressions using DeMorgan's theorems.	Logic simplification (Demorgan’s theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7		Students will be able to simplify Boolean expressions using 2- and 3-variable Karnaugh maps.	Karnaugh maps(2-variables,3-variables,)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (4-variables (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 4-variable Karnaugh maps and don't-care condition.		8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (5-variables, (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care conditions.		9
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.		10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations	Students will be able to perform basic arithmetic operations using digital logic circuits.		11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (decoder, encoder)	Students will be able to analyze and implement basic decoder and encoder circuits.		12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (Multiplexer, Demultiplexer)	Students will be able to analyze and implement multiplexer and demultiplexer circuits.		13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (comparators)	Students will be able to analyze and design digital comparator circuits.		14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (code conversion)	Students will be able to design and implement basic digital code conversion circuits.		15

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	**Fundamentals of Digital Image Processing, Anil.K.Jain – ,Pearson Education-2003**
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	**Rafael C. Gonzalez, Richard E. Woods, _Digital Image Processing‘, Pearson, Third Edition, 2010.**
المراجع الالكترونية (مواقع الانترنت)	https://www.youtube.com/watch?v=6dFnpz_AEyA&list=PL9567DFCA3A66F299

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	IoT Fundamentals /CET3207
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	1. To understand the basic principles of the Internet of Things. 2. To study the relationship between IoT and M2M. 3. To deal with using Arduino for IoT implementation. 4. To deal with using Raspberry Pi for IoT implementation. 5. To apply IoT solutions in different fields.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1. Understand the basic concepts, architecture, and components of the Internet of Things (IoT). 2. Identify and describe the various networking technologies and protocols used in IoT systems, such as Wi-Fi, Bluetooth, Zigbee, and MQTT. 3. Explain the role of sensors, actuators, and embedded systems in IoT applications. 4. Gain knowledge of different IoT platforms and frameworks for developing IoT solutions. 5. Demonstrate proficiency in designing and implementing simple IoT applications using Arduino boards. 6. Gain knowledge of using Python with the IoT platforms. 7. Demonstrate proficiency in designing and implementing simple IoT applications using Raspberry Pi boards. 8. Understand the principles of data communication and data management in IoT systems, including data collection, storage, and analysis. 9. Evaluate the impact of IoT on various industries, such as healthcare, transportation, agriculture, and smart cities. 10. Develop skills in integrating IoT devices and systems with cloud platforms and web services. 11. Apply IoT technologies to solve real-world problems and develop innovative IoT applications. 12. Collaborate effectively in teams to design and implement IoT projects or case studies.
الأهداف المهاراتية الخاصة بالمقرر	

الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1		Students will be able to convert and perform arithmetic operations between decimal, binary, and octal systems.	Number systems (decimal, binary, octal, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2		Students will be able to convert and perform operations using hexadecimal and BCD representations.	Number systems (hexadecimal, BCD, conversions, operations)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3		Students will be able to convert between Excess-3, Gray, and binary codes and apply complements.	Number systems (excess-3, gray code, conversions, operations, complements)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4		Students will be able to identify and implement basic and universal logic gates.	Logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5		Students will be able to simplify logic expressions using Boolean algebra theorems.	Logic simplification (Boolean theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6		Students will be able to simplify logic expressions using DeMorgan's theorems.	Logic simplification (Demorgan’s theorem)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7		Students will be able to simplify Boolean expressions using 2- and 3-variable Karnaugh maps.	Karnaugh maps(2-variables,3-variables,)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8		Students will be able to simplify SOP and	Karnaugh maps (4-	محاضرة نظرية + عملية	Reports, Projects,

Quizzes, Assignments		variables (SOP, POS, don’t care))	POS expressions using 4-variable Karnaugh maps and don't-care condition.		
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Karnaugh maps (5-variables, (SOP, POS, don’t care))	Students will be able to simplify SOP and POS expressions using 5-variable Karnaugh maps and don't-care conditions.		9
Mid exam		Midterm exam	Students will be assessed on the topics covered in Weeks 1–9.		10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations	Students will be able to perform basic arithmetic operations using digital logic circuits.		11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (decoder, encoder)	Students will be able to analyze and implement basic decoder and encoder circuits.		12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (Multiplexer, Demultiplexer)	Students will be able to analyze and implement multiplexer and demultiplexer circuits.		13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (comparators)	Students will be able to analyze and design digital comparator circuits.		14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Arithmetic operations (code conversion)	Students will be able to design and implement basic digital code conversion circuits.		15

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	• "The Internet 'of Things: Enabling Technologies, Platforms, and Use Cases", by Pethuru Raj and Anupama C. Raman (CRC Press) Vijay Madisetti, Arshdeep Bahga, “Internet of Things: A Hands-On Approach”
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	Beginning Sensor networks with Arduino and Raspberry Pi – Charles Bell, Apress,

المراجع الالكترونية (مواقع الانترنت)	Cisco Netacad course " Introduction to IoT" Learn Key Concepts With Introduction To IoT Course | Networking Academy (netacad.com)

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4101 / Information Theory and coding
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	82. To develop problem solving skills and understanding of information theory through the application of techniques. 83. To understand the information representation. 84. This course deals with the basic concept of source coding. 85. To represent the information depending on the probabilities of events. 86. To compress the data by various types of compression. 87. To detect and correct the errors using channel coding methods.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	67. Having a skill to calculate the probability of any event. 68. Modeling the information transmission system. 69. Defined the information of noisy channel and posteriori probabilities. 70. Representation the information source based on Shannon . 71. Measure the information using entropies. 72. Represent various types of channel model. 73. Measure the entropy for various distribution methods. 74. Having a skill of modeling various types of channels as a matrix.

