

# Northern Technical University

## الجامعة التقنية الشمالية



Second Cycle – Bachelor's degree (B.Sc.) *Department of Artificial Intelligence Engineering Technology*

بكالوريوس هندسة تقني - هندسة تقنيات الذكاء الاصطناعي

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# 1. **Mission & Vision Statement**

## *Vision Statement*

To impart quality education and produce industry ready professionals and achieve excellence and leadership in the field of Artificial Intelligence Technologies by preparing specialized engineering professionals with advanced scientific and practical skills, capable of developing innovative solutions to global challenges, supporting sustainable digital transformation, and fostering innovation and scientific research to build a technologically advanced future that aligns with the Fourth Industrial Revolution.

## *Mission Statement*

To prepare scientifically and practically qualified engineers with advanced knowledge and skills in the field of artificial intelligence and its technologies, capable of developing innovative solutions to address technical and societal challenges. The department is committed to supporting scientific research, fostering innovation, and enhancing collaboration with industrial and academic institutions to achieve digital transformation and build a sustainable future that keeps pace with global technological advancements.

# 2. **Program Specification**

Programme code:	AITE	ECTS	240
Duration:	4 levels, 8 semesters	Method of Attendance:	Full Time

Write something like:

The Artificial Intelligence Engineering program aims to produce graduates who can design, develop, and implement AI-driven solutions to address real-world challenges. The program integrates foundational principles of computer science, data science, and engineering with advanced AI techniques and applications.

The key components of Artificial Intelligence engineering department are:

- 1- Academic framework
- 2- Research and development
- 3- Practical training and skill development
- 4- Industry collaboration
- 5- Student engagement

### 3. **Program Objectives**

The Artificial Department has the following graduate objectives:

1. **Advance AI Research and Development:** Foster cutting-edge research in artificial intelligence to solve complex real-world problems and contribute to the global body of knowledge in AI.
2. **Promote Interdisciplinary Collaboration:** Collaborate across diverse fields such as computer science, robotics, healthcare, and business to drive innovation and implement AI solutions effectively.
3. **Prepare Future AI Leaders:** Equip students with comprehensive knowledge and practical skills in AI technologies to prepare them for leadership roles in academia, industry, and government.
4. **Encourage Ethical AI Practices:** Develop and promote AI systems that adhere to ethical standards, prioritizing fairness, transparency, accountability, and respect for privacy.
5. **Develop Industry Partnerships:** Build strong collaborations with industry leaders to ensure the curriculum remains relevant and aligned with market demands while fostering internship and employment opportunities.
6. **Support Societal Impact Initiatives:** Create AI systems that address societal challenges such as healthcare, education, environmental sustainability, and public safety.
7. **Promote Innovation and Entrepreneurship:** Encourage students and faculty to engage in AI-based startups and innovation projects to drive economic growth and technological advancement.
8. **Integrate AI Across Disciplines:** Support the integration of AI into other engineering and scientific disciplines to enable intelligent systems across domains.
9. **Focus on Computational Efficiency:** Research and implement efficient AI algorithms and architectures to ensure sustainable and scalable AI solutions.
10. **Foster Lifelong Learning:** Provide continuing education programs, certifications, and workshops to help professionals stay updated on the latest advancements in AI.
11. **Build State-of-the-Art Infrastructure:** Develop and maintain advanced AI labs, tools, and computing resources to support academic and research excellence.
12. **Engage in Global Collaboration:** Participate in international AI initiatives and conferences to promote knowledge exchange and position the department as a global leader in AI education and research.

### 4. **Student Learning Outcomes**

#### **Outcome 1**

#### *Foundational Knowledge*

- **Core AI Concepts:** Understand and apply fundamental principles of artificial intelligence, machine learning, deep learning, and data science.
- **Mathematics and Programming:** Demonstrate proficiency in mathematical concepts (linear algebra, calculus, probability) and programming languages (Python, R, C++) essential for AI.

## **Outcome 2**

### *Technical Expertise*

- **AI Model Development:** Design, implement, and optimize machine learning and deep learning models for various applications.
- **Data Analysis:** Collect, preprocess, analyze, and interpret large datasets for AI applications using advanced tools and frameworks.
- **System Integration:** Integrate AI solutions with hardware and software systems, including IoT and edge devices.

## **Outcome 3**

### *Problem-Solving and Innovation*

- **Critical Thinking:** Identify, analyze, and solve complex real-world problems using AI methodologies.
- **Creativity:** Develop innovative AI-driven solutions tailored to specific domains such as healthcare, robotics, finance, and smart cities.

## **Outcome 4**

### *Research and Development*

- **Research Skills:** Conduct independent and collaborative research to advance knowledge in AI and related fields.
- **Scientific Communication:** Present findings effectively through technical reports, academic papers, and oral presentations.

