

Republic of Iraq

Ministry of higher education & scientific research

Supervision and scientific evaluation directorate

Quality assurance and academic accreditation

Academic Program Specification Form For The Academic

University : Northern Technical University

College: Technical Engineering College of Mosul

Department: Computer Techniques Engineering

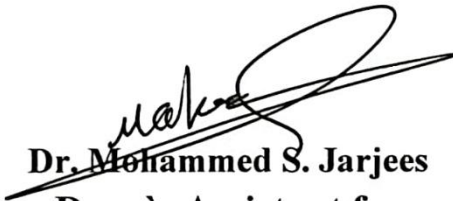
Date of form completion:



Dr. Majed Khalil Najm
Dean`s Name

Date: / /

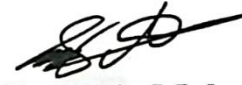
Signature



Dr. Mohammed S. Jarjees
Dean`s Assistant for
Scientific Affairs

Date: 10/1 / 2024

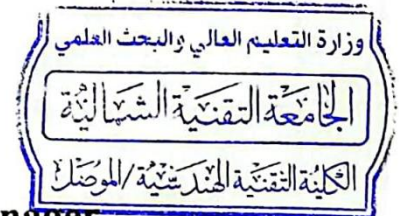
Signature



Dr. Emad A. Mohammed
Head of Department

Date: 2/1 /2024

Signature



Quality Assurance and University performance manager

Date: / /

Signature



Noor Khatun

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programme Specification provide a concise summary of the features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she take full advantage of the learning opportunities that are provide. It is supported by a specification for each course that contributes to the programme.

1.Teaching Institution	Northern Technical University/Technical Engineering College of Mosul
2.University Department/Centre	Computer techniques Engineering
3.Programme Title	Computer techniques Engineering
4.Title of Final Award	Bachelor of Computer techniques Engineering
5.Modes of Attendance offered	Annual/ Courses/ Bologna process
6.Accreditation	Ministry of Higher Education Scientific Research
7.Other external influences	Non
8.Date of production of this specification	27/5/2021
9.Aims of the Programme	
The department aims to graduate specialized engineering professionals in the field of efficient computer science and software, network development, data analysis, design of smart systems, and their practical application	

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

A1. Preparing a staff of technical engineers with a high level of understanding, knowledge

A2Continual development of academic programs through collaboration with corresponding departments to align with the requirements of local development

A3. Equipping students with knowledge related to the development of large and medium-sized programming projects within specified timeframes and toward defined objectives.

A4. Enabling graduates to evaluate alternative solutions to problems encountered in their work.

B. Subject-specific skills

B1. 1. Conducting pure and applied scientific research to keep pace with scientific advancements.

B2. Building bridges with the community through organizing scientific courses, seminars, and workshops to serve it.

Teaching and learning Methods

Blended learning (Online educational material with online interaction, with place Classroom methods), Scientific Films , Teaching Videos , Laboratories , Trainee and summer internship , Graduation projects

Assessment method

Daily , Monthly , Final examination and weekly reports

C. Thinking Skills

C1. Thinking ability and analyzing problems

C2. Communication ability with teamwork

C3. Interacting with customers and teams: Understand practical needs and communicate with customers and teams

Teaching and Learning Methods

Blended learning (Online educational material with online interaction, with place Classroom methods), Scientific Films , Teaching Videos , Laboratories , Trainee and summer internship , Graduation projects

Assessment methods

Daily , Monthly , Final examination and weekly reports

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Team work skills

D2. Computing and Internet skills

D3. English Lagrange skills

D4. Leadership and taking the responsibility skills

D5. Self learning and lifelong learning

Teaching and Learning Methods

Blended learning (Online educational material with online interaction, with place Classroom methods), Scientific Films , Teaching Videos , Laboratories , Trainee and summer internship , Graduation projects

Assessment Methods

Daily , Monthly , Final examination and weekly reports

11. Programme Structure

Level/Year	Course or Module Code	Course or Module Title	Credit rating	12. Awards and Credits
first	Bologna	Bologna	30	Bachelor Degree Requires (x) credits
second	courses	courses	36	
third	courses	courses	36	
fourth	annual	annual	36	

13. Personal Development Planning

- 1- Self learning**
- 2- Scientific seminars and symposium**
- 3- Scientific researching and publishing papers**
- 4- Trainee courses outside and inside the country**

14. Admission criteria

- High school section**
- The average degree**

15. Key sources of information about the programme

- 1- Book and textbook**
- 2- Scientific catalogues**
- 3- Scientific research and publishing paper**
- 4- Internet**

Curriculum Skills Map

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

Programme Learning Outcomes

Year/level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills relevant to employability and personal development			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
First	A1	Digital logic	Fundamental	B		T	T			B	L	T	P		L	L		P	
	A2	Human right	Accessory	T			T			P			R		R		T	R	
Second	B1	Computer architecture	Fundamental	T	L	B	L				T		P				P	R	
	B2	Power Electronics	Accessory	T	B	P								T		L		B	
Third	C1	microprocessor	Fundamental	T	B		S				R		L					T	
	C2	Engineering analysis	Accessory	T	P		B				P				T			P	
Forth	D1	Mobile communication	Fundamental	T	L		B				L							T	
	D2	Project management	Accessory	T	L	B													

B/ Book T/ Theory P/Practical R/Report S/Seminar L/Lab. J/Project

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW:PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provide a concise summary of the main features course and the learning outcomes that a typical student might reasonable expected to achieve and demonstrate if he/she take advantage of the learning opportunities that are provided. It should be cross-referenced with the specification

1.Teaching Institution	Ministry of higher education & scientific research
2.University Department/Center	Northern Technical University/computer techniques dept.
3.Course title/code	database system/ CCT208
4.Programme (s) to which it contributes	
5. Modes of Attendance offered	presence
6. Semester/Year	2023-2024/ first semester
7. Number of hours tuition(total)	30 Theoretical/ 60 practical
8.Date of production/revision of this specification	9/1/2024
9. Aims of the Course	
Understanding Basic Concepts: Providing a fundamental understanding of database concepts, such as the concept of data, databases, tables, relationships, and queries.	
Database Design: Learning how to design databases in a way that meets the needs of different applications. This includes defining tables and relationships between them and specifying database keys.	

10. Learning Outcomes , Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

Understanding Database Concepts: Achieving a basic understanding of concepts related to databases, such as data, tables, relationships, primary and foreign keys.

Analyzing Database Structure: Understanding how to analyze the structure of databases, including details related to designing tables and the relationships between them.

Using SQL Language: Learning to use the Structured Query Language (SQL) effectively for retrieving and analyzing data.

Database Design: Developing skills in designing databases in a way that meets the requirements of different applications.

B. Subject-specific skills

1. Database Design: Developing skills in designing databases, including defining table structures, identifying primary and foreign keys, and establishing relationships between tables.

3. Effective Use of SQL: Acquiring skills in writing SQL queries to retrieve and analyze data from databases.

4. Data Management: Learning how to efficiently manage data, including data input, update, deletion, and handling save and retrieval operations.

Teaching and Learning Methods

Blended learning (Online educational material with online interaction, with place Classroom methods), Scientific Films , Teaching Videos , Laboratories , Trainee and summer internship , Graduation projects

Assessment methods

Daily , Monthly , Final examination and weekly reports

stimulating Curiosity and Interest: Encouraging students to develop curiosity about database concepts and how to apply them in various fields.

Broadening Vision: Expanding students' awareness of the importance of databases in their daily lives and in business and technology fields.

Enhancing Self-Confidence: Boosting students' confidence in dealing with data and utilizing databases to solve problems.

Fostering Creativity: Motivating students to develop creative solutions using databases in the design of applications or technological solutions.

Top of Form

Teaching and Learning Methods

Blended learning (Online educational material with online interaction, with place Classroom methods), Scientific Films , Teaching Videos , Laboratories , Trainee and summer internship , Graduation projects

Assessment methods

D. General and Transferable Skills (other skills relevant to employability and personal development)

1. Teamwork Skills.

-2. Computer and Internet Skills.

-3. Communication Skills, such as English language and presentation.

-4. Leadership Skills and Responsibility. -5. Self-learning and Lifelong Learning Skills.

Daily , Monthly , Final examination and weekly reports

1. Course structure

Assessment	Teaching methodology	subject	Learning outcomes	hours	week
Exams in all their forms	Theoretical Practical	Introduction to database system	Knowledge and Application	4	1
Exams in all their forms	Theoretical Practical	Data Structure	Knowledge and Application	8	2-3
Exams in all their forms	Theoretical Practical	Types of Data and access terminology	Knowledge and Application	12	4--6
Exams in all their forms	Theoretical Practical	SQL Structure and Techniques	Knowledge and Application	12	7-9
Exams in all their forms	Theoretical Practical	SQL queuing and management	Knowledge and Application	12	10-12
Exams in all their forms	Theoretical Practical	SQL representation	Knowledge and Application	8	13-14

Exams in all their forms	Theoretical Practical	Data Execution	Knowledge and Application	4	15
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12. Infrastructure	
Required Text books: - CORE TEXTS - COURSE MATERIALS - OTHER	1." DATABASE SYSTEMS The Complete Book. "Hector Garcia-Molina 2. "Database Theory Querying Data" Santiago Paris
Special requirements (include for example workshops, periodicals, IT software, websites)	workshops
Community-based facilities (include for example, quest, lectures, internship, field studies)	Summer training , quits lechers

13. Admissions	
Per-requisites	High School section , outstanding student in the institute
Minimum number of students	15
Maximum number of students	35

Course Description Template

Course Description

This course description provides a concise overview of the key features of the course and the expected learning outcomes for students to achieve, demonstrating whether they have maximized the benefit from the available learning opportunities. It must be linked to the program description.

2. Educational Institution	Northern Technical University/ technical engineering college-Mosul
3. Department	Computer Techniques engineering
4. Course name	Optoelectronic
5. Available Attendance Modes	On campus
6. Year of study	Third
7. Total course hours	60 hours
8. Date of this course descriptor	2024/4/6
9. Objectives:	
This course provides a study of the applications of electronic systems and elements that guide the detection and control of light emission, as it is considered a sponsoring field for photonics. And the importance of light in converting it into electrical energy in circuits that use these optoelectronic elements.	
10. Course Outcomes, Teaching and Learning Methods, and Assessment	
A. Cognitive Objectives	
The course aims to provide a deep understanding of semiconductors' working nature, and their importance in achieving electrical conductivity between conductor and isolators, as they have multiple properties that can be employed to generate an electric current that can be controlled in one direction, variable resistance and sensitivity to light and heat.	

Developing design and development skills: Making a connection between the theoretical content of lectures with the practical part by understanding the work of optical electronic devices, and connecting them directly and practically through various applications in which they are used for by using the Arduino card

Teaching and Learning Methods

- A - Cognitive objectives
- 1. Knowing the importance of semiconductors and the nature of their work
- 2. Knowing the nature of light and its properties, and how to apply it to generate electrical energy for the work of electronic circuits
- 3. Knowing the details of optical electronic devices' work
- 4. The importance of optical diodes and the different nature of their work from standard diodes
- 5 .Understand the work of solar cells and how to benefit from them to generate electrical energy
- B- Program Skills Objectives
- B 1 – The skill of practical linking to observe the work of optical electronic devices
- B2 – The skill of designing electronic circuits using the Arduino card to achieve different applications using optics electronic elements
- B3 – How to control the increase of electrical current generated by the optical diodes methods both when connected in front and reverse bias of these components

Assessment Methods

- Semester written exams
- Weekly assessment of practical experiments
- Daily quizzes and oral participation
- Homework assignments

Emotional and Values Objectives

- C1- Enabling students to solve problems related to the practical side of the subject through direct applications within the practical laboratories.
- C2- Enable students to understand the work of applications that contain these optical electronic devices and how they work using and programming the Arduino card

Teaching and Learning Methods

- Lecture method and use of interactive whiteboard-
- Encourage students' participation within the lecture by asking questions and linking the theoretical explanation with practical examples through the applications they observe in daily life
- Ask students to participate in discussions to see the extent to which they understand the scientific material

<ul style="list-style-type: none"> • Giving students homework that requires self-explanation in causal ways through electronic classes that contain a specific period before the end of the assignment or test time
Assessment Methods
<ul style="list-style-type: none"> • 1. Practical tests • 2. Theoretical tests • 3. Reports and studies • 4. Daily exams with self-solved questions • Grades specified by homework Assignments
<p>General and Transferable Skills (Other skills related to employment and personal development)</p> <p>D1- Developing the skills of students and preparing them to engage them in the field of public service or the private sector.</p> <p>D2- Developing personal skills to develop students and establish their own projects.</p>

11. Course structure					
Assessment	Teaching methodology	subject	Learning outcomes	hours	week
Exams in all their forms	Theoretical Practical	Introduction To Light and its Properties	Knowledge and Application	8	1
Exams in all their forms	Theoretical Practical	Understanding how to calculate light wavelengths, frequencies	Knowledge and Application	8	2
Exams in all their forms	Theoretical Practical	Introduction to Semiconductors and its importance in the electronic circuits	Knowledge and Application	8	3
Exams in all their forms	Theoretical Practical	Optoelectronic devices definitions	Knowledge and Application	8	4
Exams in all their forms	Theoretical Practical	LED Light Emitting Diodes working principle	Knowledge and Application	8	5
Exams in all their forms	Theoretical Practical	LED Coloring Material used in Semiconducting elements	Knowledge and Application	8	6
Exams in all their	Theoretical Practical	Photodiodes Working Principle	Knowledge and Application	8	7

forms					
Exams in all their forms	Theoretical Practical	Photodiodes Types, work and its uses	Knowledge and Application	8	8
Exams in all their forms	Theoretical Practical	Photodiode and LED work in Fire sensor application	Knowledge and Application	8	9
Exams in all their forms	Theoretical Practical	Optocoupler working principle	Knowledge and Application	8	10
Exams in all their forms	Theoretical Practical	Electrical Isolation	Knowledge and Application	8	11
Exams in all their forms	Theoretical Practical	Phototransistor Optocoupler	Knowledge and Application	8	12
Exams in all their forms	Theoretical Practical	Difference between Photodiode and Phototransistor	Knowledge and Application	8	13
Exams in all their forms	Theoretical Practical	Laser Diode working principle	Knowledge and Application	8	14
Exams in all their forms	Theoretical Practical	Laser Diode Types and uses	Knowledge and Application	8	15

12. infrastructure

1. Required Textbooks

Primary References (Sources)	Text book : <u>OPTOELECTRONIC DEVICES - Missouri S&T</u>
Recommended Books and References (Scientific Journals, Reports, etc.)	
Electronic resources	https://ece.mst.edu/media/academic

13. Curriculum Development Plan
<ul style="list-style-type: none"> • Keeping up with scientific developments in the field of specialization

Course Description Template

Course Description

This course description provides a concise overview of the key features of the course and the expected learning outcomes for students to achieve, demonstrating whether they have maximized the benefit from the available learning opportunities. It must be linked to the program description.

14. Educational Institution	Northern Technical University/ technical engineering college-Mosul
15. Department	Computer Techniques engineering
16. Course name	Advanced Communication
17. Available Attendance Modes	On campus
18. Year of study	Third
19. Total course hours	60 hours
20. Date of this course descriptor	2024/4/6
21. Objectives:	Providing a comprehensive understanding of wireless communication systems and technologies for students. By the end of the course, students should be able to analyze and design wireless communication systems, understand the challenges and constraints specific to wireless environments, and make informed decisions regarding the selection and optimization of wireless communication technologies. The course also focuses on practical applications and hands-on experience through projects and simulations. Overall, the course aims to equip students with the knowledge and skills necessary for successful design and implementation of wireless communication solutions.
22. Course Outcomes, Teaching and Learning Methods, and Assessment	

B. Cognitive Objectives

Knowledge and Understanding: Enable students to

1. Identify the characteristics of wireless communication channels.
2. Recognize embedding control techniques and multiple access patterns.
3. Study wireless network architectures.

B. Program-Specific Skills Objectives

1. Ability to identify wireless communication networks.
2. Ability to design, implement, and engineer wireless networks.

Teaching and Learning Methods

- Lecture to explain the material theoretically using PowerPoint software, in addition to engaging students in discussions to assess their understanding of the scientific material.
- Online platforms to provide students with essential files for the course, as well as scientific references.
- Assignments and quizzes, along with periodic exams.
- Conducting practical experiments in the laboratory.

Assessment Methods

- Semester written exams
- Weekly assessment of practical experiments
- Daily quizzes and oral participation
- Homework assignments

Emotional and Values Objectives

1. Developing scientific and methodological thinking skills regarding wireless communications.
2. Enhancing decision-making skills and practical problem-solving.

Teaching and Learning Methods

- Group work: Solving exercises and discussions.

Assessment Methods

- Periodic exams
- Direct questions
- Assignments

General and Transferable Skills (Other skills related to employment and personal development)

1. Developing students' skills and preparing them for entry into the public or private sector job market.
2. Enhancing personal skills to develop students and establish their own projects.