	75. Measure the capacity of various types channels. 76. Improve the data rate using various types of source code algorithms. Having a basic skill of error detection and corrections
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Having a skill to calculate the probability of any event. Having a basic skill of error detection and corrections	Review of related probability and statistics related topics.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
2	4	Improve the data rate using various types of source code algorithms.	Model of information transmission system. Common sense definition of information Logarithmic measure of information. Self-information.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
3	4	Measure the capacity of various types channels.	Shannon representation diagram of information source. Parameters of discrete channel.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
4	4	Having a skill of modeling various types of channels as a matrix.	Average information (entropy) of a discrete and continuous source, maximum source entropy. Source	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments

		efficiency			
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Transition probability matrix of channel, discrete noiseless and noisy channel models, uniform 4channel. Ternary symmetric channel.	Modeling the information transmission system.	4	5
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Information transmission over symmetric channel, noiseless channel, binary symmetric channel, ternary symmetric channel.	1. Measure the entropy for various distribution methods.	4	6
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Memory and memory less information channels .Binary Erasure channel (BEC).	Represent various types of channel model.	4	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Capacity of discrete channel, channel capacity for noiseless channel. Channel efficiency and redundancy. Channel capacity for symmetric channels.	Measure the information using entropies.	4	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Sampling of continuous source. Sampling Theorem. Nyquist theorem for transmission over band	Representation the information source based on Shannon .	4	9

		limited continuous channel. Shannon-Hartly channel capacity theorem.			
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	**Midterm Exam**	Defined the information of noisy channel and posteriori probabilities.	4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Source encoding; fixed and variable length codes. Prefix property. Average length of source code. Source code efficiency and redundancy. Fano coding, Shannon- Fano methods.		4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Huffman code, data compression		4	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Channel Coding in Digital Communication Systems. Forward Error Correction (FEC)		4	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Block codes. Cyclic Redundancy Check (CRC)		4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Repetition Codes, Single Parity Check Codes		4	15

11. البنية التحتية

الكتب المقررة المطلوبة	Thomas M. Cover, Joy A. Thomas, Elements of Information Theory, John Wiley & Sons, Inc. 1991
المراجع الرئيسية	Coding Theory: Algorithms, Architectures, and Applications, Andreu Neubbauer, John Wiley & Sons, 2007
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Computer Networks Protocols / CET4102
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	88. Prepare network engineers who can prepare and design all types of networks. 89. This course teaches modern and advanced curricula in the field of computer networks. 90. Providing high-quality modern research that can be applied in the field of computer networks and the Internet. 91. Provides appropriate solutions to the problems of design and installation of networks and choose the best protocols.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	77. Enable the students to apply their knowledge and skills in the field of computer networks to find practical solutions to any problems in this field and to be able to make appropriate decisions in the field of work. 78. Summarize the OSI model with all functions and objectives. 79. Discuss the protocols of each layer and its function and work. 80. Describe the network algorithms in the entire OSI model. 81. Describe the errors in networking communication. 82. Identify the solution for routing and forwarding in the network. 83. Discuss the explain the security of the network. 84. Discuss the protocols that deal with routing and security. 85. Explain the TCP/IP model and its relationship with the OSI model Analyze, discuss, and use Network test results in the design and evaluation topology processes.
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	

المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Describe the errors in networking communication	Protocol Hierarchies in OSI model: (Application layer, presentation layer, session layer, transport layer, network layer, datalink layer. Physical layer) basics. PDU	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4	Describe the network algorithms in the entire OSI model.	Physical Layer Protocols, Protocol Design Issues, Transmission, and Multiplexing Protocol Functionality, Layering, and Framework (SP3)	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4	Enable the students to apply their knowledge and skills in the field of computer networks to find practical solutions to any problems in this field and to be able to make appropriate decisions in the field of work.	Link layer: Services Provided by the Link Layer, Multiple Access Links and HDLC Protocols, Taking-turns protocols,	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4	Discuss the protocols of each layer and its function and work.	Link layer Error control and flow control algorithms MAC Protocols (Ethernet, DSL,	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

		ISDN, FDDI) ; CSMA/CD			
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	**Link layer:** Types of errors, Checksum algorithms CRC, MAC, Switch, ARP, L2TP, PPP **Network Layer** Protocols, Concepts, and Routing Algorithms.		4	5
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	**Network Layer Protocols -** OSPF routing, EIGRP routing Rip, BGP, ICMP, DHCP	. Discuss the protocols that deal with routing and security	4	6
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	**Midterm Exam**	Summarize the OSI model with all functions and objectives.	4	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Network Protocols: RIP, BGP, ICMP, and DHCP. **Network layer components** Routing Algorithms (LS, DV)	Discuss the explain the security of the network.	4	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	IP (Internet Protocol), IP Datagram Fragmentation IPv4, IPv6, IPsec	Analyze, discuss, and use Network test results in the design and evaluation topology processes.	4	9
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Transport Layer Protocols Design Congestion Control, Flow Control- Services	Explain the TCP/IP model and its	4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	MUX, DMUX, Connectionless, Connection Oriented. TCP/UDP Analysis and	. relationship with the OSI model	4	11

		Implementation			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Presentation Protocols:** Security Protocols (SSL, SSH)		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Application Layer Protocols (Architecture, services)		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Protocols: WWW (HTTP, HTTPs, FTP, DHCP,)		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**TCP/ IP Model & Protocols Stack** Electronic Mail Protocols (SMTP, POP) DNS, Telnet protocols		4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	: **Computer Networking A Top Down Approach.** **Author :** James F. Kurose, Keith W. ross **Edition/Publisher/year :** 6th ,7th edition /Pearson 2013,2018
المراجع الرئيسية	Internetworking with TCP/IP Author : Douglas E. corner
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	https://www.coursera.org/browse/physical-science-and-engineering/
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Mobile Communications / CET4103
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	150 ساعة
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	It is aimed at students on the fourth stage definition - Concepts and terminology used in cellular systems - The study of developments in the generation cellular system - How to design cells - How to cover all the cell by signal and at all spaces - Types of modulation signal in Cellular Communications - Wireless systems construction, design and processing of interference signals - explain Multiple Access Techniques

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	1- Identify concepts and terms used in cellular systems 2- Explain the signal analysis and how coverage in each cell 3- compare between all generations and how they evolve 4 Explain the internal structural study of the cells 5- Discuss the Hand off Strategies 6- Design cellular system 7- Discuss the how to cover the signal to all the cells 8- Explain how can small number of channels can accommodate large number of random users 9- Design, planning and analysis of the signals for sending and receiving 10 explain Modulate a digital signal and demodulation as Multiple Access

الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Identify concepts and terms used in cellular systems	Evolution of mobile communications, Mobile Radio System around the world	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4	Explain the signal analysis and how coverage in each cell	Types of Wireless communication System	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4	- compare between all generations and how they evolve	Trend in Cellular radio and personal communication, 1st , 2nd ,3rd 4th ,5th generations	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4	Explain the internal structural study of the cells	Cellular system, Hexagonal geometry cell and concept of	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4	explain Modulate a digital signal and demodulation as Multiple Access	frequency reuse, Channel Assignment Strategies Distance to frequency reuse ratio	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	4	Design, planning and analysis of the signals for sending and receiving	Channel & co-channel interference reduction factor,	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
7	4	Explain how can small number of channels can accommodate large number of random users	S/I ratio consideration and calculation for Minimum Co-channel and adjacent interference	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**	Discuss the Hand off Strategies	4	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Handoff Strategies .Trucking and Grade of Service,	Discuss the how to cover the signal to all the cells	4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Improving Coverage & Capacity in Cellular System-cell splitting, Cell sectorization	Design cellular system	4	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Free Space Propagation loss equation, Path-loss of NLOS and LOS systems,		4	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Link budget design		4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Frequency Division Multiple Access (FDMA). Time Division Multiple Access (TDMA).		4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Wi-Fi, WiMAX, ZigBee Networks		4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Software Defined Radio, UWB Radio		4	15