## **Outcome 5**

### *Ethical and Social Responsibility*

- **Ethical AI Practices:** Understand and apply ethical principles to ensure fairness, transparency, and accountability in AI systems.
- **Societal Impact:** Assess the societal, economic, and environmental implications of AI technologies.

## **Outcome 6**

### *Practical and Technical Skills*

- **Hands-On Proficiency:** Use state-of-the-art AI tools and platforms such as TensorFlow, PyTorch, MATLAB, and cloud-based AI services.
- **Project Implementation:** Design, execute, and evaluate projects that address real-world challenges using AI techniques.
- **Testing and Validation:** Perform rigorous testing, validation, and evaluation of AI models to ensure reliability and effectiveness.

## **Outcome 7**

### *Communication and Collaboration*

- **Effective Communication:** Communicate technical concepts clearly to diverse audiences, including peers, stakeholders, and non-experts.
- **Teamwork:** Work effectively in multidisciplinary teams, collaborating with professionals from various fields to achieve common goals.

### **Outcome 8**

#### *Lifelong Learning*

- **Adaptability:** Stay current with emerging trends, tools, and advancements in AI through continuous learning.
- **Self-Directed Learning:** Demonstrate the ability to acquire new knowledge independently and integrate it into professional practice.

### **Outcome 9**

#### *Industry Readiness*

- **Professional Skills:** Apply AI knowledge to solve industry-specific challenges and meet organizational needs.
- **Entrepreneurship:** Exhibit entrepreneurial skills by identifying opportunities and creating innovative AI-based solutions or startups.

### **Outcome 10**

#### *Leadership and Global Competence*

- **Leadership:** Demonstrate the ability to lead AI projects, teams, or initiatives in academic or professional settings.
- **Global Perspective:** Apply AI knowledge and skills to contribute to global challenges, policies, and sustainable development goals.

## **5. Academic Staff**

Anmar Burhan Mohamed Salih | Ph.D. in Computer Engineering | Lecturer

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## 6. Credits, Grading and GPA

### **Credits**

Artificial Intelligence Techniques Engineering Department is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

### **Grading**

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	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
<b>Fail Group (0 – 49)</b>	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
<p>Number 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>				

### Calculation of the Cumulative Grade Point Average (CGPA)

- The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$CGPA = [ (1st^{th} \text{ module score} \times ECTS) + (2nd^{th} \text{ module score} \times ECTS) + \dots ] / 240$$

## 7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
AITE100	Digital logic	60	87	6	core	No
TECCAI100	Mathematics	45	77	5	core	No
AITE102	Artificial Intelligence	30	92	5	core	No
AITE103	Fundamentals of Programming	61	61	5	Basic	No
AITE101	DC Circuit Analysis	60	62	5	core	No
NTU100	Democracy and Human Rights	28	19	2	Basic	No
NTU101	English Language	16	31	2	Basic	No

**Semester 2 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
AITE110	Digital Circuits	60	62	5	core	No
AITE111	Software Development	60	62	5	core	No
AITE112	Engineering Mathematics	45	77	5	core	No
AITE113	Electrical Engineering Workshop	30	45	3	Basic	No
AITE114	AC Circuit Analysis	60	62	5	Basic	No
AITE115	Engineering Drawing	30	42	3	Basic	No
NTU102	Computer	45	2	2	Basic	No
NTU103	Arabic Language	30	17	2	Basic	No

**Semester 3 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
AITE200	Microprocessors	93	54	6	core	No
AITE201	Electronics Circuits	61	61	5	core	No
AITE202	Object Oriented Programming	63	59	5	core	No
AITE203	Applied Mathematics	60	37	4	core	No
AITE204	data Structures	62	60	5	core	No
AITE205	Measurements & Sensors	60	12	3	core	No
NTU200	The Crimes of the Defunct Ba'ath Party	33	17	2	Basic	No

**Semester 4 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
AITE210	Computer Architecture	93	54	6	core	No
AITE211	Neural Networks	93	54	6	core	No
AITE212	AI Computer Applications	60	37	4	core	No
AITE213	Probabilities and Statistics	61	61	5	core	No
AITE214	Knowledge Representation	62	60	5	core	No
NTU201	Ethics	16	31	2	Basic	No
AITE214	Summer Training 1			2	core	No

**Semester 5 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
AITE300	Machine learning	93	54	6	Core	No
AITE301	Embedded Systems	61	61	5	Core	No
AITE302	Python Programming	61	61	5	Basic	No
AITE303	Engineering Analysis	60	37	4	Core	No
AITE304	Control Engineering	61	61	5	Core	No
AITE305	Computer Networks	61	61	5	Basic	No