23. Course structure					
Assessment	Teaching methodology	subject	Learning outcomes	hours	week
Exams in all their forms	Theoretical Practical	Introduction to wireless communication systems: Evolution of mobile communication, mobile radio around the world, 2G, 3G, G4 systems, Cellular systems, hexagonal cell geometry,	Knowledge and Application	8	1-2
Exams in all their forms	Theoretical Practical	The cellular concept-system design fundamentals: Frequency reuse and cell splitting concept.	Knowledge and Application	8	3-4
Exams in all their forms	Theoretical Practical	Pathloss models:	Knowledge and Application	8	5-6
Exams in all their forms	Theoretical Practical	Multiple access techniques	Knowledge and Application	8	7-8
Exams in all their forms	Theoretical Practical	Mobile handoff strategies.	Knowledge and Application	8	9-10
Exams in	Theoretical	Mobile calls and data rerouting strategies	Knowledge and	8	11-13

all their forms	I Practical		Application		
Exams in all their forms	Theoretical I Practical	Recent trends: WiFi, Bluetooth, ZigBee protocols.	Knowledge and Application	8	14-15

24. infrastructure	
1. Required Textbooks	
Primary References (Sources)	Text book : Vijay K. Garg, Wireless Communication and Networking
Recommended Books and References (Scientific Journals, Reports, etc.)	Theodore S. Rappaport, Wireless Communication: Principles and Practice
Electronic resources	The internet

25. Curriculum Development Plan
<ul style="list-style-type: none"> Keeping up with scientific developments in the field of specialization



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Digital Logic	Module Delivery	
Module Type	Core	✓ Theory ✓ Lecture ✓ Lab ✓ Tutorial ✓ Practical ✓ Seminar	
Module Code	BCTE101-S1		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	1
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Khalis A. Mohammed	e-mail	Khalis_am@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none">1. To learn the basic techniques and methodologies for designing and analyzing digital systems and how to apply these techniques to build specific circuits.2. Define the problem (Inputs and Outputs), write its functions3. Implement functions using Combinational digital circuit.4. Minimize functions using any type of minimizing algorithms (Boolean algebra, Karnaugh-Map or Tabulation Method).5. Have knowledge in analyzing and designing procedures of Combinational digital circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1. Learning about the different number systems.2. Learning the arithmetic operations related to different number systems.3. Learning the different logic gates of computer system and their work.4. Ability to design, simplify and implement different logical and arithmetic circuits that considered the basic of digital system.5. Ability to design, simplify and implement different sequential circuits, counters and shift registers.
Indicative Contents	Indicative content includes the following: <ul style="list-style-type: none">• <u>Part 1 – Numbers Systems, Operations, and Codes</u>

المحتويات الإرشادية	<p>Different Number Systems, Data representation (integer and fraction) using different number systems. Conversion Between Different Numbers Systems. Arithmetic operations using different number systems, and Digital Codes (BCD, Parity, Gray, Excess-3 etc.) [14 hrs]</p> <ul style="list-style-type: none"> • <u>Part 2- Logic Gates</u> The Inverter (NOT Gate), AND Gate, OR Gate, NAND Gate, NOR Gate, the Exclusive-OR Gate and Exclusive-NOR Gates. [12 hrs] • <u>Part 3 Boolean Algebra and Logic Simplification</u> Boolean Operations and Expressions, Laws and Rules of Boolean Algebra, Simplification Using Boolean Algebra, DE Morgan's theorems, The Karnaugh Map (1, 2, 3 and 4 variables), SOP and POS Minimization. [16 hrs] • <u>Part 4 Combinational Logic Analysis</u> Basic Combinational Logic Circuits, Implementing Combinational Logic, Combinational Logic Using NAND and NOR Gates, Logic Circuit Operation with Pulse Waveform Inputs. [10 hrs] • Revision problem classes [6 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>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.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4.93
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	101	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	8	10% (10)	4,6,10,12	LO #1, 2, 10 and 11
	Assignments	8	10% (10)	2, 5,8,11	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	All
	Report	8	10% (10)	1,3,9,13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	1- Numbers Systems, Operations, and Codes: Decimal Numbers, Binary numbers.
Week 2	1- Numbers Systems, Operations, and Codes: Hexadecimal Numbers, Octal numbers.
Week 3	1- Numbers Systems, Operations, and Codes: Data representation (integer and fraction) using different number systems. Conversion Between Different Numbers Systems .

Week 4	1- Numbers Systems, Operations, and Codes: Arithmetic operations using 9's and 10's Complements of Decimal Numbers. Arithmetic operations using 1's and 2's Complements of Binary Numbers.
Week 5	1- Numbers Systems, Operations, and Codes: Signed Numbers, Arithmetic Operations with Signed Numbers.
Week 6	1- Numbers Systems, Operations, and Codes: Digital Codes (BCD, Excess-3, Parity, Gray etc.).
Week 7	2- Logic Gates: The Inverter (NOT Gate), The AND Gate, The OR Gate.
Week 8	2- Logic Gates: NAND Gate, NOR Gate, Exclusive-OR Gate and Exclusive-NOR Gates.
Week 9	3- Boolean Algebra and Logic Simplification: Boolean Operations and Expressions.
Week10	3- Boolean Algebra and Logic Simplification: Laws and Rules of Boolean Algebra.
Week11	3- Boolean Algebra and Logic Simplification Simplification Using Boolean Algebra. DeMorgan's theorems.
Week12	3- Boolean Algebra and Logic Simplification The Karnaugh Map (1, 2, 3 and 4 variables) , SOP and POS Minimization.
Week13	4- Combinational Logic Analysis: Basic Combinational Logic Circuits. Implementing Combinational Logic.
Week14	4- Combinational Logic Analysis: Combinational Logic Using NAND and NOR Gates. Logic Circuit Operation with Pulse Waveform Inputs.
Week15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to digital laboratory kit operation
Week 2	Lab 2: Logic Gates (AND, OR, NOT, NAND, NOR).
Week 3	Lab 3: Logic Gates (XOR, XNOR).
Week 4	Lab 4: Design of (AND, OR, NOT) gates Using NAND gates.
Week 5	Lab 5: Design of (AND, OR, NOT) gates Using NOR gates.
Week 6	Lab 6: Implementation of logic circuits using NAND-gate only.
Week 7	Lab 7: Implementation of logic circuits using NOR-gate only.
Week 8	Lab 8: Implementation of DeMorgan theory, 1 st Law
Week 9	Lab 9: Implementation of DeMorgan theory, 2 nd Law
Week 10	Lab 10: Design of a combinational logic circuits . Part 1
Week 11	Lab 11: Design of a combinational logic circuits. Part 2
Week 12	Lab 12: Realization of Boolean equation. Part 1
Week 13	Lab 13: Realization of Boolean equation. Part 2
Week 14	Lab 14: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas L. Floyd, Digital Fundamentals, 11th Edition, Pearson Education 2015	Yes
Recommended Texts	M. Morris Mano, Michael D. Ciletti, Digital Design, 5th edition, Pearson Education 2013	No
Websites	Digital Systems: From Logic Gates to Processors: https://www.coursera.org/learn/digital-systems	

APPENDIX:

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Mathematics	Module Delivery	
Module Type	Basic	✓ Theory	
Module Code	BCTE102-S1	✓ Lecture	
ECTS Credits	5	Lab	
SWL (hr/sem)	125	✓ Tutorial	
Module Level	1	Practical	
Administering Department	Department of Computer Techniques Engineering	Semester of Delivery	1
Module Leader	Ayhan A. khaleel	College	Northern Technical University Engineering Technical College/Mosul
Module Leader's Acad. Title	Lecturer	e-mail	Ay_ahmed@ntu.edu.iq
Module Tutor	None	Module Leader's Qualification	M.Sc.
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	e-mail	None
		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Mathematics is an important tool for understanding modern and scientific technologies, and the modern world today relies heavily on mathematics. Mathematics is also characterized by multiple benefits, including that it is an intellectual tool, a strong communication method, and it is in itself a way of thinking, through which the capabilities of individuals develop, and it helps us in advanced logical thinking. It also helps the student to understand the laws and issues needed for the purpose of solving simple and complex electrical circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	6. Learning about the basic Matrix and Determinants 7. Learning the Algebraic functions, natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions. 8. Learning the Derivatives formula and chain rule. 9. Learning the Integration, Indefinite and Definite Integral 10. Learning the Integration method
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Part A – the basic Matrix and Determinants Matrix, properties, and operations, Determinants and properties of determinants Inverse of square matrix by determinants, Solving linear System equations using the inverse of the coefficient matrix and Cramer's rule. [13 hrs] Part B – Algebraic functions

	<p>Review of natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions. [10 hrs]</p> <p>Part C - Derivatives of natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions.</p> <p>Applications of differentiation. [20 hrs]</p> <p>Part D: Review of Integration, Indefinite and Definite Integral, Integration method and Applications of integration, approximation (trapezoidal rule, Simpson's rule)</p> <p>Area between curves [10 hrs]</p> <p>Revision problem classes [6 hrs]</p>
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in exercises, while improving and expanding their mathematical reasoning skills.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	8	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	13	10% (10)	Continuous	All
	Projects / Lab.	0	0		
	Report	0	0		
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1-7
	Final Exam	3 hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Matrix, properties, and operations
Week 2	Determinants and properties of determinants Inverse of square matrix by determinants
Week 3	Solving linear System equations using the inverse of the coefficient matrix and Cramer's rule
Week 4	Algebraic functions
Week 5	Review of natural logarithm, the exponential function, trigonometric functions
Week 6	inverse trigonometric functions and hyperbolic functions
Week 7	Derivatives formula and chain rule.
Week 8	Derivatives of natural logarithm, the exponential function, trigonometric functions
Week 9	inverse trigonometric functions and hyperbolic functions.

Week 10	Applications of differentiation.
Week 11	Review of Integration, Indefinite and Definite Integral
Week 12	Integration method
Week 13	Integration method
Week 14	Applications of integration, approximation(trapezoidal rule, Simpson's rule) Area between curves
Week 15	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Advance Engineering Mathematics, Alan Jeffrey, 2002	Yes
Recommended Texts	Calculus I, Paul Dawkins, 2007	No
Websites	https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

Note:

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



Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Technology Engineering



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	COMPUTER ORGANIZATION	Module Delivery	
Module Type	Core	<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BCTE103-S1		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	1
Administering Department	Department of Computer Technology Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Mohammed G. Ayoub	e-mail	Mohammed.ghanim@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	14/06/2023	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	At the end of this course, following learning objectives are expected to be achieved: -To understand principles of computer organization and the basic architectural concepts. -To understand the structure, function and characteristics of computer systems. -To understand how the various components of Computer Systems fit together and interact. -To explain the function of each element of a memory hierarchy.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">11. Understand the basic concepts and structure of computers.12. Understand the main architectures of computer systems.13. Learn the concept of memory hierarchy.14. Understand the architecture and functionality of memory and storage in the computer systems.15. Understand the theory and architecture of central processing unit.16. Understand the architecture and functionality of I/O units.17. To be familiar with fundamental programming concepts and methodology.18. Understand the theory and architecture of Intel Microprocessors.
Indicative Contents المحتويات الإرشادية	<ol style="list-style-type: none">1. Introduction to Computer Systems: [2 hr.]<ol style="list-style-type: none">a. Overview of Computer Characteristicsb. Introduction to Software and Hardware

	<ul style="list-style-type: none"> c. Comparison of different Computers Categories 2. Introduction to Computer Architecture: [2 hr.] <ul style="list-style-type: none"> a. Von Neumann and Harvard architectures b. Advantages and disadvantages of both architectures 3. The Memory Hierarchy: [4 hr.] <ul style="list-style-type: none"> a. Overview of memory hierarchy in computer systems b. Comparison of different memory types such as Registers, Caches, Main Memory c. Calculation of Average Memory Access Time d. Overview of Cache Miss and Cache Hit 4. Types of CPU Register and their Functions: [2 hr.] <ul style="list-style-type: none"> a. Operations of CPU Registers b. Types and Functions of CPU Registers 5. Computer Bus Types and Functions: [2 hr.] <ul style="list-style-type: none"> a. Data Bus, Address Bus, Control Bus b. Internal and External Buses 6. Semiconductor Memory Types & Technologies: [6 hr.] <ul style="list-style-type: none"> a. Memory Array, Capacity and Addressing b. Read and Write Operations in Memory c. SRAM, DRAM, RAM Family, ROM Family d. Flash Memory, Magnetic Storage, e. Optical Storage and Cloud Storage System 7. Basic Operation of Processors: [2 hr.] <ul style="list-style-type: none"> a. Fetch/Execute Cycle b. Pipelining and Processor Elements 8. Levels of Programming Languages: [2 hr.] <ul style="list-style-type: none"> a. Assembly Language and Machine Language 9. Introduction to the Intel Microprocessors: [6 hr.] <ul style="list-style-type: none"> a. Pre-Pentium Intel Process b. 4004,8080/8085,8086/8086 80386,80486 and Multicore
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>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.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered	
Week 1	Introduction to Computer Systems
Week 2	Introduction to Computer Architecture
Week 3	The Memory Hierarchy
Week 4	Average Memory Access Time (AMAT)
Week 5	Types of CPU Register and their Functions
Week 6	Computer Bus Types and Functions
Week 7	Basics of Semiconductor Memory Types & Technologies Parts I
Week 8	Basics of Semiconductor Memory Types & Technologies Parts II
Week 9	Basics of Semiconductor Memory Types & Technologies Parts III
Week 10	Basic Operation of Processors
Week 11	Levels of Programming Languages
Week 12	Introduction to the Intel Microprocessors Parts I
Week 13	Introduction to the Intel Microprocessors Parts II
Week 14	Introduction to the Intel Microprocessors Parts III
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Material Covered	
Week 1	Lab 1: Introduction to Computer System Parts
Week 2	Lab 2: Peripherals Devices
Week 3	Lab 3: Computer Monitors
Week 4	Lab 4: Computer Cables
Week 5	Lab 5: Types of Microprocessors
Week 6	Lab 6: Types of Memory in Computer System
Week 7	Lab 7: Storage in Computer System
Week 8	Lab 8: Motherboards and Graphics Card
Week 9	Lab 9: Types of Computer Ports
Week 10	Lab 10: Computer Software Part I
Week 11	Lab 11: Computer Software Part II
Week 12	Lab 12: Programming Languages
Week 13	Lab 13: Computer Networks
Week 14	Lab 14: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	1. 1- Computer Architecture & Organisation by Atul. P. Godse, Deepali. A. Godse. Publisher: Technical Publication 2019. 2. 2- Computer Systems Architecture by Yadin, Aharon. Publisher: Taylor & Francis Group, Year: 2016.	No
Websites	https://www.coursera.org , https://www.udemy.com	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

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



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Drawing	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE104-S1	✓ Lecture	
ECTS Credits	3	✓ Lab	
SWL (hr/sem)	75	✓ Tutorial	
Module Level		1	Semester of Delivery
Administering Department		Department of Computer Techniques Engineering	College
Module Leader		Naqaa L. Mohammed	e-mail
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification
Module Tutor		None	e-mail
Peer Reviewer Name		None	e-mail
Review Committee Approval		12/06/2023	Version Number
			1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	<ol style="list-style-type: none">1. Define engineering drawing material, its uses and Engineering drawing tools2. Introduction to Engineering drawing through AutoCAD software3. Developing the student's mental and abilities in drawing simple and complex shapes4. Decomposes 3D shapes into binary projections
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">19. Learning types of engineering lines and their uses and how to draw20. Drawing geometric shapes such as square, rectangular, parallelogram and circle

	<p>21. Learning dimensions in engineering drawing and how to put them on the drawing</p> <p>22. Learning Fundamentals of projection in engineering drawing</p> <p>23. Ability of drawing an anthropomorphic shape</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> • <u>Part A – AutoCAD interface</u> Setup, save, limits, grid, object snap and ortho mode [3 hrs.] • <u>Part B- Coordinate method</u> Direct distance method, Absolute coordinate, Relative coordinate, Polar coordinate[3hrs] • <u>Part C Draw menu</u> Line, polyline, rectangle, arc, circle, ellipse and hatch [12hrs] • <u>Part D Modify and Properties menu</u> Copy, move, offset, erase, extend, trim and array, line shape and line size [9 hrs.] • <u>Part D Projection</u> <u>Front, side and top ortho projections [6 hrs.]</u> <ul style="list-style-type: none"> • <u>Part E stereoscopic shapes</u> <p><u>Method for drawing stereoscopic shapes[6hrs]</u></p> <ul style="list-style-type: none"> • Revision problem classes [8 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>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.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

<p>Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل</p>	45	<p>Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً</p>	3
<p>Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	30	<p>Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً</p>	2
<p>Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل</p>	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<p>Formative assessment</p>	<p>Quizzes</p>	3	10% (10)	5, 10	LO #1, 2, 10 and 11
	<p>Assignments</p>	3	5% (10)	2, 12	LO # 3, 4, 6 and 7
	<p>Projects / Lab.</p>	1	5% (10)	Continuous	All
	<p>Report</p>	0	0% (0)	0	0
<p>Summative assessment</p>	<p>Midterm Exam</p>	2 hr	30% (10)	7	LO # 1-7
	<p>Final Exam</p>	3 hr	50% (50)	16	All

Total assessment	100% (100 Marks)		
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Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	-Get a quick introduction to AutoCAD -Drawing Setup in AutoCAD -Use precision drawing tools such as Grid, Object Snap, and Limits to create accurate measurements in drawings.
Week 2	Coordinate method (Direct distance method, Absolute coordinate, Relative coordinate, Polar coordinate)
Week 3	Draw menu (line, poly line, polygon, rectangle).
Week 4	Drawing objects of Pentagonal, hexagonal and octagonal shapes
Week 5	Draw menu (arc, circle, ellipse, point and text).
Week 6	Draw several shapes containing circles and texts
Week 7	Modify menu (erase, copy, mirror, move offset,)
Week 8	Modify menu (rotate, trim, extend, explode)
Week 9	Properties and Layers in AutoCAD and dimension
Week 10	Orthographic projection
Week 11	Draw the three projection(front, side and top) of some shapes
Week 12	Basics of drawing stereoscopic shapes
Week 13	Draw stereoscopic shape
Week 14	Printing the graphic
Week 15	Preparatory Week
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Definition of AutoCAD interface
Week 2	Lab 2: Applications of Coordinate method
Week 3	Lab 3: Draw figures of lines, polygons and rectangle
Week 4	Lab 4: Drawing objects of Pentagonal, hexagonal and octagonal shapes
Week 5	Lab 5:Drawing figures of circles and ellipse
Week 6	Lab 6: Draw several shapes containing circles and texts
Week 7	Lab 7: Applications of some order in modify menu
Week 8	Lab 8: Applications of other order in modify menu
Week 9	Lab 9: Practicing of using layers
Week 10	Lab 10:Practicing of projection of simple figure
Week 11	Lab 11: Draw three projection of figure
Week 12	Lab 12: Practicing of drawing stereoscopic shapes
Week 13	Lab 13: Draw stereoscopic shape
Week 14	Lab 14: Practicing of Printing the graphic

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?