11. البنية التحتية	
- Mischa Schwartz, Mobile Wireless Communications, Cambridge University Press 2005	الكتب المقررة المطلوبة
- J. G. Proakis, Digital Communications, 4th ed. NY: McGraw Hill, 2000	المراجع الرئيسية
	المراجع التي يوصى

بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Engineering Management /CET4104
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	92. Knowledge of the main concepts and elements of project management. 93. Knowing the ways to draw network diagrams for projects 94. Knowledge and understanding of the linear programming process for engineering projects 95. Knowing the methods of calculating the cost per unit of production and finding the break-even point. 96. Knowing the Economics for the engineers. 97. To understand the Productivity.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	86. List the element of engineering management. 87. Define the Economics for the engineers 88. Drawing the Gantt Chart. 89. Knowing how to draw network diagrams for the project. 90. Knowledge of project critical path finding, project total tolerance, early and late start, the early and late end of the activities in the project. 91. Define Project Evaluation and Review Technique (PERT). 92. Identify standard deviation and variants. 93. Crashing of project network. 94. Knowing and understanding the Linear programming: graphical method 95. Knowing, understanding linear programming: simplex method.

	96. Knowing, understanding and drawing the break-even point of the project. Knowing the Productivity
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3	List the element of engineering management.	**Introduction of management**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	3	Knowledge of project critical path finding, project total tolerance, early and late start, the early and late end of the activities in the project. Crashing of project network	**Economics for the engineers**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	3	Identify standard deviation and variants.	**Gantt Chart**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	3		**Networks**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	3	Define Project Evaluation and Review Technique (PERT).	**Critical path method(CPM)**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
6	3	Knowing, understanding and drawing the break-even point of the project.	**Mid-term Exam**	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Pert technique(Time-Cost)**	Define the Economics for the engineers . Knowing, understanding linear programming: simplex method. Knowing the Productivity	3	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Linear programming: graphical method**	Knowing and understanding the Linear programming: graphical method	3	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Linear programming: simplex method**	Knowing how to draw network diagrams for the project.	3	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**The break-even point**	Drawing the Gantt Chart.	3	10
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Productivity**		3	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية			3	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية			3	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية			3	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية			3	15

11. البنية التحتية	
الكتب المقررة المطلوبة	J.R. Meredith and S.J. Mantel "Project Management", J. Wiley & Sons, 1995.
المراجع الرئيسية	Y. Bakouros and V. Kelessidis "Project management" INNOREGIO: dissemination of innovation and knowledge management techniques, January 2000
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Artificial Intelligence /CET4105
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	1- Provides a comprehensive introduction to artificial intelligence (AI) and neural networks. 2- Learn the fundamentals of AI, including problem-solving, reasoning, knowledge representation, and machine-learning techniques. 3- Study the various types of neural networks and their architectures.

4- Demonstrate the applications in real-world scenarios. Gain hands-on experience in implementing and training neural networks using popular frameworks and tools	

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
1- Understand the principles and theories underlying artificial intelligence. 2- Explain the concepts of machine learning, including supervised, unsupervised, and reinforcement learning. 3- Demonstrate proficiency in programming languages commonly used in AI and neural network applications. 4- Understand the fundamental concepts and principles of artificial neural networks (ANNs). 5- Explain the architecture and components of different types of ANNs, 6- Design and implement neural network architectures for various tasks, such as classification, regression, and pattern recognition. 7- Train and optimize neural networks using appropriate algorithms and techniques. 8- Evaluate and compare the performance of different neural network models using appropriate evaluation metrics. 9- Understand the limitations and challenges associated with training and deploying neural networks. 10- including feedforward, recurrent, and convolutional neural networks. 11- Optimize ANNs using appropriate algorithms and techniques, such as gradient descent and backpropagation. Explore the applications of ANNs in different fields.	الأهداف المعرفية
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
	طرائق التعليم والتعلم
	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3	Understand the principles and	Introduction to Artificial Intelligence	محاضرة نظرية + عملية	Reports, Projects, Quizzes,

Assignments			theories underlying artificial intelligence.		
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Machine Learning Fundamentals	Explain the concepts of machine learning, including supervised, unsupervised, and reinforcement learning.	3	2
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Fundamentals of Biological Neural Networks, and their early structures	Demonstrate proficiency in programming languages commonly used in AI and neural network applications.	3	3
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Properties of ANN, advantages, and disadvantage	Understand the limitations and challenges associated with training and deploying neural networks	3	4
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Network architectures, logic gates	Evaluate and compare the performance of different neural network models using appropriate evaluation metrics.	3	5
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Types of learning rules, learning algorithms, training styles	including feedforward, recurrent, and convolutional neural networks	3	6

Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Hebb Net, Applications,	Train and optimize neural networks using appropriate algorithms and techniques.	3	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Character recognition	Design and implement neural network architectures for various tasks, such as classification, regression, and pattern recognition.	3	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Mid Term Exam	Understand the fundamental concepts	3	9
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Perception: Architecture, Algorithm, Applications	Explain the architecture and components of different types of ANNs,	3	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Adaline: Architecture, Algorithm, Applications	Optimize ANNs using appropriate algorithms and techniques, such as gradient descent and backpropagation. Explore the applications of ANNs in different fields.	3	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Mdaline: Architecture, Algorithm	and principles of artificial neural networks (ANNs).	3	12

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Backpropagation Neural Network: Architecture, Algorithm, Applications		3	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Introduction to Deep Learning and Convolutional Neural Networks		3	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية			3	15

11. البنية التحتية	
الكتب المقررة المطلوبة	"Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig.
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة

2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	Web Design /CET4106
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	98. This course will introduce students to the realm of web design. : page composition, XHTML, CSS, web design and code validation. 99. Students will cover the Web design/development process. 100. Topics covered include basic and enhanced site structure, local and remote site management, and optimization of Web-site performance. Provides appropriate knowledge to web servers and browsers of the internet and network communication.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	97. Be able to use the HTML programming language, Resolves written HTML codes, Runs the page he/she has designed using HTML codes 98. Create an Information Architecture document for a web site, 99. Construct a web site that conforms to the web standards of today and includes e-commerce and web marketing. 100. Publish the website to a remote server using FTP. 101. Perform regular web site maintenance (test, repair and change). 102. Uses Domain Name and services 103. Be able to make changes on the Site. 104. Updates on the site when needed 105. Be able to use the Design Programs. 106. Designs and publish websites.
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية					
الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3	Be able to use the HTML programming language, Resolves written HTML codes, Runs the page he/she has designed using HTML codes	**Introduction to HTML :** Introduction to Internet programming, HTML language, Description and running through IE, How to write codes in HTML?, Headings, titles. The body in HTML language, background colors, pages and breaks	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	3	Uses Domain Name and services	**Lists & Tables in HTML language :** Ordered list and unordered list, creating table, table attributes and features, **Images :** Images , Combining paragraphs with table and images.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	3	Publish the website to a remote server using FTP.	**Forms in HTML I :** Command buttons, Textboxes and text areas, Checkboxes and	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	3	Perform regular web site maintenance (test, repair and change).	**Forms in HTML II :** Select lists in Forms, combining Forms with images and tables, Introduction to dynamic programming, client side versus server side	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	3	Be able to make changes on the Site	**Client-Side Programming and Server-Side Programming :** Client-Side Programming and Server-Side Programming, JavaScript, What is JavaScript, What JavaScript can do?, What	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

		JavaScript can't do?, The Script Tag, Handling older browsers, JavaScript Statements, Script statement execute, JavaScript data types, Variables, Data type conversion, browser events.			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Arithmetic Operators :** Arithmetic operators, Comparison operators, Examples and solutions, **Control Structures (if statement, if-else statement), Loops (for loop), Functions, Function parameters**	. Create an Information Architecture document for a web site,	3	6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Window and Document objects :** Window and Document objects, the window object, creating window, properties and methods: window.status, window.alert, window.confirm, window.prompt	Construct a web site that conforms to the web standards of today and includes e-commerce and web marketing.	3	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Forms and Form elements :** Forms and Form elements, creating a form, form properties, text object, form object button object, checkbox object, Radio object, Select object,	Designs and publish websites.	3	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**	Be able to use the Design Programs.	3	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Test 2: functions, forms and dates , Passing form data to functions, Submitting forms, Strings, Math and Date, Examples and solutions. **Images and dynamic HTML**	Updates on the site when needed	3	10

		: Images and dynamic HTML, the image object, interchanging images, prechaching images, creating image rollover, Examples and solutions. The String object (in detail), Examples and solutions			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**The events:** The event object, Event handler, Event properties, Window event-handler, layer event handler, mouse event handler, other event handlers		3	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Global functions:** Global functions and statements, eval(), escape(), isNaN(), number(), parsefloat(), parseInt(), string(), unescape(), unwatch(), watch()		3	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Data-Entry : Data-Entry validation, isEmpty(), isNumber(), isInteger(), isPosInterger Test 3: Images, Strings, and Global functions String : The String object, Examples and solutions**		3	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	JS frameworks		3	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية			3	15

11. البنية التحتية

الكتب المقررة المطلوبة	**The Complete Internet and World Wide Web Programming Training course** Author : Harry M.Deitel, Paul J. Deitel, Tom Nieto Edition & Year public : Prentice Hall PTR,2000
المراجع الرئيسية	Java script : the definition Guide, **Author :**David Flanagan, O'Reilly Media **Edition & Year public :** 5th edition , 2006
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	https://www.coursera.org/browse/physical-science-and-engineering/web
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	**Distributed Computing & Systems /CET4107**
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	فصلي
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	
8. أهداف المقرر	101. To introduce students to the fundamental problems, concepts, and approaches in the design and analysis of distributed computing systems. 102. To familiarize students with the stages of the distributed system design cycle, including system architecture, data and processes arrangements, naming, communication and coordination issues, existing distributed computing paradigms, techniques, and tools, and evaluating the effectiveness of distributed application systems for specific data, task, and user types. 103. understand the evolution of the distributed computing from its early beginnings as multi-processor and multi-computer systems, to computer

networks, to the emerging cloud, edge (fog, dew, mist) and heterogeneous computing environments 104. explain and discuss basic principles and typical examples of real-world distributed systems such as NFS file-sharing system and the web. understand process migration or more specifically code migration and its role in achieving scalability of distributed system	

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
107. State, prove and apply Shannon's sampling theorem know the widely used models of communication: Remote Procedure Call (RPC), and Message-Oriented Middleware (MOM). 108. know basic principles of the RPC model and problems with achieving distribution transparency. 109. understand the peculiarities of the high-level message-queuing model of process communication. 110. know how to set up multicast facilities for data dissemination in distributed systems. 111. understand traditional deterministic means of multicasting as well as probabilistic approaches. 112. know the use of Domain Name System (DNS). 113. know the way of using attributes assigned to an entity to resolve a description of an entity in distributed system. 114. know basics of the security management including mechanisms to distribute cryptographic keys, add and remove users from a system, prove ownership to access specified resources, etc...	الأهداف المعرفية
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
	طرائق التعليم والتعلم
	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	3	State, prove and apply Shannon's sampling theorem know the widely used models of communication:	**Design goals** Distributed systems consist of autonomous	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

		computers that work together to give appearance of a single coherent system.	Remote Procedure Call (RPC), and Message-Oriented Middleware (MOM).		
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Architectures: System architecture. Example** There are many different organizations of distributed systems. Client-server architectures are often highly centralized.	know basics of know the use of Domain Name System (DNS). the security management including mechanisms to distribute cryptographic keys, add and remove users from a system, prove ownership to access specified resources, etc...	3	2
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Processes: Threads. Virtualization** Processes play a fundamental role in distributed systems as they form a basis for communication between different machines.	1. know the way of using attributes assigned to an entity to resolve a description of an entity in distributed system.	3	3
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Processes: Clients. Servers.	1. understand traditional deterministic means of multicasting as well as probabilistic approaches.	3	4
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Communication: Foundations. RPC**	1. know how to set up multicast facilities for data dissemination in distributed systems.	3	5

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Naming: Structured naming. Attribute-based naming**	know basic principles of the RPC model and problems with achieving distribution transparency.	3	6
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Mid-term Exam	understand the peculiarities of the high-level message-queuing model of process communication.	3	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Coordination: Clock synchronization** There are various ways to synchronize clocks in a distributed system. All methods are based on exchanging clock values, while taking into account the time it takes to send and receive messages.		3	8
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Midterm Exam**		3	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Coordination: Mutual exclusion. Election algorithms** An important class		3	10

		of synchronization algorithms is that of distributed mutual exclusion. These algorithms ensure that in a distributed collection of processes, at most one process at a time has access to a shared resource. Consistency and replication: Data-centric & Client-centric models			
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Consistency and replication: Replica management. Consistency protocols		3	11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Fault tolerance.		3	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Security		3	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Distributed System Models and Enabling Technologies**		3	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	**Parallel Programming Systems and**		3	15