Required Texts	AutoCAD 2017 2D Fundamentals Randy H. Shih © Tutorial First Level by Randy H. Shih	No
Recommended Texts	Introduction to AutoCAD 2011 2D and 3D Design, Alf Yarwood	No
Websites	https://youtu.be/XF08VQT731M Introduction to AutoCad 2017 Tutorial series	

APPENDIX:

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	fundamentals of electrical engineering	Module Delivery	
Module Type	Core	✓ Theory ✓ Lecture ✓ Lab ✓ Tutorial ✓ Practical ✓ Seminar	
Module Code	BCTE105-S1		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	1
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Maysaloon Abed Qasim	e-mail	Maysaloon.alhashim@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course focuses on direct current (DC) circuit analysis and aims to: 1-Understanding of the fundamental laws and elements of electrical circuits design and application. 2-Understand the techniques to analyze different circuit configuration 3- Analyze resistive circuits and laws/theorems including Kirchhoff's Superposition, Thevenin's, Nortons, and Maximum Power Transfer. 4- Develop students computational skills.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Having successfully completed the course, students will be able to: 1- Know the various types of electric circuits. 2-Know the Elements of electric circuits and their roles 3-Apply different techniques to analyze electric circuits. 4-Solve Problem of different electric circuits 5-Compare the application of different type of electric circuits. 6-Appreciate the importance of electric circuit elements. 7-Compare and contrast the operation of different types of electrical elements. 8-Derive equations related to the circuit's performance and design. 9-Identify different types of electrical elements and their applications.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • <u>Part A – General Electric System.</u> Constituent parts of an electrical system (source, load, communication & control), Current flow in a circuit, Electromotive force and potential difference, Electrical units.

	<p>Ohm's law, Resistors, Resistivity, Temperature rise & Temperature coefficient of resistance, Voltage & Current sources [8 hrs]</p> <ul style="list-style-type: none"> • <u>Part B DC circuits.</u> Series circuits, Parallel circuits. Kirchoff's laws. Power and energy [14 hrs] • <u>Part C Network Theorems</u> . Star-delta & delta-star transformation. Sources transformations Mesh analysis. Nodal analysis. Superposition theorem. Thevenin's theorem. Norton's theorem. Maximum power transfer theorem. [32 hrs] • Revision problem classes [4 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>1-Hands-on Experiments: Engage students in practical experiments to deepen their understanding of circuits.</p> <p>2-Simulation Software: Use circuit simulation software for virtual circuit design and analysis.</p> <p>3-Problem-solving Exercises: Include various problem-solving exercises to apply circuit analysis techniques.</p> <p>4-Group Projects: Assign collaborative projects for circuit design and construction.</p> <p>5-Real-world Applications: Discuss practical applications of circuits in different devices and systems.</p> <p>5-Interactive Discussions: Encourage student participation and critical thinking through open-ended questions.</p> <p>6-Conceptual Understanding: Focus on intuitive understanding alongside mathematical analysis.</p> <p>7-Assessment Variety: Use diverse assessment methods to gauge student understanding.</p> <p>8-Office Hours and Support: Offer individualized assistance through office hours or online support.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	117	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	8	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	8	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	All
	Report	8	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

Material Covered	
Week 1	Constituent parts of an electrical system, Current flow in a circuit, Electromotive force and potential difference, Electrical units.

Week 2	Ohm's law, Resistors, Resistivity, Temperature rise & Temperature coefficient of resistance, Voltage & Current sources
Week 3	Series circuits , Parallel circuits.
Week 4	Kirchhoff's laws.
Week 5	Power and energy.
Week 6	Star-delta & delta-star transformation
Week 7	Sources transformations
Week 8	Mesh analysis.
Week 9	Nodal analysis.
Week 10	Superposition theorem.
Week 11	Thevni's theorem
Week 12	Nortan's theorem
Week 13	Maximum power transfer theorem.
Week 14	Reciprocity theorem
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Connection of resistances in series and parallel.
Week 2	Lab 2: Verification of Ohm's law using hardware .
Week 3	Lab 3: Verification of Ohm's law using digital simulation.
Week 4	Lab 4: Verification of Kirchhoff's current law and Voltage law using hardware.
Week 5	Lab 5: Verification of Kirchhoff's current law and Voltage law using digital simulation.
Week 6	Lab 6: Determination of mesh currents using hardware.
Week 7	Lab 7: Determination of mesh currents using digital simulation.
Week 8	Lab 8: Measurement of nodal voltages using hardware and digital simulation.
Week 9	Lab 9: Verification of superposition theorem using hardware .
Week 10	Lab 10: Verification of superposition theorem using digital simulation.
Week 11	Lab 11: Verification of Thevni's theorem using hardware.
Week 12	Lab 12: Verification of Thevni's theorem using hardware.
Week 13	Lab 13: Verification of Nortan's using hardware.
Week 14	Lab 14: Verification of Nortan's using digital simulation.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Charles K. Alexander, Matthew N.O. Sdiku Fundamentals of Electrical Engineering, 4th Edition, 2009	Yes
Recommended Texts	Tony R. Kuphaldt, Lessons In Electric Circuits, Volume I - DC 5th edition, Pearson Education 2002	No
Websites	Direct Current (DC) https://www.allaboutcircuits.com/textbook/direct-current/	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
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الصفحة

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

Note:

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Human rights and Democracy	Module Delivery	
Module Type	Suplement	✓ Theory ✓ Lecture Lab Tutorial Practical ✓ Seminar	
Module Code	NTU100		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	1
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Dr. Eesha I. Mohammed	e-mail	aysha.ibrahim@ntu.edu.iq
Module Leader's Acad. Title	Assist Prof.	Module Leader's Qualification	PHD
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives	تهدف الديمقراطية وحقوق الإنسان للحفاظ على كرامة الفرد وحقوقه الأساسية وتعزيزها كما تحقيق العدالة الاجتماعية وتشجيع التنمية الاقتصادية والاجتماعية للمجتمع وتماسكه فضلاً عن توطيد الأمان الوطني وإرساء مناخ مؤات للسلام الدولي وذلك لأن حقوق الإنسان والديمقراطية مرجعاً أساسياً للجميع لحماية حقوق الإنسان؛ وهي توفر بيئة لحماية حقوق الإنسان وإعمالها إعمالاً فعلياً. واليوم، بعد مضي فترة على تحقيق الديمقراطية في مختلف أنحاء العالم، يبدو أن العديد من النظم الديمقراطية تتراجع. ويظهر أن بعض الحكومات تعتمد إضعاف إجراء عمليات تحقق مستقلة بشأن سلطاتها، والقضاء على أي نقد، وتفكيك الرقابة الديمقراطية وضمان حكمها لمدة طويلة، مع أثر سلبي على حقوق الشعب.
Module Learning Outcomes	1- فهم ومعرفة وأدراك حقوقه التي اقرها الله له وللشعر جميعاً وبالتالي فهي هبه وليس مكسب من أحد ولا يحق لأي شخص انتزاعها. 2- يعبر الطالب بأسلوبه الخاص عن هذه الحقوق ويدافع عنها. 3- تحليل الظواهر واعطاء التفسيرات لما يحدث امامه من انتهاك لحقوق الانسان وحرياته من خلال تحديد اوجه النقص او الثغرات الموجودة في ضوء المعلومات المتوفرة لديه 4- فهم اهم النظم السياسية والتي تعد ضمانه لحقوق الانسان وحرياته السياسية ومحاولة تطبيقه على ارض الواقع الا وهو النظام الديمقراطي.
Indicative Contents	❖ حقوق الانسان في التاريخ المعاصر والحديث: الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة (4 ساعات)

	<p>❖ حقوق الانسان، تعريفها، اهدافها وحقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين (6 ساعات)</p> <p>ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي:</p> <p>- دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات</p> <p>- دور المنظمات الاقليمية (الجامعة العربية، الاتحاد الأوربي، الاتحاد الافريقي، منظمة الدول الأمريكية، منظمة آسيان)</p> <p>❖ دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان (12 ساعة)</p> <p>❖ المشاكل والمعوقات ونقاشات الطلبة (6 ساعات)</p>
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>- استراتيجيات التفكير حسب قدرة الطالب</p> <p>2- استراتيجيات مهارة التفكير العالية</p> <p>3- استراتيجيات التفكير الناقد في التعلم</p> <p>4- العصف الذهني</p>
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Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	28	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	22	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1.5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	0	0	Continuous	All
	Projects / Lab.	0	0		
	Report	4	10% (10)		
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1-7
	Final Exam	3 hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered	
Week 1	حقوق الانسان، تعريفها، اهدافها
Week 2	حقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين
Week 3	حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الإسلام
Week 4	حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الأمم المتحدة
Week 5	الاعتراف الاقليمي بحقوق الانسان : الاتفاقية الاوربية لحقوق الانسان 1950 ، الاتفاقية الامريكية لحقوق الانسان 1969 ، الميثاق الافريقي لحقوق الانسان 1981 ، الميثاق العربي لحقوق الانسان 1994
Week 5	حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الأمم المتحدة

Week 6	حقوق الانسان في الدساتير العراقية بين النظرية والواقع
Week 7	حقوق الانسان الاقتصادية والاجتماعية والثقافية و حقوق الانسان المدنية والسياسية
Week 8	حقوق الانسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين
Week 9	ضمانات احترام وحماية حقوق الانسان على الصعيد الوطني ، الضمانات في الدستور والقوانين الضمانات في الرقابة الدستورية ، الضمانات في حرية الصحافة والرأي العام ، دور المنظمات غير الحكومية في احترام وحماية حقوق الانسان
Week 10	ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي : - دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات - دور المنظمات الاقليمية (الجامعة العربية ، الاتحاد الأوربي ، الاتحاد الافريقي ، منظمة الدول الأمريكية ، منظمة آسيان) دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان
Week 11	مصطلح الديمقراطية ، نشأته ، دلالاته ، تاريخ الديمقراطية.
Week 12	الاسلام والديمقراطية ومساوى الحكم الاستبدادي .
Week 13	الانتقادات الموجهة للديمقراطية، ومحاسن النظام الديمقراطي.
Week 14	الأنظمة الديمقراطية في العالم/الديمقراطية في العالم الثالث/ المشاكل التي تواجه البلدان العربية في التحول الديمقراطي
Week 15	الامتحان النهائي

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	حقوق الانسان والديمقراطية – المفاهيم والمرتكزات للدكتور سماح مهدي العلياوي والدكتور سلمان كاظم البهادلي	Yes
Recommended Texts	الديمقراطية وحقوق الانسان في الاسلام للدكتور راشد الغنوشي	No
Websites	https://www.neelwafurat.com https://studies.aljazeera.net	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
<p>NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>				



Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English Language	Module Delivery	
Module Type	SUPPLEMENT	✓ Theory	
Module Code	NTU101	✓ Lecture	
ECTS Credits	2	Lab	
SWL (hr/sem)	50	Tutorial	
Module Level	1	Practical	
Administering Department	Department of Computer Techniques Engineering	Semester of Delivery	2
Module Leader	dr. Younis Anas Younis	College	Northern Technical University Engineering Technical College/Mosul
Module Leader's Acad. Title	Lecturer	e-mail	younis.alrozz@ntu.edu.iq
Module Tutor	None	Module Leader's Qualification	PhD.
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	e-mail	None
		Version Number	1.0

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

Module Aims, Learning Outcomes, and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	To enable the learner to communicate effectively and appropriately in real life situation. To use English effectively for study purposes across the curriculum. To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking, and Writing. To revise and reinforce structure already learned.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Students will heighten their awareness of the correct usage of English grammar in writing and speaking. Students will improve their speaking ability in English both in terms of fluency and comprehensibility. Students will give oral presentations and receive feedback on their performance. Students will increase their reading speed and comprehension of academic articles. Students will improve their reading fluency skills through extensive reading.

	Students will enlarge their vocabulary by keeping a vocabulary journal.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following:</p> <p><u>Part 1 – Grammar</u> [4 hrs] Tenses, Present tenses: Present Simple, Present Continuous</p> <p><u>Part 2 – Vocabulary</u> [6 hrs] Irregular verbs, making connections, Nouns, verbs, and adjectives, Making negatives.</p> <p><u>Part 3 – Speaking</u> [6 hrs] Information gap, people's lifestyles, comparing cities.</p> <p><u>Part 4 – Listening</u> [4 hrs] Telling stories, Town survey, attitudes to shopping, comparing cities.</p> <p><u>Revision</u> [2 hrs]</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage student's 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 interesting sampling activities for the students.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	22	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1.12
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	3, 7, 11, 14	LO #1, 2, 10 and 11
	Assignments	0	0	0	0
	Projects / Lab.	0	0	0	0
	Report	4	10% (10)	5, 6, 8, 10, 13	LO # 5, 8 and 12
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1-7
	Final Exam	3 hr	60% (60)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Grammar: Tenses, Questions, Questions words Vocabulary: Using a bilingual dictionary, Parts of speech, and Words with more than one meaning. Everyday English: Social expressions.
Week 2	Reading: the many ways we communicate Speaking: Information gap

	Listening: Neighbors
Week 3	Grammar: Present tenses: Present Simple, Present Continuous, have/have got Vocabulary: Describing countries, Collocation Everyday English: Making conversation
Week 4	Reading: three people talk about their experiences Speaking: people's lifestyles Listening: what annoys you about the people in your life?
Week 5	Grammar: Past tenses: Past Simple, Past Continuous Vocabulary: Irregular verbs, making connections, Nouns, verbs, and adjectives, Making negatives. Everyday English: Time expressions
Week 6	Reading: Newspaper stories Speaking: Telling stories Listening: A radio drama
Week 7	Grammar: Quantity, Articles Vocabulary: Buying things Everyday English: Prices and shopping
Week 8	Reading: 'The best shopping street in the world' Speaking: Town survey, attitudes to shopping Listening: Buying things
Week 9	Grammar: Verb patterns 1, Future intentions Vocabulary: Hot verbs Everyday English: How do you feel?
Week 10	Reading: Hollywood kids Speaking: Being a teenager Listening: You've got a friend
Week 11	Grammar: Comparative and superlative adjectives Vocabulary: Synonyms and antonyms Everyday English: Directions
Week 12	Reading: 'A Tale of two millionaires' Speaking: comparing cities Listening: Living in another country
Week 13	Grammar: Present Perfect and Past Simple Vocabulary: Past participles, Adverbs, Word pairs Everyday English: Short answers
Week 14	Review
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	

Week 13	
Week 14	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	New Headway Intermediate Students Book	No
Recommended Texts		
Websites	You can visit the course page at the following link: https://youtube.com/playlist?list=PLzOug2pV17x9JD3wR8mk5qst_1EQ1myF6	

APPENDIX:

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



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Digital Circuits	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE101-S2	✓ Lecture	
ECTS Credits	6	✓ Lab	
SWL (hr/sem)	150	✓ Tutorial	
Module Level	1	Semester of Delivery	2
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University ENGINEERING TECHNICAL COLLEGE/MOSUL
Module Leader	Khalis A. Mohammed	e-mail	Khalis_am@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Digital Logic BCTE101-S1	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none">1. To learn the basic techniques and methodologies for designing and analyzing digital circuits such as Adder - subtractor circuits.2. To learn the Decoder and Encoder circuits.3. To learn the Comparator, Multiplexer and Demultiplexer circuits.4. To learn and analysis sequential circuits such as flip-flop circuits and Registers.5. To learn the types of counters.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">24. Ability to design Adder and Subtractor circuits.25. Knowledge of designing encoder and decoder circuits.26. Knowledge the Comparator, Multiplexer, Demultiplexer and places of use.27. Learn how to design an asynchronous and synchronous counters.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <ul style="list-style-type: none">• <u>Part 1 – Functions of Combinational Logic.</u> Half, Full and Parallel Binary Adders and Subtractors. 1's and 2's Complement Subtractor, 2's Complement Adder-Subtractor, BCD Adder, etc. Comparators, Decoders, Encoders, Multiplexers, Demultiplexer [14 hrs]• <u>Part 2- Latches, Flip-Flops, and Timers.</u>

	<p>Latches, Edge-Triggered Flip-Flops. Flip-Flop operating (R-S, T, J-K ,D) [12 hrs]</p> <ul style="list-style-type: none"> • <u>Part 3 Counters</u> <p>Synchronous Counters, Asynchronous Counters. Design of Counters. [26 hrs]</p> <ul style="list-style-type: none"> • <u>Part 4 Shift Registers</u> <p>Basic Shift Register Operations: SISO, SIPO, PISO, PIPO, Bidirectional and special Types Shift Register. [10 hrs]</p> <ul style="list-style-type: none"> • Revision problem classes [6 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>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.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	61	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	5% (5)	4,6,10	LO # 2, 10 and 11
	Assignments	3	5% (5)	2, 5,8	LO # 3, 4 and 7
	Lab.	14	10%(10)	Continuous	All
	Projects	3	5% (5)	3,9,11	LO # 5, 8 and 10
	Report	6	10% (10)	Continuous	All
	Seminars	3	5% (5)	4,10,12	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered	
Week 1	1- Functions of Combinational Logic. Basic Adders; Half and Full Adders.
Week 2	1- Functions of Combinational Logic. Basic Subtractors; Half and Full Subtractors.
Week 3	1- Functions of Combinational Logic. Parallel Binary Adders and Subtractors. 1's ,2's Complement Subtractor, 2's Complement Adder-Subtractor, BCD Adder, etc.

Week 4	1- Functions of Combinational Logic. Comparators, Code converters.
Week 5	1- Functions of Combinational Logic. Decoders, Encoders.
Week 6	1- Functions of Combinational Logic. Multiplexers (Data Selectors), Demultiplexer.
Week 7	2- Latches, Flip-Flops, and Timers. Latches
Week 8	2- Latches, Flip-Flops, and Timers. Edge-Triggered Flip-Flops.
Week 9	2- Latches, Flip-Flops, and Timers. Flip-Flop operating (R-S, T, J-K ,D)
Week 10	3- Counters Synchronous Counters.
Week 11	3- Counters Asynchronous Counters.
Week 12	3- Counters Design of Counters.
Week 13	4- Shift Registers Basic Shift Register Operations. Serial In/Serial out Shift Registers. Serial In/Parallel out Shift Registers.
Week 14	4- Shift Registers Parallel In/Serial Out Shift Registers. Parallel In/parallel Out Shift Registers. Bidirectional Shift Registers.
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Half Binary Adder
Week 2	Lab 2: Full Binary Adder
Week 3	Lab 3: Half Binary Subtractor
Week 4	Lab 4: Full Binary Subtractor
Week 5	Lab 5: 2's Complement Adder-Subtractor
Week 6	Lab 6: Binary Comparator
Week 7	Lab 7: Digital Multiplexer
Week 8	Lab 8: DeMultiplexer.
Week 9	Lab 9: Decoders
Week 10	Lab 10: Encoders
Week 11	Lab 11: D Flip-Flop
Week 12	Lab 12: JK- Flip-Flop
Week 13	Lab 13: T- Flip-Flop

Week 14	Lab 14: Review
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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Thomas L. Floyd, Digital Fundamentals, 11th Edition, Pearson Education 2015	Yes
Recommended Texts	M. Morris Mano, Michael D. Ciletti, Digital Design, 5th edition, Pearson Education 2013	No
Websites	Digital Systems: From Logic Gates to Processors: https://www.coursera.org/learn/digital-systems	

APPENDIX:

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Mathematics	Module Delivery	
Module Type	Basic	✓ Theory ✓ Lecture Lab ✓ Tutorial Practical Seminar	
Module Code	BCTE102-S2		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	2
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Ayhan A. khaleel	e-mail	Ay_ahmed@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Mathematics is an important tool for understanding modern and scientific technologies, and the modern world today relies heavily on mathematics. Mathematics is also characterized by multiple benefits, including that it is an intellectual tool, a strong communication method, and it is in itself a way of thinking, through which the capabilities of individuals develop, and it helps us in advanced logical thinking. It also Introduce students to mathematics through the laws and issues necessary for the purpose of assisting them in their studies in their field of specialization .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	28. Learning about the complex numbers. 29. Learning the Functions of several variables. 30. Learning the Lines and planes in space, Tangent and normal in the plane 31. Learning the Triple integrals in rectangular coordinates 32. Double Integral in rectangular and polar form, Areas and volumes 33. Applications (Surface Area, Green's theorem and Stokes' theorem
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: ❖ <u>Complex Numbers</u> – For most students the assumptions I've made above about their exposure to complex numbers is the extent of their exposure. Problems tend to arise however because most instructors seem to assume that either students will see beyond this exposure in some later class or have already seen beyond this in some earlier class. Students are then suddenly expected to know more than basic arithmetic of complex

	<p>numbers but often haven't actually seen it anywhere and have to quickly pick it up on their own in order to survive in the class. [13 hrs]</p> <ul style="list-style-type: none"> ❖ Vector Fields – In this section we introduce the concept of a vector field and give several examples of graphing them. We also revisit the gradient that we first saw a few chapters ago. <p>Line Integrals – Part I – In this section we will start off with a quick review of parameterizing curves. This is a skill that will be required in a great many of the line integrals we evaluate and so needs to be understood. We will then formally define the first kind of line integral we will be looking at : line integrals with respect to arc length.</p> <p>Line Integrals – Part II – In this section we will continue looking at line integrals and define the second kind of line integral we'll be looking at : line integrals with respect to x, y, and/or z. We also introduce an alternate form of notation for this kind of line integral that will be useful on occasion.</p> <p>Line Integrals of Vector Fields – In this section we will define the third type of line integrals we'll be looking at : line integrals of vector fields. We will also see that this particular kind of line integral is related to special cases of the line integrals with respect to x, y and z. [20 hrs]</p> <ul style="list-style-type: none"> ❖ Part D: Multiple Integrals - In this chapter will be looking at double integrals, i.e. integrating functions of two variables in which the independent variables are from two dimensional regions, and triple integrals, i.e. integrating functions of three variables in which the independent variables are from three dimensional regions. Included will be double integrals in polar coordinates and triple integrals in cylindrical and spherical coordinates and more generally change in variables in double and triple integrals.[20 hrs] ❖ Revision problem classes [6 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in exercises, while improving and expanding their mathematical reasoning skills.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	61	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (25)	5, 7, 9, 11	LO #1, 2, 10 and 11
	Assignments	8	16% (10)	Continuous	All
	Projects / Lab.	0	0		
	Report	1	4%(20)		
Summative assessment	Midterm Exam	2 hr	10% (20)	7	LO # 1-7
	Final Exam	3 hr	50% (60)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	COMPLEX NUMBERS IN CARTESIAN COORDINATES AND POLAR FROM
Week 2	LINEAR ALGEBRA FOR COMPLEX NUMBER IN POLAR AND CARTESIAN EULER'S FORMULA.
Week 3	DEMOIVRE'S THEOREM TO FIND POWERS AND THE NTH ROOTS OF GIVEN COMPLEX NUMBERS
Week 4	Functions of several variables
Week 5	Partial differentiation and the chain rule
Week 6	Functions of a complex variable, Cauchy-Riemann equations
Week 7	Cartesian coordinates and vectors in space, Dot product and Cross product
Week 8	Lines and planes in space, Tangent and normal in the plane
Week 9	The two-dimensional Coordinate system, The three dimensional Coordinate .
Week 10	Directional derivatives, Gradient vectors
Week 11	Divergence, curl and the laplacian
Week 12	Double Integral in rectangular and polar form, Areas and volumes
Week 13	Triple integrals in rectangular coordinates
Week 14	Applications (Surface Area, Green's theorem and Stokes' theorem)
Week 15	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Advance Engineering Mathematics, Alan Jeffrey, 2002	Yes
Recommended Texts	Calculus II & Calculus III, Paul Dawkins, 2007	No
Websites	https://tutorial.math.lamar.edu/Classes/CalcIII/CalcIII.aspx https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Programming	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE103-S2	✓ Lecture	
ECTS Credits	4	✓ Lab	
SWL (hr/sem)	100	✓ Tutorial	
Module Level	1	✓ Practical	
Administering Department	Department of Computer Techniques Engineering	✓ Seminar	
Module Leader	Najwan Z. Waisi	Semester of Delivery	1
Module Leader's Acad. Title	Lecturer	College	Northern Technical University Engineering Technical College/Mosul
Module Tutor	None	e-mail	Najwan.tuhafi@ntu.edu.iq
Peer Reviewer Name	None	Module Leader's Qualification	M.Sc.
Review Committee Approval	21/06/2023	e-mail	None
		Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	Object Oriented Programming	Semester	S3

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	Introduce the students with computer programming techniques using C++ language, and how it can be used to solve problems related to their specialization.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The learning outcomes for a module on computer programming in C++ can vary depending on the specific objectives of the course or program: 1-Understanding the basics of C++: Students should be able to comprehend the fundamental concepts of C++ programming, including syntax, data types, variables, operators, control structures, and functions. 2-Proficiency in C++ programming: Students should develop the skills required to write, compile, and execute C++ programs. They should be able to implement various programming constructs and algorithms using C++. 3-Problem-solving and algorithm design: Students should gain the ability to analyze problems and design efficient algorithms to solve them using C++. They should be able to break down complex problems into smaller, manageable tasks and implement them in code. 4-Debugging and error handling: Students should develop skills in debugging C++ programs and identifying and fixing errors. They should learn techniques for error handling, exception handling, and writing robust code. 5-Code optimization and efficiency: Students should be able to optimize their C++ code for

	<p>efficiency, considering factors such as algorithm complexity, data structures, and code organization. They should learn about performance analysis and profiling tools to identify bottlenecks in code.</p> <p>6-Software development practices: Students should understand and apply good software development practices, including code documentation, version control, and testing. They should learn how to write readable and maintainable code.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> • <u>Part A – Introduction to C++.</u> [14 hrs] • <u>Part B- Operators & Making Decisions</u> [12 hrs] • <u>Part C- Looping & Arrays</u> [16 hrs] • <u>Part D- Looping & Arrays</u> [10 hrs] • Revision problem classes [6 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>When teaching and learning C++ programming, various strategies can be employed to enhance comprehension and mastery of the subject. Here are some effective learning and teaching strategies for C++ programming:</p> <p>Hands-on coding , Step-by-step approach , Visual aids and diagrams , Active learning , Real-world examples and projects , Online resources and coding platforms , Code documentation and commenting , Debugging and problem-solving techniques , Assessment and feedback , Continuous learning and staying updated</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

<p>Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل</p>	59	<p>Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً</p>	4
<p>Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	41	<p>Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً</p>	3
<p>Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل</p>	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	4% (4)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	All
	Report	6	10% (10)	13	LO # 5, 8 and 10
	Seminar	1	6% (6)	5	

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to C++ (Structure of a program)
Week 2	Variables, Data Types, Declaration of variables, Scope of variables, Initialization of variables, Expressions and Basic Input/Output.
Week 3	Operators (Assignment, Arithmetic operators, Compound assignment, Increase and decrease, Relational and equality operators, Conditional operator)
Week 4	Making Decisions (if...else and switch).
Week 5	Looping (while loop and for loop).
Week 6	Bitwise Operators and Explicit type casting operator
Week 7	Arrays (Single Dimensional arrays, Arrays as parameters)
Week 8	Arrays (two Dimensional arrays, Arrays as parameters)
Week 9	Character Sequences and String handling.
Week 10	Structure
Week 11	Pointers (Reference operator, dereference operator, Declaring variables of pointer types,)
Week 12	Pointers and arrays, Pointers to pointers, void pointers and Pointers to functions
Week 13	Functions (Local and global variables, Arguments passed by value and by reference, Default values in parameters)
Week 14	Overloaded functions and Recursive functions.
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to C++ program using visual studio .
Week 2	Lab 2: my first program and how solve a problem.
Week 3	Lab 3: : if...else and switch programs
Week 4	Lab 4: while loop and for loop programs
Week 5	Lab 5: Bitwise Operators programs
Week 6	Lab 6: Single Dimensional arrays
Week 7	Lab 7: two Dimensional arrays ..part1
Week 8	Lab 8: two Dimensional arrays..part2
Week 9	Lab 9: : Character and String programs
Week 10	Lab 10: how implement a Structure
Week 11	Lab 11: Pointers and arrays
Week 12	Lab 12: Functions..part1
Week 13	Lab 13: Functions..part2
Week 14	Lab 14: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	The Complete Reference, 4th Edition – Herbert schildt	No

Recommended Texts	complete c++ programming fundamentals with examples projects- emenwa global	No
Websites	non	

APPENDIX:

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



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electronic Workshop		Module Delivery
Module Type	Core		Theory Lecture ✓ Lab ✓ Tutorial ✓ Practical Seminar
Module Code	BCTE104-S2		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	
Administering Department	DEPARTMENT OF COMPUTER TECHNIQUES ENGINEERING	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Thabat F. Thabet	e-mail	Thabet.tfy@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	10/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	<ol style="list-style-type: none">To learn the basics of electrical elements (Symbols and Abbreviations, Units).To learn how to use measurement devices for DC and ACHow to measure electrical elements by using measurement devicesTo learn the basics of electronic devicesHow to test electronic devices by using measurement devicesHow to use Oscilloscope (CRO)How to use Function Generator
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">Learning about the electrical elements.Learning about the electronic devices.Learning about the measurement devices.Learning about Oscilloscope and Function GeneratorLearning about the integrated circuits.Learning about the printed circuit board
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <ul style="list-style-type: none">Part A – Basic information and electrical elements [12 hrs] Basic information Color of resistance Capacitors values Measurement devices

	<p>How to measure resistors and capacitors values How to measure DC and AC values</p> <ul style="list-style-type: none"> • Part B – Electronic devices and AC circuits [10 hrs] <p>Diodes Transistors. Operating of Oscilloscope Function Generator DC and AC circuit</p> <ul style="list-style-type: none"> • Part C – Circuit Implementation [6 hrs] <p>Electric circuit schematic diagram Integrated circuits Printed circuit board Review [2 hrs]</p>
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>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.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2/6	30% (30)	2, 4, 5, 7, 8 and 10	LO # 1, 2, 3 and 4
	Assignments	1/4	10% (20)	3, 11, 12 and 13	LO # 1, 2, 4, 5 and 6
	Projects	5/1	10% (10)	14	all
	Report	3/4	20% (20)	4, 5, 6 and 9	LO # 1, 2, 3 and 4
	LAB.	10/4	20% (20)	3-12	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Basic information
Week 2	Lab 2: Color of resistance
Week 3	Lab 3: Capacitors values
Week 4	Lab 4: Measurement devices
Week 5	Lab 5: How to measure resistors and capacitors values
Week 6	Lab 6: How to measure DC and AC values
Week 7	Lab 7: Diodes
Week 8	Lab 8: Transistors.
Week 9	Lab 9: Operating of Oscilloscope
Week 10	Lab 10: Function Generator

Week 11	Lab 11: DC and AC circuit
Week 12	Lab 12: Electric circuit schematic diagram
Week 13	Lab 13: Integrated circuits
Week 14	Lab 14: Printed circuit board
Week 15	Lab 15: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	ELECTRONIC WORKSHOP & PCB LAB MANUAL	Yes
Recommended Texts	Integrated Circuits	Yes
Websites	https://www.youtube.com/watch?v=YJr-kHy6STg https://www.youtube.com/watch?v=VxMV6wGS3NY:	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

Note:

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



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	electrical Circuits	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE105-S2	✓ Lecture	
ECTS Credits	7	✓ Lab	
SWL (hr/sem)	175	✓ Tutorial	
Module Level	1	Semester of Delivery	2
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University ENGINEERING TECHNICAL COLLEGE/MOSUL
Module Leader	Maysaloon Abed Qasim	e-mail	Maysaloon.alhashim@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PHD
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	electrical Circuits	Semester	2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none">1-Understand the fundamental concepts and principles of alternating current (AC) circuits.2-Gain knowledge of the mathematical tools and techniques used to analyze AC circuits, including phasors, complex numbers, and impedance.3-Develop the ability to solve AC circuit problems using circuit analysis techniques such as mesh analysis, nodal analysis, and Thevenin's theorem.. ect.4-Learn how to calculate and analyze voltage and current phasors in AC circuits, including their amplitudes, phases, and frequency relationships.5-Explore the behavior and characteristics of AC circuit elements, such as resistors, capacitors, and inductors, and understand their roles in AC circuit analysis.6-Investigate the concept of impedance in AC circuits and its relationship to resistance, reactance, and frequency.7-Study the principles of AC power and power factor, including real power, reactive power, apparent power, and power factor correction.8- Gain a comprehensive understanding of three-phase AC systems, including the generation, transmission, and distribution of power in three-phase circuits.
Module Learning Outcomes	<ol style="list-style-type: none">1-Knowledge Acquisition: Students will acquire a comprehensive understanding of the fundamental concepts and principles of alternating current (AC) circuits.2-Circuit Design and Analysis: Students will gain the ability to design and analyze AC circuits, applying their knowledge of impedance, power factor, and component

مخرجات التعلم للمادة الدراسية	<p>characteristics. They will learn to calculate voltage and current magnitudes, phase differences, and power relationships in AC circuits.</p> <p>3-Phasor Diagram Interpretation: Students will be able to construct and interpret phasor diagrams to visualize and analyze the behavior of voltages and currents in AC circuits.</p> <p>4-Three-Phase Systems: Students will acquire understanding of three-phase AC systems, including balanced and unbalanced configurations.</p> <p>Laboratory Skills: Students will develop practical skills in using circuit simulation software and laboratory equipment to design, analyze, and verify the performance of AC circuits.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> • <u>Part A – Inductance & Capacitance in Electric circuits.</u> General concept of capacitance (charge and voltage, capacitors in series and parallel) General concept of inductance (inductive and non-inductive circuits, capacitors in series and parallel) [4 hrs] • <u>Part B Alternating Quantities.</u> Ac systems, waveforms, terms and definitions. Average and R.M.S values of current and voltage. [10 hrs] • <u>Part C Single - phase of AC Circuits.</u> AC in resistive circuits, current and voltage in inductive circuits, current and voltage in capacitive circuits. Concept of complex impedance and admittance, AC series and parallel circuits. RL, RC and RLC circuit analysis and phasor representation. [12 hrs] • <u>Part D Power in AC circuits.</u> Power in resistive circuits. power in inductive and capacitive circuits ,power in circuit with resistance and reactance. Power factor, its practical importance, improvement of power factor, measurement of power in a single – phase AC circuits. [16 hrs] • <u>Part E Three – phase circuit analysis.</u> Basic concept and advantages of three – phase circuit. Phasor representation of star and delta connection. Phase and line quantities. Voltage and current computation in 3-phase balance and unbalance circuits. Real and Reactive power computation, measurement of power and power factor in 3-phase system. [12 hrs] • Revision problem classes [4 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>1-Conceptual Understanding: Explain the differences between AC and DC circuits, introduce the concept of impedance, reactance, and phasors, and highlight the significance of frequency and phase in AC circuits.</p> <p>2-Mathematical Foundations: Provide a solid mathematical foundation for AC circuits. Teach students the use of complex numbers and phasor notation to analyze AC circuits.</p> <p>3-Problem-Solving Skills: Dedicate adequate time to problem-solving exercises and examples.</p> <p>4-Laboratory Experiments: Incorporate laboratory experiments to reinforce theoretical concepts. Allow students to build and analyze AC circuits using oscilloscopes, function generators, and AC power sources.</p> <p>5-Simulation Tools: Introduce simulation software tools that allow students to simulate AC circuits and observe their behavior.</p> <p>6-Review and Assessment: Regularly review key concepts and provide formative assessments to gauge students' understanding. Offer constructive feedback on their performance to help them identify areas for improvement.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

<p>Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل</p>	58	<p>Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً</p>	4
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Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	117	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	7
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	5% (5)	5,7,10	LO #1, 2, 10 and 11
	Assignments	3	5% (5)	2,9,12	LO # 3, 4, 6 and 7
	Lab.	14	10%(10)	Continuous	All
	Projects	3	5% (5)	2,9,12	LO # 3, 4, 6 and 7
	Report	8	10% (10)	Continuous	All
	Seminars	3	5% (5)	3,10,13	LO # 3, 4, 6 and 7
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	1- Inductance & Capacitance in Electric circuits. 1-General concept of capacitance (charge and voltage, capacitors in series and parallel) 2- General concept of inductance (inductive and non-inductive circuits, capacitors in series and parallel)
Week 2	2- Alternating Quantities. Ac systems, waveforms, terms and definitions.
Week 3	2- Alternating Quantities. Average and R.M.S values of current and voltage.
Week 4	2- Alternating Quantities. Phasor diagram
Week 5	3- Single - phase of AC Circuits. AC in resistive circuits , current and voltage in inductive circuits, current and voltage in capacitive circuits.
Week 6	3- Single - phase of AC Circuits. Concept of complex impedance and admittance , AC series and parallel circuits .
Week 7	3- Single - phase of AC Circuits. RL , RC and RLC circuit analysis and phasor representation.
Week 8	4- Power in AC circuits. Power in resistive circuits ,power in inductive and capacitive circuits ,power in circuit with resistance and reactance.
Week 9	4- Power in AC circuits. Power factor ,its practical importance , improvement of power factor , measurement of power in a single – phase AC circuits.
Week 10	5- Three – phase circuit analysis. Basic concept and advantages of three – phase circuit.