		Models			

11. البنية التحتية	
الكتب المقررة المطلوبة	Tanenbaum S. Maarten V.S.: Distributed Systems Principles and Paradigms, (Pearson Education).
المراجع الرئيسية	George Coulouris, Jean Dollimore. Tim Kindberg: Distributed Systems concepts and design.
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	https://www.youtube.com/watch?v=cQP8WApzIQQ&list=PLrw6a1wE39_tb2fErI4-WkMbsvGQk9_UB&ab_channel=MIT6.824%3ADistributedSystems
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4201 / Fiber Optics Communication
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 2 / سنة 4
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• In this course, the students can acquire the basic knowledge of Optical Communication Systems ,Optical Communication Media, Fiber optics communication principles and their

application . • Students will be learned about high-speed single-mode and low-speed multimode fiber. • Students can acquire knowledge of step and graded refractive index profiles, different dispersion mechanisms and their effect on high-speed links, • The advantage of coherent (LASER) light sources over incoherent (LED) sources for the long haul, high-speed links, and photodetectors.	

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
• Discuss Laser Principles, operation, structures, applications • Describe Photodiodes • Explain the Optical Communication Media • Identify optical fiber waveguides • Explain the of optical fiber communication • Describe Transmission characteristics of optical fibers • Discuss Optical Transmitters - transmitter types, design • Explain Optical Amplifiers	الأهداف المعرفية
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Students will be able to explain the basic concepts and components of optical communication systems.	Basic Concepts of Optical Communication Systems	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4	Students will be able to explain the basic behavior and properties of light in optical systems.	Light Behavior	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Laser Principles	Students will be able to explain the operating principles of lasers.	4	3
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Light Emitting Diodes (LEDs) - principle of operation , structures , applications	Students will be able to explain the operation, structures, and applications of LEDs.	4	4
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Laser Diodes LDs- principle of operation, structures, applications	Students will be able to explain the operation, structures, and applications of laser diodes.	4	5
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Photodiodes - (pin Photodiode, Avalanche Photodiode, comparisons of photodetectors	Students will be able to explain the operation of PIN and avalanche photodiodes and compare their characteristics.	4	6
		Mid-term Exam	Students will be assessed on the topics covered in Weeks 1–6.	4	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Optical Communication Media- Overview of optical communication media, free space optical communication, optical fiber waveguides.	Students will be able to describe free-space optical communication and optical fiber transmission media.	4	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Overview of optical fiber communication- general system, advantages, disadvantages, and applications of optical fiber communication	Students will be able to explain the basic architecture, advantages, limitations, and applications of optical fiber communication systems.	4	9
Mid exam		optical fiber waveguides, Ray theory, cylindrical fiber, single mode fiber, multi-mode fiber, cutoff wavelength, mode filed diameter	Students will be able to analyze optical fiber waveguides using ray theory and distinguish between single-mode and multimode fibers.	4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Transmission characteristics of optical fibers- Attenuation, absorption, scattering losses, bending loss, dispersion	Students will be able to explain attenuation, losses, and dispersion in	4	11

			optical fibers.		
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Fiber couplers and connectors	Students will be able to describe the operation and applications of fiber couplers and connectors.	4	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Optical Transmitters - transmitter types, design	Students will be able to explain the types and basic design of optical transmitters.	4	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Optical Receivers - receivers' types, design	Students will be able to explain the types and basic design of optical receivers.	4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Optical Amplifiers	Students will be able to explain the operating principles and applications of optical amplifiers.	4	15

11. البنية التحتية	
Optical Communications Essentials, Gerd Keiser, The McGraw-Hill Companies.	الكتب المقررة المطلوبة
Handbook of Laser Technology and Applications, Colin E. Webb, Julian D. C. Jones, CRC Press	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4202 / Advanced Computer Technology
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 2 / سنة 4
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• The μP and its architecture and the addressing modes • Paging mechanism, Segment translation and Page translation • Cache memory, Cache organization, fully associative, Direct mapped and set associative • Cache memory used for 80386 Direct Maps; Two-way set associative • Intel's Pentium and its Features • Pentium pro, out of order execution • Other Pentium processors, Core processor

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• an ability to apply knowledge of microprocessor Architecture. (High) • an ability to apply knowledge about 80386 The μP (High) • an ability to apply knowledge about Paging mechanism, Segment translation and Page translation (High) • an ability to identify and calculate the addressing mode and physical address (High) • an ability to calculate the data and tag for cache (High)
الأهداف المهاراتية الخاصة بالمقرر	

الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، المحاضرات العملية، حلقات نقاشية
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Students will be able to explain the basic concepts and functions of microprocessors and computers.	Introduction to the Microprocessor and Computer	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
2	4	Students will be able to describe the architecture and internal organization of the 80x86 microprocessor.	The μ_p 80x86 and its architecture Internal organization of μ_p 80x86	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
3,4	4	Students will be able to explain the 80386 architecture and apply addressing modes, assembly language, and memory segmentation.	The μ_P 80386 architecture • Addressing mode • Assembly language Memory segmentation	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
5,6	4	Students will be able to explain protected mode addressing and the role of selectors and descriptors.	Protected mode memory addressing • Selectors and descriptors Local and global descriptors tables	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
7	4	Students will be able to explain descriptor and page table entries and analyze memory access in the 80386.	Descriptor and page table entries • Program-invisible registers • Illustrating local memory access. Examples	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
8	4	Students will be assessed on the topics covered in Weeks 1–8.	Midterm Exam		
9	4	Students will be able to explain	Memory paging Virtual memory	محاضرة + نظرية	Reports, Projects,

Quizzes, Assignments	عملية		memory paging and virtual memory concepts.		
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Paging mechanism • Segment translation Page translation	Students will be able to analyze segment and page address translation mechanisms.	4	10
Mid exam		A translation lookaside buffer (TLB) Examples	Students will be able to explain the function of the TLB and apply address translation concepts to practical examples.	4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Major changes in the 80386 μ_p	Students will be able to identify the major architectural features and improvements introduced in the 80386.	4	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Cache memory • Cache organization • Fully associative • Direct mapped Set associative	Students will be able to explain cache organization and distinguish between fully associative, direct-mapped, and set-associative caches.	4	13
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Cache memory used for 80386 • Direct Maps Two-way set associative	Students will be able to analyze direct-mapped and two-way set-associative cache organization in the 80386.	4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Intel's Pentium • Features of the Pentium Intel's overdrive technology	Students will be able to describe the main features of the Pentium processor and Intel OverDrive technology.	4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	The 80x86 IBM Pc and compatible computer
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية،	

التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4203 / Network Security & Cybersecurity
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 2 / سنة 4
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• Understand hacking techniques. • Understand the fundamentals of secure network design. • Understand the issues involved with providing secure networks. • Understand underlying cryptography required for secure communications, authorization and authorization. • Obtain hands on experience in cryptography and network security through laboratory work

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Students will be able to explain security principles. • Develop Concept of Security needed in Communication of data through computers and networks along with Various Possible Attacks. • Understand Various Encryption mechanisms for secure transmission of data and management of key required for required for encryption. • Students will be able to evaluate risks faced by computer systems and how various attacks work . • Students will be able to explain how various security mechanisms work, and correlate these security mechanisms with security principles.