Week 11	5- Three – phase circuit analysis. Phasor representation of star and delta connection.
Week 12	5- Three – phase circuit analysis. Phase and line quantities.
Week 13	5- Three – phase circuit analysis. Voltage and current computation in 3-phase balance and unbalance circuits.
Week 14	5- Three – phase circuit analysis. Real and Reactive power computation , measurement of power and power factor in 3-phase system.
Week 15	Final Exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Measurement amplitude, frequency and time with oscilloscope using hardware and digital simulation.
Week 2	Lab 2: Examine phase relation in RL & RC circuit using hardware and digital simulation.
Week 3	Lab 3: Calculate & verify average and RMS value,
Week 4	Lab 4: Impedance of series RL and RC circuit using digital simulation..
Week 5	Lab 5: Impedance of series RLC circuit using digital simulation..
Week 6	Lab 6: Determination of average value, RMS value, form factor, peak factor of sinusoidal wave using digital simulation.
Week 7	Lab 7: Measure currents and voltages in three-phase balanced AC circuits
Week 8	Lab 8: Prove Y- Δ transformation,
Week 9	Lab 9: Exercise on phasor diagrams for three-phase circuits
Week 10	Lab 10: Measurement of voltage, current & power in a three-phase circuit
Week 11	Lab 11: Ohm's LAW, KVL AND KCL in AC circuits using digital simulation..
Week 12	Lab 12: Determination of mesh currents in AC circuits using digital simulation.
Week 13	Lab 13: Measurement of nodal voltages in AC circuits using digital simulation.
Week 14	Lab 14: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Charles K. Alexander, Matthew N.O. Sdiku Fundamentals of Electrical Engineering, 4th Edition, 2009	Yes
Recommended Texts	Tony R. Kuphaldt, Lessons In Electric Circuits, Volume II - AC 5th edition, 2002	No
Websites	AC circuits https://byjus.com/physics/ac-circuit/	

APPENDIX:

GRADING SCHEME

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer Principles		Module Delivery	
Module Type	Supported		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	NTU102			
ECTS Credits	3			
SWL (hr/sem)	30			
Module Level	First	Semester of Delivery		
Administering Department	Med. Ins. Tech. Eng.	College	Technical Engineering College	
Module Leader	Zaid Abdulsattar Abdulrazzaq		e-mail	zaid.a.abdulrazzaq@ntu.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	Master	
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	N/A		Semester	2
Co-requisites module	N/A		Semester	2

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none"> 1. Studying computer principles. 2. Defining keyboards and mice. 3. Presenting principles of memories. 4. Explaining disc drives. 5. Explaining principles of windows. 6. Illustrating accessories of windows.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Abilities to recognize different computer hardware parts. 2. Defining various types of keyboards and mice. 3. Getting knowledge about computer memories and drives. 4. Getting knowledge about windows. 5. Presenting different windows accessories.
Indicative Contents المحتويات الإرشادية	<ul style="list-style-type: none"> • Indicative content includes the following. • Computer types of: digital, analogues and hybrid. • Different memory types of: RAM, ROM, PROM, EPROM and EEPROM. • Different drives types of: magnetic and optical. • Windows facilities of: Notepad, Wordpad, Paint, Accessories and others.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Strategies that will be adopted for delivering this module are theoretical lectures, practical experiments, home works and exams. This will be achieved through classes, interactive tutorials and by considering practical experiments.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	43	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	32	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative	Quizzes	2	10% (10)	4,7	LO #2, #4

assessment	Assignments	2	10% (10)	10	LO #1, #3, #5
	Projects / Lab.	15	10% (10)	Continuous	All
	Report	8	10% (10)	9	LO #3
Summative assessment	Midterm Exam	2hr	10% (10)	10	All
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
1 st	Introducing to the Computer System Including: What is Computer? Computer System, Functions of Computer Input Storage Process & Output, Classification of Computers and Computer Units
2 nd , 3 rd , 4 th	Explaining Types of Computer Keyboards and Types of Keyboard Keys
5 th	Explaining Types of Computer Mice and Mouse Functions
6 th	Explaining Different Plugs and Ports for Some Computer Parts
7 th	Illustrating Computer Discs and Drives
8 th	Illustrating RAM, Non-Volatile and Cache Memories
9 th , 10 th , 11 th	Demonstrating Computer Hardware Parts and Definitions
12 th , 13 th	Presenting Windows, Windows Desktop and Windows Taskbar
14 th , 15 th	Illustrating Start Menu and Windows Accessories

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
1 st	Introducing to the Computer System Including: What is Computer?, Computer System, Functions of Computer Input Storage Process & Output, Classification of Computers and Computer Units
2 nd , 3 rd , 4 th	Explaining Types of Computer Keyboards and Types of Keyboard Keys
5 th	Explaining Types of Computer Mice and Mouse Functions
6 th , 7 th	Explaining Different Plugs and Ports for Some Computer Parts, and Illustrating Computer Discs and Drives
8 th	Illustrating RAM, Non-Volatile and Cache Memories
9 th , 10 th , 11 th , 12 th	Demonstrating Computer Hardware Parts and Definitions, and Presenting Windows, Windows Desktop and Windows Taskbar
13 th , 14 th , 15 th	Illustrating Start Menu and Windows Accessories

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	[1] Umar Farooq, "What is Computer - Definition & Basic Concept of Computer", Study Lecture Notes, 2016. [2] University Information Technology Services, "Microsoft Windows 10, Getting Started Guide", Kennesaw State University – UITS, 2016.	In the internet
Recommended Texts	Cre8te Opportunities, "Introduction to Computers (Windows 10)", Digital Skills Academy, 2016.	In the internet
Websites	[1] http://www.studylecturenotes.com/computer-science/what-is-computer-definition-basic-concept-of-computer [2] http://ergonomictrends.com/different-types-of-computer-keyboards/ [3] UKEssays, "Wireless Mouse: History and Types", 2018. [Online]. Available: https://www.ukessays.com/essays/computer-science/wireless-mouse-history-types-5302.php?vref=1 . [4] https://searchstorage.techtarget.com/definition/RAM-random-access-memory [5] https://tldp.org/HOWTO/Network-boot-HOWTO/a610.html#:~:text=PRONOUNCED%20PROM%3A%20Pronounced%20prom%2C%20an%20acronym,the%20computer%20is%20turned%20off .	

Grading Scheme

مخطط الدرجات

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

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Arabic Language	Module Delivery	
Module Type	Supplement	✓ Theory	
Module Code	NTU103	✓ Lecture	
ECTS Credits	2	Lab	
SWL (hr/sem)	50	Tutorial	
Module Level	2	Practical	
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Dr. Eesha I. Mohammed	e-mail	aysha.ibrahim@ntu.edu.iq
Module Leader's Acad. Title	Assist. Prof.	Module Leader's Qualification	PHD
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	ينشأ الطالب على حب اللغة العربية لغة القرآن الكريم. التعرف على مواطن الجمال في اللغة العربية وأدائها، وأن يكتسب الطالب القدرة على دراسة فروع اللغة العربية. تعريف الطالب بألفاظ اللغة العربية الصحيحة وتراكيبها وأساليبها السليمة بطريقة مشوقة وجذابة. أن يستغل الطالب وقت فراغه بالقراءة والإطلاع والرجوع إلى المكتبة. تمكين الطالب من القراءة الصحيحة، وأن يكتسب القدرة على استعمال اللغة استعمالاً صحيحاً في الاتصال مع الآخرين؛ كالسرعة وجودة الإلقاء وحسن التعبير، وتعوده حسن الاستماع لما يسمع مما يبسر له أموره ويعينه على قضاء حوائجه. تنمية الذوق الأدبي لدى الطالب حتى يدرك النواحي الجمالية في أساليب الكلام ومعانيه وصوره. تعويد الطالب التعبيرات السليمة الواضحة عن أفكاره وما يقع تحت حواسه نطقاً وكتابةً وحسن استخدام علامات الترقيم. تنمية قدرة ومهارة الطالب الإملائية والخطية بحيث يستطيع الكتابة الصحيحة من جميع النواحي. إيقاظ وعي الطالب لإدراك شرف الكلمة وتوجيهه، للمحافظة على طهارتها ونقاها حتى لا تستعمل إلا في الخير. مساعدة الطالب على فهم التراكيب المعقدة والأساليب الغامضة.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- معرفة القواعد النحوية والصرفية. 2- التعرف بأبرز المصنفات اللغوية والأدبية. 3- تحديد المشكلات اللغوية والأدبية لدى الدارسين. 4- القراءة المعاصرة للنصوص اللغوية والأدبية. 5- قراءة النصوص الأدبية وكتابتها وفق المعايير النحوية والصرفية

	6- تعزيز الثقة بالنفس والجرأة والفصاحة 7- المنافسة والتميز في سوق العمل.
Indicative Contents المحتويات الإرشادية	❖ مقدمة عن الأخطاء اللغوية التاء المربوطة والتاء المفتوحة (4 ساعات) ❖ تطبيقات الأخطاء اللغوية الشائعة واقسام الكلام (6 ساعات) ❖ همزة الوصل والقطع والهمزة المتوسطة والمتطرفة قواعد كتابة الالف الممدودة والمقصورة ❖ الحروف الشمسية والقمرية والضاد والطاء (12 ساعة) ❖ المشاكل والمعوقات ونقاشات (6 ساعات)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1- تبسيط المعلومات وتنظيمها 2- تسهيل عملية استرجاع المعلومات 3- ربط المفاهيم الجديدة بالمكتسبات السابقة 4- إيجاد العلاقة بين المفاهيم 5- تسهيل تذكر المعارف والمعلومات
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	19	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	مقدمة عن الأخطاء اللغوية
Week 2	التاء المربوطة والتاء المفتوحة
Week 3	همزة الوصل والقطع
Week 4	الهمزة المتوسطة والمتطرفة
Week 5	قواعد كتابة الالف الممدودة والمقصورة
Week 6	الحروف الشمسية والقمرية

Week 7	الضاد والظاء
Week 8	العدد
Week 9	المفاعيل
Week 10	أقسام الكلام
Week 11	معاني حروف الجر
Week 12	تطبيقات الأخطاء اللغوية الشائعة
Week 13	النون والتنوين
Week 14	مقدمة عن الأخطاء اللغوية
Week 15	الامتحان النهائي

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	الكامل في اللغة والادب لابي عباس المبرد	Yes
Recommended Texts	أخطاء لغوية شائعة لخالد بن هلال بن ناصر العبري	No
Websites	https://www.eshamel.ne https://www.ektebsa7.com	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Microprocessors	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE201-S1	✓ Lecture	
ECTS Credits	7	✓ Lab	
SWL (hr/sem)	175	✓ Tutorial	
Module Level	2	✓ Practical	
Administering Department	Department of Computer Techniques Engineering	✓ Seminar	
Module Leader	Ahmad F. Al-Allaf	Semester of Delivery	1
Module Leader's Acad. Title	Assistant Professor	College	Northern Technical University Engineering Technical College/Mosul
Module Tutor	None	e-mail	Ahmed.faleh@atu.edu.iq
Peer Reviewer Name	None	Module Leader's Qualification	Ph.D.
Review Committee Approval	13/06/2023	e-mail	None
		Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<p>13. Understanding Microprocessor Architecture: The course provides a comprehensive understanding of microprocessor architecture, including its components, data path, control unit, memory hierarchy, and input/output systems. Students will learn about different microprocessor families and their characteristics.</p> <p>14. Instruction Set Architecture (ISA): Students gain proficiency in understanding and working with the instruction set architecture of a microprocessor. This involves learning about different instruction formats, addressing modes, data types, and the relationship between instructions and the underlying hardware.</p> <p>15. Assembly Language Programming: The course cover assembly language programming for a specific microprocessor. Students learn the syntax, conventions, and techniques for writing efficient assembly language programs. They also understand the translation process from assembly language to machine code.</p>
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>40. Understand the fundamental concepts and principles of microprocessor architecture, including the components, data path, control unit, memory hierarchy, and input/output systems.</p> <p>41. Analyze and interpret the instruction set architecture (ISA) of a microprocessor, including instruction formats, addressing modes, data types, and the relationship between instructions and hardware.</p> <p>42. Demonstrate proficiency in writing and debugging assembly language programs for a specific microprocessor, considering syntax, conventions, and efficient programming</p>

	techniques.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> Part-A: Introduction to Microprocessor: Introduction and History of Microprocessors, Basic Block Diagram of a Microprocessor, Organization of Microprocessor Based System, Bus Organization, Processing Cycle of a Stored Program Computer. 8085 Microprocessor: Internal Architecture and Features of 8085 microprocessor, pin description. [6hrs.] Part-B: 8086/8088 Microprocessor: Internal Architecture and Features of 8086/8088 Microprocessor, components of BIU and EU. Pin descriptions and bus cycles. Pin descriptions and bus cycles, 8284 clock generator and 8288 bus controller circuits, Minimum and Maximum configurations, Memory and I/O organization, [24hrs] Part-C: 8086 programming and instruction sets: 8086 Addressing Modes, instruction groups, Data Movement instructions, Arithmetic and logical instructions, Jump instructions, String instructions, example. [24hrs] Part -D : Different Microprocessor Architectures: Register Based and Accumulator Based Architecture, RISC and CISC Architectures, Digital Signal Processors. [4hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	61	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	114	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	7.6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	8	10% (10)	3, 6, 9,12	LO #1, 2, 10 and 11
	Assignments	8	10% (10)	4, 7,10,13	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	All
	Report	8	10% (10)	3,5,7,9	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	3,7,10,13	LO # 1-7
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	1-Introduction to Microprocessor: Introduction and History of Microprocessors, Basic Block Diagram of a Microprocessor, Organization of Microprocessor Based System, Bus Organization, Processing Cycle of a Stored Program Computer.

Week 2	2-8085 Microprocessor: Internal Architecture and Features of 8085 microprocessor, pin description.
Week 3	3-8086/8088 Microprocessor: Internal Architecture and Features of 8086 Microprocessor, components of BIU and EU.
Week 4	4-8086 Microprocessor: Pin descriptions and bus cycles.
Week 5	5-8086 Microprocessor: Pin descriptions and bus cycles.
Week 6	6-8086 Microprocessor: 8284 clock generator and 8288 bus controller circuits
Week 7	7-8086 Microprocessor: Minimum and Maximum configurations, Memory and I/O organization.
Week 8	8-8086 programming and instruction sets 8086 Addressing Modes, instruction groups
Week 9	9-8086 instruction sets: Data Movement instructions
Week 10	10-8086 instruction sets: Arithmetic and logical instructions
Week 11	11-8086 instruction sets: Jump instructions
Week 12	12-8086 instruction sets: String instructions
Week 13	13-8086 instruction sets: Programming examples
Week 14	14-Different Microprocessor Architectures: Register Based and Accumulator Based Architecture, RISC and CISC Architectures, Digital Signal Processors.
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to debugging program
Week 2	Lab 2: 8086 instruction formats
Week 3	Lab 3: 8086 addressing modes
Week 4	Lab 4: Program examples of Data movement instructions
Week 5	Lab 5: Program examples of Arithmetic instructions
Week 6	Lab 6: Program examples of Arithmetic instructions (addition and subtraction)
Week 7	Lab 7: Program examples of Arithmetic instructions (Multiplication and division)
Week 8	Lab 8: Program examples of logical instructions
Week 9	Lab 9: Program examples of shift and rotate instructions
Week 10	Lab 10: Program examples of timing delay using counters
Week 11	Lab 11: Program examples of JMPs instructions
Week 12	Lab 12: Program examples of stack instructions
Week 13	Lab 13: Program examples of strings instructions
Week 14	Lab 14: Program examples of call and return instructions

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	The Intel Microprocessors (8th Edition), BARRY B. BREY, 2009	No

Recommended Texts	MICROPROCESSOR 8086 Architecture, Programming and Interfacing, Sunil Mathur, 2011	No
Websites	Digital Systems: From Logic Gates to Processors: https://www.coursera.org https://www.edx.org https://ocw.mit.edu	

APPENDIX:

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



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Analog Electronics Fundamentals		Module Delivery
Module Type	Core	<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BCTE202-S1		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2		Semester of Delivery
Administering Department	DEPARTMENT OF COMPUTER TECHNIQUES ENGINEERING	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Thabat F. Thabet	e-mail	Thabet.tfy@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	10/06/2023	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	16. To learn the physics of material and the basics of electronic devices. 17. Study the structure and the characteristics of electronic devices (diodes and transistors). 18. To learn the applications of different types of diodes. 19. Study the principles of binary junction transistors (BJT), biasing, cutoff, saturation, operating point and DC load line.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	43. Learning about the physics of material. 44. Learning about the different electronic devices (structure and characteristics). 45. Ability to recognize and test different electronic devices (diodes and transistors). 46. Learning about the applications of diodes (circuits and their functions). 47. Ability to design, and implement different diode circuits (with a specific required output). 48. Ability to design, or analyze BJT biasing circuits to know the operating point.

Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> Part A – Introduction to electronics Physics of material, atoms, electrons and energy bands, types of material (insulators, conductors, and semiconductors), N-type and P-type semiconductor. Diodes, forward bias, reverse bias, V-I characteristics [8 hrs] Part B- Application of diodes. Half-wave rectifier, average value, r.m.s. value, capacitor filter, ripple voltage. Full-wave rectifier, average value, r.m.s. value, capacitor filter, ripple voltage. Half-wave rectifier, average value, r.m.s. value, capacitor filter, ripple voltage. Diode limiters, output voltage signal. Clampers and Voltage Doubler. [16 hrs] Part C Other types of diodes Zener diodes, V-I characteristics. Voltage regulators using Zener diode (variable input voltage, and variable load). Zener limiters. Special purpose diodes, Varactor, Light Emitting diode LED, Photo diode, Schottky diode, Tunnel diodes. [16 hrs] Part D Transistors Bipolar junction transistor BJT, current, voltages, and parameters, maximum ratings. BJT biasing, cutoff, saturation, operating point. Transistor bias circuits, base-bias, voltage divider Transistor bias circuits, emitter-bias, collector-feedback. [16 hrs] Revision problem classes [4 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>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.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	65	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to electronics.
Week 2	Physic of diode. Diode's equivalent circuits.
Week 3	Application of diodes.
Week 4	Half-wave rectifier.
Week 5	Full-wave rectifier .
Week 6	Diode Limiters
Week 7	Clampers.
Week 8	Zener diode Characteristics.
Week 9	Voltage regulator using Zener diode.
Week 10	Another typed of diode.
Week 11	Physic of transistor: Bipolar junction transistor BJT.
Week 12	DC operation point.
Week 13	Transistor bias circuits.
Week 14	Transistor bias circuits.
Week 15	Preparatory Week
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to the Electronic Laboratory
Week 2	Lab 2: Diode characteristics
Week 3	Lab 3: Half-wave rectifiers
Week 4	Lab 4: Full-wave rectifiers
Week 5	Lab 5: Filter for Half-wave rectifiers
Week 6	Lab 6: Filter for Full-wave rectifiers
Week 7	Lab 7: Clipping Circuits
Week 8	Lab 8: Clamper and Voltage Doubler
Week 9	Lab 9: Zener diode characteristics
Week 10	Lab 10: Voltage regulators using Zener diode
Week 11	Lab 11: Transistor Characteristics
Week 12	Lab 12: Transistor Biasing (part 1)
Week 13	Lab 13: Transistor Biasing (part 2)
Week 14	Lab 14: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas L. Floyd, Electronic Devices, 9th Edition, Pearson Education 2012	Yes
Recommended Texts	R. BOYLESTAD and L. NASHESKY, "ELECTRONIC DEVICES AND CIRCUIT THEORY", 11th edition, Pearson Education , 2013	Yes
Websites	Digital Systems: From Logic Gates to Processors: https://www.coursera.org/learn/electronics	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

Note:

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Object oriented programing	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCT203-S1	✓ Lecture	
ECTS Credits	5	✓ Lab	
SWL (hr/sem)	125	x Tutorial	
Module Level	2	✓ Practical	
Administering Department	Department of Computer Techniques Engineering	Semester of Delivery	1
Module Leader	Anmar Burhan Mohammed	College	Northern Technical University Engineering Technical College/Mosul
Module Leader's Acad. Title	Lecturer	e-mail	Anmar.salih@ntu.edu.iq
Module Tutor	None	Module Leader's Qualification	PhD.
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	e-mail	None
		Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none">20. • Understanding OOP Concepts: Gain a solid understanding of fundamental OOP concepts such as encapsulation, inheritance, and polymorphism. Learn how these concepts promote code reusability, modularity, and maintainability.21. • Programming Language Proficiency: Develop proficiency in a specific programming language that supports OOP paradigms, such as Java, C++, Python, or C#. Learn the syntax, data types, control structures, and other language features necessary for implementing OOP concepts.22. • Class and Object Creation: Learn how to create classes and objects, define attributes and behaviors, and establish relationships between objects using techniques like composition and aggregation.23. • Encapsulation and Data Hiding: Understand the principles of encapsulation and data hiding to enforce proper access control and protect data integrity. Learn how to define public, private, and protected access levels for class members.24. • Inheritance and Polymorphism: Explore inheritance, where classes can inherit properties and behaviors from other classes, and polymorphism, where objects can take on different forms depending on their context. Understand the benefits and use cases for these concepts.25. • Abstraction and Interface Design: Learn how to create abstract classes and interfaces to define common behaviors and establish contracts for implementing classes. Understand the advantages of abstraction in managing complex systems.
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	<ul style="list-style-type: none"> 26. • OOP Design Patterns: Study common design patterns used in OOP, such as the Singleton, Factory, Observer, and Strategy patterns. Learn how to apply these patterns to solve common software design problems. 27. • Error Handling and Exception Handling: Understand how to handle errors and exceptions in an OOP context. Learn techniques for graceful error recovery, exception propagation, and creating custom exceptions. 28. • OOP Software Development Practices: Gain familiarity with software development practices aligned with OOP, such as modular programming, code organization, and documentation. Learn about version control systems and collaboration tools commonly used in OOP projects. 29. • OOP Analysis and Design: Learn how to analyze and design software systems using OOP principles. Understand the importance of modeling techniques like class diagrams and sequence diagrams in the software development lifecycle.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ul style="list-style-type: none"> 49. Understand the principles of Object-Oriented Programming 50. Design and implement classes and objects 51. Apply access modifiers to control class member visibility. 52. Utilize inheritance and polymorphism 53. Implement function overriding and virtual functions for runtime polymorphism. 54. Develop object-oriented programs and projects. 55. Develop larger projects that demonstrate effective use of OOP concepts.
Indicative Contents المحتويات الإرشادية	<ul style="list-style-type: none"> Introduction to Object-Oriented Programming (4 hours) C++ Basics and Syntax Review (6 hours) Encapsulation and Access Control (8 hours) Inheritance and Polymorphism (10 hours) Dynamic Memory Management (8 hours) Object Relationships and Composition (6 hours) Operator Overloading (6 hours) Exception Handling (6 hours) Templates and Generic Programming (8 hours) Advanced OOP Concepts (8 hours) Design Patterns (8 hours) Project Development (16 hours)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>Understand the Core Concepts: Begin by grasping the fundamental principles of OOP, including encapsulation, inheritance, and polymorphism. Gain a clear understanding of how these concepts work together to create object-oriented systems.</p> <p>Hands-on Coding: Actively practice writing code in C++ to reinforce your understanding of OOP. Implement classes, objects, and inheritance hierarchies. Solve programming exercises and work on small projects to apply OOP concepts in practical scenarios.</p> <p>Read and Analyze Code Examples: Study well-written C++ code that utilizes OOP techniques. Analyze how classes and objects are structured, how inheritance is implemented, and how polymorphism is achieved. This will help you understand real-world applications of OOP.</p> <p>Work with Real-World Examples: Seek out real-world examples or case studies where OOP has been employed in C++ projects. Examine open-source projects or sample code to understand how OOP is used to solve complex problems and create modular, reusable code.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	61	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem)	64	Unstructured SWL (h/w)	4

الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	8	10% (10)	5, 10	LO #1, 2, 6,7,8,9,10 and 11
	Assignments	8	10% (10)	2, 12	LO # 3, 4, 6, 7,9,10,12,14
	Projects / Lab.	16	10% (10)	Continuous	All
	Report	5	10% (10)	2,4,8 ,10and13	LO#2,4,8,10 and 13
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to C++ and OOP Basics <ul style="list-style-type: none"> Introduction to C++ programming language Basic syntax, variables, and data types Functions and control structures Introduction to object-oriented programming (OOP) concepts: classes, objects, and methods
Week 2	Classes and Objects <ul style="list-style-type: none"> Defining and declaring classes Creating objects and using constructors Encapsulation and access modifiers (public, private, protected) Member functions and data members
Week 3	Inheritance and Polymorphism <ul style="list-style-type: none"> Inheritance hierarchy and base/derived classes Single inheritance and multiple inheritance Polymorphism and function overriding Abstract classes and pure virtual functions asses
Week 4	Dynamic Memory Allocation and Pointers <ul style="list-style-type: none"> Dynamic memory allocation with new and delete Introduction to pointers and references Memory management and deallocation Object lifetime and scope
Week 5	Operator Overloading <ul style="list-style-type: none"> Overloading unary and binary operators Overloading comparison and assignment operators Friend functions and operator overloading Best practices and guidelines for operator overloading
Week 6	Templates and Generic Programming <ul style="list-style-type: none"> Introduction to templates and generic programming Function templates and class templates Template specialization Standard Template Library (STL) containers and algorithms
Week 7	Exception Handling <ul style="list-style-type: none"> Introduction to exception handling try-catch blocks and handling exceptions

	<ul style="list-style-type: none"> • Throwing and catching exceptions • Exception specifications and best practices
Week 8	<ul style="list-style-type: none"> • Midterm exam
Week 9	<p>File Handling and Streams</p> <ul style="list-style-type: none"> • Input/output streams and file handling • Reading from and writing to files • Error handling and file status flags • Working with text and binary files
Week 10	<p>Advanced OOP Concepts</p> <ul style="list-style-type: none"> • Polymorphism and virtual functions • Virtual base classes and diamond problem • Type casting and runtime type identification (RTTI) • Object slicing and dynamic casting
Week 11	<p>Standard Library Algorithms</p> <ul style="list-style-type: none"> • Overview of the standard library algorithms • Sorting and searching algorithms • Numeric algorithms and iterators • Practical applications and usage examples
Week 12	<p>Memory Management</p> <ul style="list-style-type: none"> • Smart pointers: unique_ptr, shared_ptr, weak_ptr • Memory management strategies and pitfalls • Resource Acquisition Is Initialization (RAII) • Memory leaks and debugging techniques
Week 13	<p>Namespaces and Organizing Code</p> <ul style="list-style-type: none"> • Using namespaces for code organization • Creating and managing namespaces • Namespace conflicts and resolutions • Best practices for code modularization
Week 14	<p>Namespaces and Organizing Code</p> <ul style="list-style-type: none"> • Using namespaces for code organization • Creating and managing namespaces • Namespace conflicts and resolutions • Best practices for code modularization
Week 15	Review
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	<ul style="list-style-type: none"> • Introduction to C++ • Basic syntax, variables, and data types • Functions and control structures
Week 2	<ul style="list-style-type: none"> • Classes and Objects • classes, objects, and methods document analysis
Week 3	<ul style="list-style-type: none"> • Encapsulation and access modifiers (public, private, protected) • Member functions and data member
Week 4	<ul style="list-style-type: none"> • Introduction to templates and generic programming • Function templates and class templates
Week 5	<ul style="list-style-type: none"> • Template specialization • Standard Template Library (STL) containers and algorithms
Week 6	<ul style="list-style-type: none"> • Introduction to exception handling • try-catch blocks and handling exceptions

Week 7	<ul style="list-style-type: none"> Introduction to exception handling try-catch blocks and handling exceptions
Week 8	Midterm
Week 9	•OLID principles: Single Responsibility, Open-Closed, Liskov Substitution, Interface Segregation, Dependency Inversion
Week 10	Design patterns: overview and examples
Week 11	•Multithreading and concurrency in C++
Week 12	Assignment
Week 13	<ul style="list-style-type: none"> Applying design principles to real-world scenarios Code refactoring and improvement
Week 14	Review
Week 15	Review
Week 16	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Effective Modern C++: 42 Specific Ways to Improve Your Use of C++11 and C++14" by Scott Meyers. "C++ Primer" by Stanley B. Lippman, Josée Lajoie, and Barbara E. Moo. "Design Patterns: Elements of Reusable Object-Oriented Software" by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides.	No
Recommended Texts	Online tutorials and documentation specific to advanced C++ programming and libraries.	No
Websites	https://www.w3schools.com/cpp/cpp_oop.asp	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Applied Mathematics	Module Delivery	
Module Type	Basic	✓ Theory	
Module Code	BCTE204-S1	✓ Lecture	
ECTS Credits	4	Lab	
SWL (hr/sem)	100	✓ Tutorial	
Module Level	2	Practical	
Administering Department	Department of Computer Techniques Engineering	Semester of Delivery	1
Module Leader	Ayhan A. khaleel	College	Northern Technical University Engineering Technical College/Mosul
Module Leader's Acad. Title	Lecturer	e-mail	Ay_ahmed@ntu.edu.iq
Module Tutor	None	Module Leader's Qualification	M.Sc.
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	e-mail	None
		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Mathematics is an important tool for understanding modern and scientific technologies, and the modern world today relies heavily on mathematics. Mathematics is also characterized by multiple benefits, including that it is an intellectual tool, a strong communication method, and it is in itself a way of thinking, through which the capabilities of individuals develop, and it helps us in advanced logical thinking. It also Introduce students to mathematics through the laws and issues necessary for the purpose of assisting them in their studies in their field of specialization .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	56. Learning about the basic Matrix and Determinants Learning the Gaussian and Gauss-Jordan elimination, rank of a matrix. 57. Learning the Eigen values and Eigenvectors 58. Learning the First order differential equations, variable separable, homogeneous, linear first order and exact differential equations 59. Convergence and the Divergence tests, Alternating series ,Absolute and conditional convergence 60. Power series and Taylor and Maclaurin series
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Part A – Review of matrices and their properties, Complex matrices, Hermitian,

	<p>skew-Hermitian and unitary matrices, Inverse matrices and elementary row operation, Gaussian and Gauss-Jordan elimination, rank of a matrix. Eigen values and Eigenvectors. [20 hrs]</p> <p>Part B – First order differential equations, variable separable, homogeneous, linear first order and exact differential equations. [10 hrs]</p> <p>Part C – Convergence and the Divergence tests, Alternating series ,Absolute and conditional convergence, Power series and Taylor and Maclaurin series. [10 hrs]</p> <p>Revision problem classes [7 hrs]</p>
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in exercises, while improving and expanding their mathematical reasoning skills.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	8	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	13	10% (10)	Continuous	All
	Projects / Lab.	0	0		
	Report	0	0		
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1-7
	Final Exam	3 hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Review of matrices and their properties
Week 2	Complex matrices, Hermitian, skew-Hermitian and unitary matrices
Week 3	Inverse matrices and elementary row operation
Week 4	Gaussian and Gauss-Jordan elimination.
Week 5	rank of a matrix
Week 6	Eigen values and Eigenvectors.
Week 7	First order differential equations, variable separable, homogeneous
Week 8	linear first order and exact differential equations
Week 9	Non-homogeneous second order with constant coefficients
Week 10	Convergence and the Divergence tests-part1
Week 11	Convergence and the Divergence tests-part2
Week 12	Alternating series ,Absolute and conditional convergence
Week 13	Power series

Week 14	Taylor and Maclaurin series
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Advance Engineering Mathematics, Alan Jeffrey, 2002	Yes
Recommended Texts	Calculus II & Calculus III, Paul Dawkins, 2007	No
Websites	https://tutorial.math.lamar.edu/Classes/CalcIII/CalcIII.aspx https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx	

APPENDIX:

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Data Structure	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE205-S1	✓ Lecture	
ECTS Credits	5	✓ Lab	
SWL (hr/sem)	125	x Tutorial	
Module Level	2	✓ Practical	
Administering Department	Department of Computer Techniques Engineering	Semester of Delivery	1
Module Leader	Mohand lokman Ahmed	College	Northern Technical University Engineering Technical College/Mosul
Module Leader's Acad. Title	Asst.Prof.	e-mail	mohandaldabag@ntu.edu.iq
Module Tutor	None	Module Leader's Qualification	PhD.
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	e-mail	None
Version Number	1.0		

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<p>30. Understanding the basic concepts of Data structures such as arrays, stacks, queues, trees, graphs, and so on. for building blocks of algorithms and programs..</p> <p>31. Analyzing the algorithms that are used to manipulate data. By analyzing algorithms, we can determine their efficiency and optimize them to make them faster and more efficient.</p> <p>32. Choosing the right data structure is essential for developing efficient programs. The study of data structures helps in choosing the right data structure for a particular problem.</p> <p>33. The study of data structures helps in implementing data structures such as linked lists, trees, and graphs. By implementing data structures, we can create efficient programs that can handle large amounts of data.</p>
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>61. Understanding the fundamental concepts of data structures.</p> <p>62. Analyzing the performance of algorithms</p> <p>63. Choosing appropriate data structures.</p> <p>64. Implementing data structures.</p> <p>65. Designing algorithms.</p> <p>66. Applying data structures to real-world problems</p>
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following:</p> <ul style="list-style-type: none">Part A – Introduction to data structures: Overview of data structures, their types, and applications. .[8 hrs]

	<ul style="list-style-type: none"> Part B- Arrays and Linked lists:: One-dimensional and multi-dimensional arrays, array operations, and applications. Linked lists: Singly linked lists, doubly linked lists, circular linked lists, and their operations.[12hrs] Part C -: Stacks and Queues Array-based and linked-list based implementation of stacks and queues, their operations, and applications.. [12 hrs] Part D - Trees: Binary trees, binary search trees, AVL trees, red-black trees, and their operations. [14 hrs] Part E – Graphs: Graph representation, graph traversal algorithms, shortest path algorithms, and minimum spanning tree algorithms..[10 hrs] Revision problem classes [4 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be used in Data structure courses to introduce the concepts of data structures and explain the theoretical aspects of algorithms that operate on data structures, provide hands-on exercises to help students implement data structures and algorithms using programming languages such as C++, Java, or Python, provide practice problems to help students improve their problem-solving skills and prepare for exams and assess students' understanding of data structures and algorithms through quizzes, exams, programming assignments, and group projects..
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	61	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	8	10% (10)	5, 10	LO #1, 2, 6,7,8,9,10 and 11
	Assignments	8	10% (10)	2, 12	LO # 3, 4, 6, 7,9,10,12,14
	Projects / Lab.	16	10% (10)	Continuous	All
	Report	5	10% (10)	2,4,8,10and13	LO#2,4,8,10 and 13
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered	
Week 1	General introduction to data structures: Introduce to the Basic types of Data Structures and the common algorithm
Week 2	Linear data structures: What is linear data structure, characteristics of linear data structure and types of linear data structure
Week 3	Algorithm Analysis:

	Algorithm Analysis types and methods,experimental of analysis algorithm
Week 4	Recursion: Introduction to recursion, some problems that solved by recursion and the difference between recursion and iteration
Week 5	Back tracking technique: Introduction to back tracking technique ,general method of back tracking technique ,when to use a Backtracking algorithm and How does Backtracking work.
Week 6	Linked Lists: Introduction linked lists data structures ,comparison between linked lists and array .
Week 7	Linked Lists: basic operations on linked lists(Insertion, Deletion and traversing).
Week 8	Types of linked lists: Doubly linked lists,circular linked lists,memory -efficient doubly linked list,unrolled linked lists
Week 9	Stacks: What is a Stack,how stacks are used and stack applications and implementations.
Week 10	Queue: What is queue ,how are queues used and queue exceptions and implementations
Week 11	Tree : What is tree,binary trees and types of binary trees and properties of binary trees.
Week 12	Tree: Binary tree traversals,generic trees(N-ary trees) and threaded binary tree traversals
Week 13	Sorting algorithm: What is sorting ,why is sorting necessary and classification of sorting algorithms.
Week 14	Sorting algorithm: Classification of sorting algorithm types:bubble sort, selection sort, insertion sort,shell sort,merge sort ,quick sort and tree sort.
Week 15	Review
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: function declaration and function expression
Week 2	Lab 2: pointer declaration and initialization.
Week 3	Lab 3:user defined data structures
Week 4	Lab 4: Implementation problems using iteration/recursion problems
Week 5	Lab 5: implementation of back tracking method
Week 6	Lab 6:how to define a linked list node and programming traversal operation.
Week 7	Lab 7:programming a linked list insertion operation.
Week 8	Lab 8: programming a linked list deletion operation.
Week 9	Lab 9: Implementation of push and pop operation on stack
Week 10	Lab 10: Programming some application using stack.
Week 11	Lab 11: Programming the queue to store some of data
Week 12	Lab 12: Programming a storing data as tree structure and implementation of various traversal techniques
Week 13	Lab 13: Programming a storing data as graph structure and implementation of various traversal technique
Week 14	Lab 14: Programming a bubble sort, selection sort and insertion sort algorithms
Week 15	Lab 15: Programming a shell sort,merge sort ,quick sort and tree sort algorithms
Week 16	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Data Structures And Algorithms Made Easy by Narasimha Karumanch (Author)	YES
Recommended Texts	data structure, algorithm and application in c++ by Sartaj sahani	No
Websites	https://opendatastructures.org/	

APPENDIX:

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

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



Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Measurements & Sensors	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE206-S1	✓ Lecture	
ECTS Credits	2	✓ Lab	
SWL (hr/sem)	50	Tutorial	
Module Level	2	Practical	
Administering Department	Department of Computer Techniques Engineering	Semester of Delivery	1
Module Leader	Ahmed Waled Kasim	College	Northern Technical University Engineering Technical College/Mosul
Module Leader's Acad. Title	Lecturer	e-mail	ahmadwaled1973@ntu.edu.iq
Module Tutor	None	Module Leader's Qualification	Ph.D.
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	12/06/2023	e-mail	None
		Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<ul style="list-style-type: none">• Explain the basic working principle of various electronic measurement instruments used to measure electrical parameters like current, voltage, power etc.• Understand and describe the specifications, features, characteristics, error and the performance of an instrument.• Learn about various types AC bridges and their applications in measurements of capacitance, frequency, inductance etc.• Gain knowledge about the functional blocks of a CRO and do analysis, measurements of waveform display.• Explain working of various types of sensors, transducers and their applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After the completion of course, the students will have ability to:</p> <p>67. Learning about the principle of various electronic measurement instruments.</p> <p>68. Ability to design the AVO-meter instrument from PMMC.</p> <p>69. Learning about the both types of electrical bridges (DC and AC) bridges.</p> <p>70. Learning the main principles of Oscilloscopes instruments.</p> <p>71. 5. Learning the main principles of the electrical sensors, transducers and taking some examples about them.</p>
Indicative Contents	Indicative content includes the following:

المحتويات الإرشادية	<ul style="list-style-type: none"> Part A – Measurement & Errors: Definitions, significant figures, some examples, Types of Errors, Statistical Analysis with applications examples [2 hrs]. Part B- Electromechanical Indicating Instruments: The DC Ammeters and DC Voltmeters, Properties of DC Voltmeters and Series type Ohmmeter, Alternating - Current Indicating Instruments, Thermo-instruments(Thermocouple Instrument), Electrodynamometer and their application [6 hrs] Part C Bridges and their Applications: DC and AC Bridges with some examples [4 hrs] Part D Oscilloscopes; [2 hrs] Part E Hall Effect Sensors: Types of Hall Effect Sensors, Some Examples about Hall Effect Sensors [4 hrs] Part F Signal Generation: [2 hrs] Part G Analogue and Digital Data Acquisition System: [2 hrs] Part H Computer – Controlled Test System: [2 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	29	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	21	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5, 8,11,14	LO #1, 2, 10 and 11
	Assignments	6	10% (10)	2, 3,4,5,7,10	LO # 3, 4, 6 and 7
	Projects / Lab. Report	15	10% (10)	Continuous	All
	Summative assessment	Midterm Exam	2 hr	20% (20)	9
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

Material Covered	
Week 1	Measurement and Errors.
Week 2	Electromechanical Indicating Instruments.
Week 3	Electromechanical Indicating Instruments.
Week 4	Electromechanical Indicating Instruments.

Week 5	Bridges and their Applications.
Week 6	Bridges and their Applications.
Week 7	Oscilloscopes.
Week 8	1-Theory of Hall Effect, Hall Effect Sensors, Basic Hall Effect Sensors. 2-Analogue output Sensors.
Week 9	Mid-Term Exam.
Week 10	1- Digital output Sensors. 2- Some Examples about Hall Effect Sensors.
Week 11	Signal Generation.
Week 12	Analogue and Digital Data Acquisition System.
Week 13	Computer – Controlled Test System.
Week 14	Preparatory Week.
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab1: Measurements of DC current.
Week 2	Lab2: Measurements of DC voltage.
Week 3	Lab 3: Loading effect on Voltmeter.
Week 4	Lab 4: Series type Ohmmeter.
Week 5	Lab 5: AC Voltmeter using half wave rectifier.
Week 6	Lab 6: AC Voltmeter using full wave rectifier.
Week 7	Lab 7: DC Bridges (Wheatstone bridge).
Week 8	Lab 8: Comparison bridges.
Week 9	Lab 9: Maxwell and Hay bridges.
Week 10	Lab 10: Measurements of frequency.
Week 11	Lab 11: Measurements of phase angle using Lissajous method.
Week 12	Lab 12: Calibration of Thermocouple.
Week 13	Lab 13: Photosensitive.
Week 14	Lab 14: Review.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electronic Instrumentation and Measurement Techniques by: W. D. Cooper and A. D. Helfrick. 3 rd edition.	Yes
Recommended Texts	Principles of Measurement Systems" by John P. Bentley	No
Websites	Measurement systems: Application and design 4th Revised edition by Ernest O. Doebelin https://www.amazon.com/Measurement-Systems-Application-Design-Doebelin/dp/0070173389	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

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

Note:

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer architecture	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE201-S2	✓ Lecture	
ECTS Credits	6	✓ Lab	
SWL (hr/sem)	150	✓ Tutorial	
Module Level	2	✓ Practical	
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Ahmad F. Al-Allaf	e-mail	Ahmed.faleh@atu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	13/06/2023	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<p>34. Microprocessor Interfacing: Students learn about interfacing microprocessors with external devices such as memory, input/output ports, and peripherals.</p> <p>35. Memory Systems: The course cover different memory types used in microprocessor systems, such as main memory, and secondary storage, types of semiconductor memories (ROMs and RAMs).</p> <p>36. Interrupts: Students learn about interrupt handling mechanisms in 8086 microprocessors. This includes understanding interrupt prioritization, interrupt service routines, and designing hardware interrupt circuits.</p>
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>72. Explain the principles and characteristics of different memory types used in microprocessor systems, including, main memory, secondary storage.</p> <p>73. Design and implement interfaces between a microprocessor (16 and 32 bit) and external devices, such as memory, input/output ports, and peripherals, applying relevant protocols and techniques.</p> <p>74. Interfacing different I/O deceives to the 8088 and 8086 microprocessors, such as Keyboard, &-segment displays, and ADC/DAC circuits.</p> <p>75. Understand the concepts and mechanisms of interrupts in microprocessors, including interrupt prioritization, and interrupt service routines.</p> <p>76. Designing hardware interrupt circuits.</p>

Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> • Part-A: Basic computer architecture and memory: Computer organization, Primary and secondary memories, Memory hierarchy, types of ROMs and RAMs, primary memory architecture, Internal structure and operation of ROMs, and RAMs [8hrs.] • Part-B: Memory Interfacing: Memory address decoder, Simple address decode, 2-4 and 3-8 address decoders. Use programmable logic devices (PLDs) to decode memory addresses, Interfacing ROM and SRAM to the 8088 microprocessor, Expanding memory in size and words. Interfacing ROM and SRAM to the 8086 microprocessor, Interfacing ROM and SRAM to the 32-bit microprocessor, memory interfacing Design examples [20hrs] • Part-C: I/O interfacing: The I/O Instructions, Isolated and Memory-Mapped I/O, Basic Input and Output Interfaces, Interfacing simple devices (LEDs and switches) to the 8088/8086 microprocessor, Interfacing ADC and DAC to the 8088/8086 microprocessor, Interfacing Keyboard and 7-segment displays to the 8088/8086 microprocessor [20hrs] • Part -D : Interrupts: Basic Interrupt Processing, Interrupt Instructions, Interrupt Vector, Hardware Interrupts, Expanding the Interrupt Structure, Using the 74ALS244 to Expand Interrupts, Daisy-Chained Interrupt, Interrupt Examples, Real-Time Clock, Interrupt-Processed Keyboard. [12hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>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.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	61	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	<ul style="list-style-type: none"> • Basic computer architecture:

	Computer organization, Primary and secondary memories, Memory hierarchy, types of ROMs and RAMs
Week 2	<ul style="list-style-type: none"> • <u>Primary memory architecture:</u> Internal structure and operation of ROMs, and RAMs
Week 3	<ul style="list-style-type: none"> • <u>Memory address decoder:</u> Simple address decode, 2-4 and 3-8 address decoders. Use programmable logic devices (PLDs) to decode memory addresses.
Week 4	<ul style="list-style-type: none"> • <u>Memory interfacing:</u> Interfacing ROM and SRAM to the 8088 microprocessor, Expanding memory in size and words.
Week 5	<ul style="list-style-type: none"> • <u>Memory interfacing:</u> Interfacing ROM and SRAM to the 8086 microprocessor.
Week 6	<ul style="list-style-type: none"> • <u>Memory interfacing:</u> Interfacing ROM and SRAM to the 32-bit microprocessor.
Week 7	<ul style="list-style-type: none"> • <u>Memory Interfacing:</u> Memory interfacing Design examples
Week 8	<ul style="list-style-type: none"> • <u>I/O system:</u> The I/O Instructions, Isolated and Memory-Mapped I/O, Basic Input and Output Interfaces
Week 9	<ul style="list-style-type: none"> • <u>I/O system interfacing:</u> Interfacing simple devices (LEDs and switches) to the 8088/8086 microprocessor
Week 10	<ul style="list-style-type: none"> • <u>I/O system interfacing:</u> Interfacing ADC and DAC to the 8088/8086 microprocessor,
Week 11	<ul style="list-style-type: none"> • <u>I/O system interfacing</u> Interfacing Keyboard and 7-segment displays to the 8088/8086 microprocessor
Week 12	<ul style="list-style-type: none"> • <u>Interrupts:</u> Basic Interrupt Processing, Interrupt Instructions, Interrupt Vector, Hardware Interrupts.
Week 13	<ul style="list-style-type: none"> • <u>Interrupts:</u> Expanding the Interrupt Structure, Using the 74ALS244 to Expand Interrupts, Daisy-Chained Interrupt.
Week 14	<ul style="list-style-type: none"> • <u>Interrupts:</u> Interrupt Examples, Real-Time Clock, Interrupt-Processed Keyboard
Week 15	<ul style="list-style-type: none"> • Final Exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Proteus simulator for digital systems
Week 2	Lab 2: Introduction to Memory type and organization
Week 3	Lab 3: Address decoders
Week 4	Lab 4: SRAM interfacing
Week 5	Lab 5: ROM interfacing
Week 6	Lab 6: Expanding ROM and RAM
Week 7	Lab 7: Interfacing LEDs and switches to the microprocessor
Week 8	Lab 8: Interfacing Keyboard to the microprocessor
Week 9	Lab 9: Interfacing 7-segment display to the microprocessor
Week 10	Lab 10: Interfacing ADC to the microprocessor
Week 11	Lab 11: Interfacing DAC to the microprocessor
Week 12	Lab 12: Expanding the Interrupt Structure using the 74ALS244
Week 13	Lab 13: Interrupt design example
Week 14	Lab 14: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	The Intel Microprocessors (8th Edition), BARRY B. BREY, 2009	No
Recommended Texts	MICROPROCESSOR 8086 Architecture, Programming and Interfacing, Sunil Mathur, 2011	No
Websites	https://www.coursera.org https://www.edx.org https://ocw.mit.edu	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

Note:

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



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electronic Circuits	Module Delivery	
Module Type	Core	<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BCTE202-S2		
ECTS Credits	6		
SWL (hr/sem)	125		
Module Level			
Administering Department	DEPARTMENT OF COMPUTER TECHNIQUES ENGINEERING	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Thabat F. Thabet	e-mail	Thabet.tfy@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	10/06/2023	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	37. To learn the applications of BJT . 38. Study the types of BJT amplifiers (Common Emitter, Common Collector, and Common Base). 39. Study the Frequency response of amplifiers. 40. Differential and Operational Amplifiers 41. Negative Feed-back (Inverting and Non-inverting Amplifiers) and other Applications of Operational Amplifiers. 42. Study the family of Field Effect Transistors (FET).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	77. Learning about the BJT applications. 78. Learning about the types of BJT amplifiers. 79. Frequency Response 80. Learning about Differential and Operational Amplifiers 81. Study the family of Field Effect Transistors (FET)..
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <ul style="list-style-type: none">Part A – BJT Applications BJT as a Switch (cutoff and saturation). Linear operation and DC load line [8 hrs]Part B- BJT Amplifiers. Common Emitter CE. Common Collector CC. Common Base CB. [12 hrs]

	<ul style="list-style-type: none"> • Part C Frequency Response The Decibel. Low Frequency Amplifier Response (Effect of the external capacitors). High Frequency Amplifier Response (Effect of the internal capacitors). Total Frequency Response (Bode Plot). [16 hrs] • Part D Differential and Operational Amplifiers Differential and Operational Amplifiers. Negative Feed-back (Inverting and Non-inverting Amplifiers). Applications of Operational Amplifiers. [12 hrs] • Part E Field Effect Transistors (FET). Junction Field Effect Transistors (JFET). Metal Oxide Semiconductor Field Effect Transistors (MOSFET). [8 hrs] • Revision problem classes [4 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	61	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

Material Covered	
Week 1	BJT as a Switch (cutoff and saturation).
Week 2	Linear operation and DC load line.
Week 3	Common Emitter CE.
Week 4	Common Collector CC.
Week 5	Common Base CB.
Week 6	The Decibel.
Week 7	Low Frequency Amplifier Response (Effect of the external capacitors)
Week 8	High Frequency Amplifier Response (Effect of the internal capacitors)

Week 9	Total Frequency Response (Bode Plot)
Week 10	Differential and Operational Amplifiers.
Week 11	Negative Feed-back (Inverting and Non-inverting Amplifiers).
Week 12	Applications of Operational Amplifiers.
Week 13	Junction Field Effect Transistors (JFET).
Week 14	Metal Oxide Semiconductor Field Effect Transistors (MOSFET).
Week 15	Preparatory Week
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Review of Transistor Biasing (operating point)
Week 2	Lab 2: BJT as a Switch (cutoff and saturation).
Week 3	Lab 3: Linear operation and DC load line.
Week 4	Lab 4: Common Emitter Amplifiers
Week 5	Lab 5: Common Collector Amplifiers
Week 6	Lab 6: Common Base Amplifiers
Week 7	Lab 7: Frequency response of OPAMP
Week 8	Lab 8: Inverting and Non-inverting OPAMPs
Week 9	Lab 9: Analogue Comparator
Week 10	Lab 10: The Integrator Circuit
Week 11	Lab 11: The Differentiator Circuit
Week 12	Lab 12: FET
Week 13	Lab 13: FET Amplifier
Week 14	Lab 14: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas L. Floyd, Electronic Devices, 9th Edition, Pearson Education 2012	Yes
Recommended Texts	R. BOYLESTAD and L. NASHESKY, "ELECTRONIC DEVICES AND CIRCUIT THEORY", 11th edition, Pearson Education, 2013	Yes
Websites	Digital Systems: From Logic Gates to Processors: https://www.coursera.org/learn/electronics	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

Note:

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Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	Computer applications	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE203-S2	✓ Lecture	
ECTS Credits	4	✓ Lab	
SWL (hr/sem)	100	✓ Tutorial	
Module Level	2	Semester of Delivery	1
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Shaima Miqdad Mohamed Najeeb	e-mail	shaimamiqdad76@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	43. provide a foundation in programming for engineering problem solving using the MATLAB software package. 44. develop the skills analyze and break down a program and solve it . 45. study the creation and use of functions and scripts in MATLAB. 46. study the use of MATLAB for data analysis and visualization, including plotting functions.
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	47. Learn the capabilities and applications supported by the MATLAB program, implement them, and use them to solve various problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	82. Ability to use MATLAB: Students should be able to use the MATLAB software effectively, including navigating the MATLAB desktop, using the command window, and accessing the help system. 83. Ability to create scripts and functions: Students should be able to create and use MATLAB scripts and functions to solve problems and automate tasks. 84. Ability to perform data analysis and visualization: Students should be able to use MATLAB's built-in functions and tools for data analysis and visualization 85. Ability to perform simulations and modeling: Students should be able to use MATLAB for simulations and modeling of systems. 86. Ability to perform Graphical User Interfaces(GUI) and apply to construct the front end for different applicatio
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <ul style="list-style-type: none"> Part A – Introduction to MATLAB and Data Structures Overview of MATLAB environment, history, and applications. Basic commands, arrays, matrices, vectors, and cell arrays. scripts, functions and File I/O and Data Manipulation: Importing and exporting data from files, data cleaning, and manipulation.[10 hrs] Part B- Numeric Data Types and Basic Operations: Numeric data types, arithmetic operations, and mathematical functions.[4 hrs] Part C - Control Structures: Conditional statements, loops, and logical operators. [10 hrs] Part D -Plotting and Visualization: Creating plots, customizing plots, and 2D/3D visualization. [6 hrs] Part E – Simulink and GUI Simulink concept, creating models, and simulation. Graphical User Interfaces(GUI) construct the front end for different applicatio.[10 hrs] Revision problem classes [3 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be used in MATLAB courses to introduce concepts, explain syntax and functions, and provide examples. Hands-on exercises are an effective learning strategy in MATLAB courses to help students apply what they have learned. Exercises may involve solving problems, writing functions, and working with data. Case studies are a useful teaching strategy in MATLAB courses to help students understand how MATLAB can be used in real-world applications. Overall, the learning and teaching strategies of a MATLAB course should be designed to maximize students' understanding and proficiency in using MATLAB for various applications in engineering, science, and other fields.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	55	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
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Formative assessment	Quizzes	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	5	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	All
	Report	2	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	General introduction to matlab programming: Introduce to the basics of programming in general and programming MATLAB® in particular.Environment and Settings,Preferences and settings, platform differences, adding hardware and optional features
Week 2	Programming in MATLAB: Introduction to matrices and vectors , creating a Matlab Matrix, referencing the Elements of a Matrix, deleting a Row or a Column in a Matrix.
Week 3	Programming in MATLAB: Arithmetic ,logical and bitwise operations.
Week 4	Programming in MATLAB: Writing MATLAB scripts and functions, a custom-made Matlab functions.
Week 5	Programming in MATLAB : Loops and control flow (for-loops, if-statements)
Week 6	Function in MATLAB : Declare function name, inputs, and outputs(syntax) with examples.
Week 7	Plotting in matlab: Overview of MATLAB Plotting, Plotting Process graph components,figure tools,selecting plot types
Week 8	Plotting in matlab: Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).
Week 9	Plotting in matlab: Mesh and surface plots, visualizing functions of two variables .
Week 10	Plotting in matlab: Handle graphics: Work with graphics objects and set object properties. Animations: Create moving graphics
Week 11	Matlab simulink: Simulink Concepts, simulink environment,basic elements,simulink librarys
Week 12	Matlab simulink: Block Libraries,modifying the blocks ,interactive model editing,programmatic model editing and running simulation .
Week 13	MATLAB GUI: Creating Graphical User Interfaces, introduces GUIDE, the MATLAB graphical user interface design environment, Laying out a GUI,
Week 14	3D Computer Graphics Operations: Programming a GUI, introduces callbacks to define behavior of the GUI components, Menu-driven programs, Controls: uimenu and uicontrol.
Week 15	Final Exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to MATLAB .
Week 2	Lab 2: Basic commands
Week 3	Lab 3: Working with matrices part(I)

Week 4	Lab 4: Working with matrices part(II)
Week 5	Lab 5: Relational ,logical bitwise operations
Week 6	Lab 6: Input and output commands in a script file.
Week 7	Lab 7: Flow control(if and switch-case) statements
Week 8	Lab 8: Loop(for,while,break,continue)statements
Week 9	Lab 9: M-file functions
Week 10	Lab 10: 2D Plotting functions
Week 11	Lab 11: 3D Plotting functions
Week 12	Lab 12: Basics of Matlab simulink
Week 13	Lab 13:Graphical user interface part(I)
Week 14	Lab 14: Graphical user interface part(II)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1-MATLAB for Engineering Applications 4th Edition by William Palm Iii (Author)	Yes
Recommended Texts	Getting Started with MATLAB® Version 7 by Mathwoks	No
Websites	Digital Systems: From Logic Gates to Processors: https://www.coursera.org/learn/matlab	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Communication Fundamentals	Module Delivery	
Module Type	Core	✓ Theory	
Module Code	BCTE204-S2	✓ Lecture	
ECTS Credits	7	✓ Lab	
SWL (hr/sem)	175	✓ Tutorial	
Module Level	2	✓ Practical	
Administering Department	Department of Computer Techniques Engineering	✓ Seminar	
Module Leader	Dr. Emad A. Mohammed	Semester of Delivery	2
Module Leader's Acad. Title	Asst. prof.	College	Northern Technical University Engineering Technical College/Mosul
Module Tutor	None	e-mail	e.a.mohammed@ntu.edu.iq
Peer Reviewer Name	None	Module Leader's Qualification	PhD
Review Committee Approval	21/06/2023	e-mail	None
		Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	48. To learn the fundamentals of communications system architecture. 49. To learn the basic components used in communication system and each component basic functions. 50. To learn the types of channels that are used in communication system. 51. To learn the basic techniques used in signal representation, modulation and demodulation. 52. To learn the basics of transmission lines, their use and their equivalent circuits
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	87. To learn how to deal with different types of signals. 88. To learn how to utilize linear and nonlinear systems. 89. To learn how to design different types of filters. 90. To learn the basics of finding the spectrum of different types of signals. 91. To be familiar with various types of modulation. 92. To be familiar with how to use smith chart for transmission lines.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <ul style="list-style-type: none">Part A – Signals and Systems Signals and system definition, periodic signals, non-periodic signal, deterministic and non-deterministic signals Linear systems and nonlinear systems, filters, [8 hrs]Part B- Fourier Series and Transform Fourier series, signal harmonics, Fourier transform, Frequency domain, exponential and trigonometric Fourier transform, Properties of Fourier Transform, application of Fourier

	transform [12 hrs] <ul style="list-style-type: none"> Part C -Signals Transmission Baseband signal transmission, line coding, polar code, bipolar code, Manchester code, Analogue modulation Techniques, AM, FM, PM, Pulse modulation techniques, PAM, PPM, PWM [12 hrs] <ul style="list-style-type: none"> PartD- Digital Modulation and Digital Channels. Digital modulation Techniques ASK, PSK, FSK, Multilevel modulation, QAM, Wireless channels, Shannon equation, channel capacity [12 hrs] <ul style="list-style-type: none"> PartE-Transmission lines. Transmission lines and their equivalent circuits, TL characteristics, Incident wave, reflected wave, Smith Chart, matching techniques [10 hrs] <ul style="list-style-type: none"> Revision problem classes [6 hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	101	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	8	10% (10)	4,6,10,12	LO #1, 2, 10 and 11
	Assignments	8	10% (10)	2, 5,8,11	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	All
	Report	8	10% (10)	1,3,9,13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Signals and system definition, periodic signals, non-periodic signal, deterministic and non-deterministic signals
Week 2	Linear systems and nonlinear systems, filters
Week 3	Fourier series, signal harmonics
Week 4	Fourier transform, Frequency domain, exponential and trigonometric Fourier transform
Week 5	Properties of Fourier Transform, application of Fourier transform
Week 6	Baseband signal transmission, line coding, polar code, bipolar code, Manchester code
Week 7	Analogue modulation Techniques, AM, FM, PM
Week 8	Pulse modulation techniques, PAM, PPM, PWM

Week 9	Digital modulation Techniques ASK, PSK, FSK
Week 10	Multilevel modulation, QAM
Week 11	Wireless channels, Shannon equation, channel capacity
Week 12	Transmission lines and their equivalent circuits, TL characteristics
Week 13	Incident wave, reflected wave
Week 14	Smith Chart, matching techniques
Week 15	Final Exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Signals properties
Week 2	Lab 2: Linear systems and nonlinear systems, filters
Week 3	Lab 3: Harmonics determination
Week 4	Lab 4: Fourier transform, Spectrum analysis
Week 5	Lab 5: Fourier transform properties
Week 6	Lab 6: Types of Baseband signals
Week 7	Lab 7: Amplitude and phase modulation
Week 8	Lab 8: Frequency modulation
Week 9	Lab 9: PPM, PAM, PWM
Week 10	Lab 10: ASK
Week 11	Lab 11: FSK
Week 12	Lab 12: PSK
Week 13	Lab 13: QAM
Week 14	Lab 14: Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Ferrel Stremler "Introduction to Communication Systems" Addison Wesley Longman, 3rd Edition 1992	Yes
Recommended Texts	B.P. Lathi "Modern Digital and Analog Communication Systems" Oxford University Press, 4th Edition, 2010	No
Websites	Communication Skills Courses & Tutorials Online https://www.udemy.com	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

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



Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Computer Techniques Engineering



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Website Design		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BCTE205-S2			
ECTS Credits	3			
SWL (hr/sem)	75			
Module Level	2	Semester of Delivery		2
Administering Department	Department of Computer Techniques Engineering		College	Northern Technical University Engineering Technical College/Mosul
Module Leader	Nawar Ali Ibrahim Al_Obaidy	e-mail	Nawar.ali@ntu.edu.iq	
Module Leader's Acad. Title	Assist Lecturer	Module Leader's Qualification	PhD.	
Module Tutor	None	e-mail	None	
Peer Reviewer Name	None	e-mail	None	
Review Committee Approval	21/06/2023	Version Number	1.0	

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The objectives of a course on Website Design: Upon successful completion of the Diploma, students should be able to: <ol style="list-style-type: none"> 1. Developing front-end website architecture 2. Designing user interactions on web pages 3. Developing back-end website applications 4. Creating servers and databases for functionality 5. Developing adaptive content for multiple devices (cell phones, tablets, etc.) ensure cross-platform optimization for mobile phones
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	<ol style="list-style-type: none"> 6. Ensure responsiveness of applications 7. Working alongside graphic designers for web design features 8. Managing a project from conception to finished product 9. Designing and developing Application Programming Interfaces (APIs) 10. Meeting both technical and consumer needs for a web development project 11. Learning to research new methods of development in web applications and programming languages 12. Preparing mock-ups and storyboards for a web development project. 13. Consult with clients to develop and document website requirements. 14. Demonstrating communication skills, service management skills, and presentation skills. 15. Completing job preparation tasks including writing resumes and cover letters, conducting job interviews, and developing an ePortfolio
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Upon successful completion of the Certificate, graduates should be able to:</p> <ul style="list-style-type: none"> • Use their learned skills, knowledge, and abilities to develop websites for the internet • Apply basic design principles to present ideas, information, products, and services on websites • Apply fundamental programming principles to the construction of websites • Effectively manage website projects using available resources • Demonstrate communication skills, service management skills, and presentation skills • Complete job preparation tasks including writing resumes and cover letters, conducting job interviews, and developing an ePortfolio • Apply employability skills including fundamental skills, personal management skills, and teamwork skills
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> • Part A – Introduction to Website Building: Provide a historical review of web design and the stages it went through in the process of development. Learning the basics of web design and development [4 hrs.] • Part B- The Website and Its Future: Explaining how website design can provide students with great opportunities in many jobs. In addition to increasing the demand for web designers in the future because companies are in constant need of competencies in the field of web work to provide them with all means of technical support for websites because the website is the first interface for companies and institutions. [2 hrs.] • Part C -: The Language of the Web: HTML5: present the design of a web page by referring to the HTML5 semantic tags and using some CSS3 style properties. learning a simple structure of a web page with its associated style sheet. [8 hrs.] • Part D - Structuring the content of a web page: It covers the following concepts: <ul style="list-style-type: none"> ○ Structuring an HTML page (head/body/header/nav/main/article/aside/footer); ○ Importing elements (font/icons/style sheet/conditional import); ○ Organizing the elements of an HTML page (container/header/menu/sidebar/footer); ○ Adding style properties to these elements. [6 hrs.] • Part E – Style Sheets: CSS3: CSS – Cascading Style Sheets – is commonly used to format HTML-type web pages using display properties (colors, fonts, borders, etc.) and positioning properties (height, width, top-down, side-by-side, etc.). The display result of a web page can be completely changed without adding additional code to the web page. [6 hrs.] • Part F – Design and Creation a Website: The purpose is: <ul style="list-style-type: none"> ○ Avoid repeating the same formatting code in each web page; ○ Employ common styles, using clear names (e.g. employing the same shaded style for images or text); ○ Modify the appearance of an entire website by changing only one single file (the style sheet). [4 hrs.]

- - understand the code of the web page. [4 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

Following planned steps to teach students the basic skills that they must learn (in the correct order) as follow:

Getting Started: Fundamentals of Web Design and Development

Learn Essential Skills: Design and programming concepts that all new web designers should learn.

Using the Best Resources: A complete list of the best resources for learning web design.

Gain Experience: How to gain hands-on web design experience and build your portfolio.

Choosing a Career Path: Decide if freelancing or working at home is right for them.

Finding a job: How to find their first web design job and start their career.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	43	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	32	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10% (10)	4, 6, 8, 10, 12, 14	LO # 2, 3, 8, 9, 10 and 11
	Assignments	4	10% (10)	2, 5, 8, 12	LO # 1-2, 4-5, 7, 11
	Projects / Lab.	16	10% (10)	Continuous	All
	Report	6	10% (10)	3, 6-8,10-12	LO#2,4and10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Background and Phases of Evolution of the Web.
Week 2	Web application architecture.
Week 3	Choosing a Domain Name and Hosting
Week 4	Installing WordPress and Account Setup
Week 5	WordPress Admin Dashboard and the Features
Week 6	Structure of an HTML5 document.
Week 7	CSS3 Overview.
Week 8	Process of creating a website.
Week 9	Different website types and ergonomics the website
Week 10	New Theme Installation
Week 11	Header and Landing Page Top Design
Week 12	How to Insert Logo, Site Title, and Setup Search Box on a Website
Week 13	Explanation of Post Screen Option and its Use
Week 14	Footer Design of a Website and Adding Social Media Link
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Step-by-Step Guide to Registering Domain Name.
Week 2	Lab 2: Structure of an HTML5 web page.
Week 3	Lab 3: How to Design the Menu Items.
Week 4	Lab 4: Simple Forms and Table Formatting.
Week 5	Lab 5: How to Add Search on the Website.
Week 6	Lab 6: How to Change Website Title and Description
Week 7	Lab 7: Steps in Adding Gallery to a Website using Gallery Widget Option.
Week 8	Lab 8: How to Place Slider on the Website.
Week 9	Lab 9: How to Publish with Post Tool.
Week 10	Lab 10: How to insert Page Break (Block) in a Post.
Week 11	Lab 11: How to Hyperlink in a Post.
Week 12	Lab 12: Inserting Image/Photo in the Post or Pages.
Week 13	Lab 13: Creating a template model.
Week 14	Lab 14: Creating a website from A to Z.
Week 15	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Website Design and Development with HTML5 and CSS3. Authers: Hassen Ben Rebah, Hafedh Boukthir, and Antoine Chédebois	No
Recommended Texts	How to Build and Design a Website using wordpress, William S. Page, 2020	No
Websites		

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

Note:

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



Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Summer Training 1	Module Delivery	
Module Type	Suplement	Theory Lecture ✓ Lab Tutorial ✓ Practical ✓ Seminar	
Module Code	BCTE206-S2		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	2		
Administering Department	Department of Computer Techniques Engineering	College	Northern Technical University Engineering Technical College/Mosul
Module Leader	All Acadimic staf	e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	21/06/2023	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none">1- القدرة على ربط المعرفة المكتسبة من الطالب خلال دراسته الاكاديمية بالمشاكل الحقيقية على ارض الواقع2- اكتشاف بيئة العمل واحتياجاتها وقيودها3- القدرة على تحديد المتطلبات المطلوبة لايجاد حلول مناسبة وفعالة للمشاكل الحقيقية على ارض الواقع مع وجود قيود فنية مختلفة4- القدرة على تكوين رؤية واضحة حول الاهداف والمعوقات والعمل بشكل فعال5- ايجاد الطالب استقلاليته باكتسابه لمهارات جديدة مع اشراف بسيط من قبل جهة التدريب .6- القدرة على ايجاد حلول مناسبة في حال حدوث اي تغيير في متطلبات العمل وقيوده7- القدرة على التواصل مع الكثير من الشخصاخص المتواجدين في المجال العملي .8- تعلم المسؤوليات الاخلاقية والاحترافية.
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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ul style="list-style-type: none"> Understanding of Computer Architecture: Gain knowledge of the components and operation of computer systems, including processors, memory, input/output devices, and the organization of data. Programming Skills: Develop proficiency in programming languages commonly used in computer engineering, such as C, C++, Java, or Python. Learn to write efficient and well-structured code. Problem-Solving and Algorithm Design: Learn techniques for problem-solving and algorithm development. Understand various algorithmic approaches and their efficiency. Develop skills to analyze and optimize algorithms.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <ul style="list-style-type: none"> Part 1- [7 hrs] : تعريف الطالب على اقسام وشعب الموقع التدريبي Part 2- [7 hrs] : التعرف على اجزاء القرص الصلب Part 3- [7 hrs] : التعرف الاعطال الشائعة في الاقراص الصلبة: Part 4- [8 hrs] : انواع الطابعات الالكترونية والاعطال التي تواجه هذه الطابعات

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	ان الإستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة: <ul style="list-style-type: none"> تشجيع طلبة هندسة الحاسوب على المشاركة بشكل مهني مع الأوساط العملية من خلال الممارسة الميدانية في دوائر الدولة. إيجاد حلول مبتكرة ريادية لسد الاحتياجات المحلية. بناء قيادة مهنية وأخلاقية وتعاونية في مكان العمل وفي المجتمع. تطوير معرفتهم وخبراتهم
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	20	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	7.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes				
	Assignments	8	15% (10)	1, 2,3,4	LO # 1, 2, 3 and 4
	Projects / Lab.	4	20% (10)	Continuous	All
	Report	2	15% (10)	2,4	LO # 2 and 4
Summative assessment	Midterm Exam				
	Final Exam	1 hr	50% (50)	5	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	- تعريف الطالب على اقسام وشعب الموقع التدريبي مع اعطاء نبذة مختصرة عن اجزاء الحاسبة وكيفية عملها وامكانية

	صيانة بعض اجزائها.
Week 2	- التعرف على اجزاء القرص الصلب وكيفية تقسيمه وطريقة خزن البيانات ومقارنته مع قرص SSD و M2 والطرق المستخدمة لتصفير القرص (NTFS,FAT16,FAT32)
Week 3	- التعرف الاعطال الشائعة في الاقراص الصلبة وكيفية معالجتها والبرامج المستخدمة في عملية اصلاح الاقراص الصلبة واسترجاع المعلومات المحذوفة او المفقودة بعد عملية الاصلاح
Week 4	- اعطاء نبذة مختصرة عن انواع الطابعات الالكترونية والاعطال التي تواجه هذه الطابعات وكيفية معالجتها. - التعرف على طبيعة الاجهزة المسيطر عليها حاسوبياً وكيفية عملها في حال توفرها في الموقع التدريبي
Week 5	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

Note:

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