• Students will be able to compare various security mechanisms and articulate their advantages and limitations. • Understand authentication requirements and study various authentication mechanisms. • Understand network security concepts and study different Web security mechanisms. • Students will be able to create cybersecurity policies and procedures to help secure a medium-sized organization's information technology infrastructure. • Students will understand the latest techniques hackers employ to test out cyber defenses. • Students will analyze the mission and strategy of the Iraq government agencies who protect our portion of the Internet. • Students will discuss hypothetical issues of cyber security with other students in the group Discussions format.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، حلقات نقاشية، محاضرات الكترونية، حل تمارين	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Students will be able to explain the basic model and components of symmetric-key encryption.	Introduction, Symmetric Ciphers model: plaintext, encryption algorithm, secret key, cipher text, decryption algorithm.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4	Students will be able to describe conventional encryption models and classify cryptographic techniques.	Model of Conventional Encryption and Cryptography Classification.	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4	Students will be able to encrypt and decrypt messages using affine and Vigenère ciphers.	Affine Cipher and Polyalphabetic algorithm (Vigenere cipher).	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Cryptanalysis of a Symmetric key.	Students will be able to apply basic cryptanalysis techniques to symmetric-key ciphers.	4	4
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Hill cipher and Play fair cipher. Stream Cipher	Students will be able to explain and apply Hill, Playfair, and stream cipher techniques.	4	5
		Mid-term Exam	Students will be assessed on the topics covered in Weeks 1–5.	4	6
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Unit-Step Forcing, Forced Response, the RLC Circuit	Students will be able to analyze unit-step and forced responses in RLC circuits.	4	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	DES—The Data Encryption Standard, hers -16 round.	Students will be able to explain the structure and operation of the DES algorithm.	4	8
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Public-Key Algorithms, - RSA.	Students will be able to explain and apply the RSA public-key encryption algorithm.	4	9
Mid exam	محاضرة + نظرية عملية	Diffie Hellman Algorithm.	Students will be able to explain and apply the Diffie-Hellman key exchange algorithm.	4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Elgamal Algorithm.	Students will be able to explain and apply the ElGamal public-key cryptosystem.	4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Cyber Security Tools	Students will be able to identify and apply basic tools for cybersecurity analysis and protection.	4	12
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية عملية	Web Security.	Students will be able to explain common web security threats and basic protection mechanisms.	4	13

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Email Security.	Students will be able to explain common email security threats and protection mechanisms.	4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	PGP—Pretty Good Privacy and S/MIME.	Students will be able to explain and compare PGP and S/MIME for secure email communication.	4	15

11. البنية التحتية	
الكتب المقررة المطلوبة	Stallings, W. (2016). Cryptography and network security: principles and practice (Eighth edition.). Pearson
المراجع الرئيسية	Speciner, M. et al. (2002). Network security: Private communication in a public world. (Second edition.).
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4204 / Cloud Computing
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 2/ سنة 4
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• To define the concept of hosting • To introduce the cloud-computing paradigm • To simplify the transition from bare-metal servers thinking to a cloud-native approach. • To foster the automation and orchestration concepts . • To design, build and manage private clouds.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• Classify cloud hosting types. • Describe the data center infrastructure. • Utilization of virtual machines • Transition into virtual networking . • Management of cloud infrastructure . • Comprehension of cloud-storage • Correct utilization of micro-services . • Proper use of rate-limiting concepts . • Understanding the concept of security. • Understanding the concept of privacy. • Capability to diagnose bottlenecks in cloud-based systems. • Proper application of concepts of elasticity in production systems.
الأهداف المهاراتية الخاصة بالمقرر	

الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	المحاضرات المباشرة، حلقات نقاشية، محاضرات الكترونية، حل تمارين
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Students will be able to explain the motivation, characteristics, and service models of cloud computing.	The Era of Cloud Computing: The Motivations for Cloud, Power wall, Racks of Server Computer, Elastic Computing, Multi-tenant Clouds, IaaS, PaaS, SaaS, and DaaS.	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
2	4	Students will be able to distinguish between public, private, hybrid, multi-cloud, and hyperscale cloud environments.	Types of Clouds and its Providers: Private and Public Cloud, Provider Lock-in, Hybrid Cloud, Multi-Cloud, Hyperscale.	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
3	4	Students will be able to describe data center infrastructure, networking, power, and cooling systems.	Data Center Infrastructure and Equipment: Racks, Aisles, and Pods, Power and Cooling, Network Equipment, North-South and East-West Network Traffic, Fat tree Design, leaf spine scaling, Unified Data Centers Network.	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
4	4	Students will be able to explain virtualization, hypervisors, virtual machines, and Docker containers.	Virtual Machines and Containers: Approaches To virtualization, Properties of Virtualization, Level of Trust and I/O devices, VM Migration, Hypervisor. Container approach, Docker Containers, Docker software components.	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments
5	4	Students will be able to explain virtual networking technologies and cloud storage architectures.	Virtual Networks and Virtual Storage: Virtual Networks, Overlay and Underlays, VLANs, VXLAN, Virtual Network Switch, NAT, Mobility, SDN, The OpenFlow Protocol, Programmable Networks. Local and Remote Storage, NAS, SAN, Object Storage.	محاضرة + نظرية + عملية	Reports, Projects, Quizzes, Assignments

Reports, Projects, Quizzes, Assignments		Consensus: Raft, Paxos, consistency levels, CAP, theorem.	Students will be able to explain consensus algorithms, consistency levels, and the CAP theorem.	4	6
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية + عملية	Software : Cloud native vs. Conventional Software, Parallel Processing, MapReduce Programming Paradigm, Math of MapReduce, Apache Hadoop, HDFS, Hadoop support for Programming languages.	Students will be able to explain cloud-native software, parallel processing, and the MapReduce programming model.	4	7
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية + عملية	Microservices: Monolithic Apps in Data Centers, The Microservices Approach: Pros and Cons, Microservices Granularity, Communication Protocols for Microservices, Servie Mesh Proxy, Microservices Technologies.	Students will be able to explain microservice architectures, communication methods, and service mesh technologies.	4	8
		Mid-term	Students will be assessed on the topics covered in Weeks 1–8.	4	9
Mid exam	محاضرة + نظرية + عملية	Cloud Storage: File, Object, Database storage systems, Software Defined Storage	Students will be able to distinguish between file, object, and database storage systems and explain software-defined storage.	4	10
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية + عملية	Serverless Computing and DevOps: The serverless Computing Approach, Stateless Servers and Containers, Serverless Infrastructure, An Example of Serversles Processing. DevOps Approach, Continuous Integration, Continuous Delivery, Caucious Deployment, Sandbox, Canary, and Blue/Green.	Students will be able to explain serverless computing and apply basic DevOps deployment practices.	4	11
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية + عملية	Edge Computing and IoT: The Latency Disadvantage of Cloud, Low Latency Needs, Extending Edge to A Fog Hierarchy, Multi-level Caching, Edge computing and IIoT, Communication of IIoT, Decentralization.	Students will be able to explain edge computing architectures and their role in low-latency IoT applications.	4	12

Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Cloud Security and Privacy: Cloud Security Problems, Traditional Security Methods and its insufficiency with cloud, Zero Trust Security Model, Identity Management, PAM, AI and Security, Protecting Remote Access, Privacy in Cloud, Back Doors, Side Channels.	Students will be able to identify major cloud security and privacy challenges and explain basic protection mechanisms.	4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Building Your Own Cloud: Case Study, see TextBook#2	Students will be able to apply cloud computing concepts to design and build a basic cloud environment.	4	14
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Building Your Own SaaS: Case Study, see TextBook#2	Students will be able to apply cloud computing concepts to design and develop a basic SaaS application.	4	15

11. البنية التحتية	
Douglas E. Comer, The Cloud Computing Book, the future of Computing Explained, 1st Edition, CRC Press, 2021.	الكتب المقررة المطلوبة
Ian Foster and Dennis B. Gannon, "Cloud Computing for Science .and Engineering", The MIT Press, 2017	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4205 / Engineering Project
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 2 / سنة 4
6. عدد الساعات الدراسية (الكلي)	
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	
طرائق التعليم والتعلم	
طرائق التقييم	

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم

11. البنية التحتية	
الكتب المقررة المطلوبة	
المراجع الرئيسية	
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي

نموذج وصف المقرر

وصف المقرر

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1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4206 / Reconfigurable Computing Systems
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 2 / سنة 4
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• Understand the fundamentals of the reconfigurable computing and reconfigurable architectures • Articulate the design issues involved in reconfigurable computing systems with a specific focus on Field Programmable Gate Arrays (FPGAs) both in theoretical and application levels • Understand the performance trade-offs involved in designing a reconfigurable computing platform with a specific focus on the architecture of a configurable logic block and the programmable interconnect • Discuss the state-of-the-art reconfigurable computing architectures spanning fine grained (look up table-based processing elements) to coarse grained (arithmetic logic unit level processing elements) architectures. • Understand both how to architect reconfigurable systems and how to utilize them for solving challenging computational problems.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	• an ability to apply knowledge of mathematics, science, and engineering (High) • an ability to design and conduct experiments, as well as to analyze

and interpret data (High) • an ability to design a system, component, or process to meet desired needs within realistic constraints (High) • an ability to identify, formulate, and solve engineering problems (High) • an ability to communicate effectively (Medium) • a recognition of the need for, and an ability to engage in life-long learning (Medium) • a knowledge of contemporary issues (High) • an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. (High)	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، حلقات نقاشية، محاضرات الكترونية، حل تمارين	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Students will be able to explain the basic concepts and principles of reconfigurable computing.	Introduction to Reconfigurable Computing	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
2,3	4	Students will be able to describe the architecture and main components of FPGAs.	FPGA Architectures	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
4-7	4	Students will be able to explain the FPGA design cycle and apply basic optimization, mapping, placement, and routing techniques.	FPGA Design Cycle Technology-independent optimization Technology Mapping Placement Routing	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments
8	4	Students will be able to explain the architecture and operation of coarse-grained	Coarse-grained Reconfigurable Devices	محاضرة نظرية + عملية	Reports, Projects, Quizzes, Assignments

			reconfigurable devices.		
		Midterm Exam	Students will be assessed on the topics covered in Weeks 1–4.	4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية نظرية	Reconfigurable Computing Applications	Students will be able to identify and analyze applications of reconfigurable computing.	4	10,11
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Multi-FPGA Systems	Students will be able to explain the architecture and operation of multi-FPGA systems.	4	12
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	FPGAs vs. Multicore architectures	Students will be able to compare FPGA and multicore architectures for computing applications.	4	13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Advanced Topics Dynamic Reconfiguration Partial Reconfiguration 3D FPGAs	Students will be able to explain dynamic, partial, and 3D FPGA reconfiguration techniques.	4	14,15

11. البنية التحتية	
الكتب المقررة المطلوبة	Reconfigurable Computing: The Theory and Practice of FPGA-Based Computation by Scott Hauck, André DeHon.
المراجع الرئيسية	C. Maxfield, The Design Warrior's Guide to FPGAs, Newnes, 2004, ISBN: 978-0750676045
المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)	
المراجع الالكترونية (مواقع الانترنت)	

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

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1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4207 /Wireless Sensor Network
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 2/ سنة 4
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	The aim of the course is to provide students with knowledge and skills for wireless network design, operation and testing, equipment configuration, security considerations.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	By the end of the course, students will know : • Electromagnetic signal specifications IEEE802.11 link layer protocol data rates, media access control and logical link control techniques, quality-of-service and security features • Wireless network design principles. • Perform wireless signal planning and strength measurement. • Design wireless network with optimal performance. • Plugin and configure wireless network equipment. • Build large wireless network with centralized control. • Configure wireless network security • The necessary skills to design, configure and operate production-grade wireless network.
الأهداف المهاراتية الخاصة بالمقرر	
الأهداف الوجدانية والقيمية	
المهارات العامة	

طرائق التعليم والتعلم	المحاضرات المباشرة، حلقات نقاشية، محاضرات الكترونية، حل تمارين
طرائق التقييم	Reports, Projects, Quizzes, Assignments, Mid exam, Final exam

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1,2	4	Students will be able to explain the evolution, concepts, and characteristics of modern wireless networks.	Course introduction, wireless network introduction. Wireless technology history, modern wireless networks	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
3,4	4	Students will be able to explain wireless propagation, modulation, coding, and data transmission techniques.	Data transfer over wireless media. Electromagnetic waves propagation. Wireless equipment and EM waves specifications. Data modulation and coding schemes, data decoding.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
5,6	4	Students will be able to explain the Wi-Fi physical layer, modulation, coding, and data rate mechanisms.	IEEE 802.11 (Wi-Fi) protocol design. Wi-Fi physical layer: EM signal specifications, data rates, data modulation and coding schemes.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
7,8	4	Students will be able to explain Wi-Fi frame structure, addressing, media access, and error control.	Wi-Fi data-link layer: data frame structure, media access control, wireless nodes addressing, error detection/correction.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
9	4	Students will be assessed on the topics covered in Weeks 1–4.	Midterm Exam		
10	4	Students will be able to explain Wi-Fi frame types, network coexistence, access points, and roaming.	Wi-Fi logical link control layer: data frame types, control and management frames, multiple network coexistence. Wireless network with multiple access points, roaming.		Reports, Projects, Quizzes, Assignments
11,12	4	Students will be able to analyze Wi-Fi management and control mechanisms in multi-access-point networks.	Wi-Fi logical link control layer: data frame types, control and management frames, multiple network coexistence. Wireless network with multiple access points, roaming.	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
13	4	Students will be able to explain	Wi-Fi security features. 802.1x protocol, WPA/2/3 operation.	محاضرة + نظرية	Reports, Projects,

Quizzes, Assignments	عملية	Network infrastructure security.	802.1X and WPA/WPA2/WPA3 security mechanisms.		
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية + عملية	Wi-Fi centralized architecture. Wireless controller configuration/operation	Students will be able to explain the architecture and operation of centralized Wi-Fi controllers.	4	14
Reports, Projects, Quizzes, Assignments	محاضرة + نظرية + عملية	Decentralized Wi-Fi networks (Ad-Hoc, Mesh-type). Introduction to sensor networks. Bluetooth basics	Students will be able to distinguish between decentralized wireless networks and explain basic sensor network and Bluetooth technologies.	4	15

11. البنية التحتية	
Wireless Sensor Network, Leonidas J. Guibas, The Morgan Kaufmann Series in Networking, Elsevier, NEW YORK	الكتب المقررة المطلوبة
Kazem Sohraby, Daniel Minoli and Taieb Znati, " Wireless Sensor Networks Technology, Protocols, and Applications", John Wiley & Sons, 2007..	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.

نموذج وصف المقرر

وصف المقرر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	كلية الطف الجامعة
2. القسم العلمي / المركز	هندسة تقنيات الحاسوب
3. اسم / رمز المقرر	CET4208 /Optimization Algorithms
4. أشكال الحضور المتاحة	اسبوعي
5. الفصل / السنة	ف 2/ سنة 4
6. عدد الساعات الدراسية (الكلي)	125 ساعة
7. تاريخ إعداد هذا الوصف	2026
8. أهداف المقرر	• Provides students with an introduction to optimization techniques and genetic algorithms . • Students will learn about various optimization problems, including linear and nonlinear optimization. • Explore the principles and applications of genetic algorithms . • Cover the fundamental concepts, algorithmic implementations, and practical considerations for solving optimization problems using genetic algorithms. • Students will gain hands-on experience through programming assignments and project work.

9. مخرجات المقرر وطرائق التعليم والتعلم والتقييم	
الأهداف المعرفية	By the end of the course, students will know : • Understand the fundamental concepts and principles of optimization techniques. • Explain the different types of optimization problems, including linear programming, nonlinear programming, and combinatorial optimization. • Evolutionary Algorithms, Swarm Intelligence Algorithms. • Understand the principles and workings of genetic algorithms. • Advantages and disadvantages of Genetic algorithms.

• Population, selection, crossover, and mutation algorithms • Design and implement genetic algorithms to solve optimization problems. • Analyze and compare the performance of different optimization algorithms. • Evaluate and select suitable optimization algorithms for specific problem domains. • Implement optimization algorithms using programming languages and libraries commonly used in the field. • Analyze and interpret the results obtained from optimization algorithms. • Apply optimization techniques to real-world applications in various domains.	
	الأهداف المهاراتية الخاصة بالمقرر
	الأهداف الوجدانية والقيمية
	المهارات العامة
المحاضرات المباشرة، حلقات نقاشية، محاضرات الكترونية، حل تمارين	طرائق التعليم والتعلم
Reports, Projects, Quizzes, Assignments, Mid exam, Final exam	طرائق التقييم

10. بنية المادة الدراسية

الاسبوع	الساعات	مخرجات التعلم	اسم الموضوع	طريقة التعلم	طريقة التقييم
1	4	Students will be able to explain the basic concepts and principles of optimization algorithms.	Introduction to optimization algorithms	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
2,3	4	Students will be able to explain the principles of nature-inspired optimization techniques.	Nature-inspired Optimization Techniques	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
4,5	4	Students will be able to distinguish between evolutionary and swarm intelligence algorithms.	Evolutionary Algorithms, Swarm Intelligence Algorithms	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments
6	4	Students will be able to explain the basic concepts and operation of genetic	Introduction to Genetic Algorithm	محاضرة + نظرية عملية	Reports, Projects, Quizzes, Assignments

			algorithms.		
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Advantages and disadvantages of Genetic algorithms	Students will be able to evaluate the advantages and limitations of genetic algorithms.	4	7
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Type of operators, population, selection, crossover, crossover rate, mutation, mutation rate	Students will be able to explain population, selection, crossover, and mutation operators and their parameters.	4	8
		Mid Term Exam	Students will be assessed on the topics covered in Weeks 1–6.	4	9
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Population, selection, crossover, and mutation algorithms	Students will be able to implement the main genetic algorithm operations.	4	10,11
Reports, Projects, Quizzes, Assignments		Applications of genetic algorithms	Students will be able to apply genetic algorithms to basic optimization problems.	4	12,13
Reports, Projects, Quizzes, Assignments	محاضرة نظرية + عملية	Introduction to Particle swarm optimization (PSO)	Students will be able to explain the basic concepts and operation of particle swarm optimization.	4	14,15

11. البنية التحتية	
"Introduction to Genetic Algorithms" by Melanie Mitchell.	الكتب المقررة المطلوبة
"Introduction to the Theory of Optimization" by J.E. Dennis Jr. and Robert B. Schnabel.	المراجع الرئيسية
	المراجع التي يوصى بها (المجلات العلمية، التقارير، ..)
	المراجع الالكترونية (مواقع الانترنت)

12. خطة تطوير المقرر الدراسي
إضافة مواضيع حسب تقييم التدريسي لمستوى الطلاب لتهيئتهم للمراحل القادمة.