**Semester 6 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
AITE310	Deep Learning	93	54	6	Core	No
AITE311	Operating Systems	60	37	4	Basic	No
AITE312	Signals and Systems	60	37	4	Core	No
AITE313	Ethics of Artificial Intelligence	60	12	3	Basic	No
AITE314	Algorithms Design and Analysis	61	61	5	Core	No
AITE315	Optimization	93	54	6	Core	No
AITE316	Summer Training 2	30	17	2	Basic	No

**Semester 7 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
AITE400	Security of Artificial Intelligence	115	60	7	Basic	No
AITE401	Robotics Fundamentals	93	54	6	Core	No
AITE402	Biometrics	93	54	6	Core	No
AITE403	Engineering Management	93	54	6	Basic	No
AITE404	Applications of Deep Learning	60	12	3	Basic	No
AITE405	Project 1	30	17	2	Basic	No

**Semester 8 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
AITE410	Neural Language Processing	115	60	7	Core	No
AITE411	Data mining	93	54	6	Core	No
AITE412	Cloud Computing	93	54	6	Basic	No
AITE413	Robotics Design	93	54	6	Basic	No
NTU400	Methodology of Scientific Research	30	17	2	Basic	No
AITE414	Project 2	30	17	2	Basic	No

## 8. **Contact**

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## ENGLISH LANGUAGE Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
NTU101	English Language	2	2	2	2

### GENERAL INFORMATION

Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Mrs. Nazik Jamal Ahmed
Instructor(s) of the Course Unit	Mrs. Nazik Jamal Ahmed

### OBJECTIVES AND CONTENTS

<b>Objectives of the Course Unit:</b>	Introduce the student to general English through reading, writing, listening, and speaking.
<b>Contents of the Course Unit:</b>	Grammar, Vocabulary, Reading, Speaking, Listening, and Everyday English

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	<b>Grammar:</b> Tenses, Questions, Questions words <b>Vocabulary:</b> Using a bilingual dictionary, Parts of speech, and Words with more than one meaning. <b>Everyday English:</b> Social expressions.
2	<b>Reading:</b> the many ways we communicate <b>Speaking:</b> Information gap <b>Listening:</b> Neighbors
3	<b>Grammar:</b> Present tenses: Present Simple, Present Continuous, have/have got <b>Vocabulary:</b> Describing countries, Collocation <b>Everyday English:</b> Making conversation
4	<b>Reading:</b> three people talk about their experiences <b>Speaking:</b> people's lifestyles <b>Listening:</b> what annoys you about the people in your life?
5	<b>Grammar:</b> Past tenses: Past Simple, Past Continuous <b>Vocabulary:</b> Irregular verbs, making connections, Nouns, verbs, and adjectives, Making negatives. <b>Everyday English:</b> Time expressions
6	<b>Reading:</b> Newspaper stories <b>Speaking:</b> Telling stories <b>Listening:</b> A radio drama
7	<b>Grammar:</b> Quantity, Articles <b>Vocabulary:</b> Buying things <b>Everyday English:</b> Prices and shopping
8	<b>Reading:</b> 'The best shopping street in the world' <b>Speaking:</b> Town survey, attitudes to shopping <b>Listening:</b> Buying things
9	<b>Grammar:</b> Verb patterns 1, Future intentions <b>Vocabulary:</b> Hot verbs <b>Everyday English:</b> How do you feel?
10	<b>Reading:</b> Hollywood kids <b>Speaking:</b> Being a teenager <b>Listening:</b> You've got a friend
11	<b>Grammar:</b> Comparative and superlative adjectives <b>Vocabulary:</b> Synonyms and antonyms <b>Everyday English:</b> Directions
12	<b>Reading:</b> 'A Tale of two millionaires' <b>Speaking:</b> comparing cities <b>Listening:</b> Living in another country
13	<b>Grammar:</b> Present Perfect and Past Simple <b>Vocabulary:</b> Past participles, Adverbs, Word pairs <b>Everyday English:</b> Short answers
14	<b>Reading:</b> Celebrity interview <b>Speaking:</b> Roleplay <b>Listening:</b> An interview with the band

<b>WORKLOAD &amp; ECTS CREDITS OF THE COURSE UNIT :</b>		<b>NTU101 ENGLISH LANGUAGE</b>	
<b>WORKLOAD FOR LEARNING &amp; TEACHING ACTIVITIES</b>			
<b>TYPE OF THE LEARNING ACTIVITIES</b>	<b>LEARNING ACTIVITIES (# OF WEEK)</b>	<b>DURATION (HOURS, H)</b>	<b>WORKLOAD (H)</b>
<b>Lecture &amp; In-Class Activities</b>	14	2	28
<b>Preliminary &amp; Further Study</b>	NA	NA	NA
<b>Land Surveying</b>	NA	NA	NA
<b>Group Work</b>	2	1	2
<b>Laboratory</b>	NA	NA	NA
<b>Reading</b>	NA	NA	NA
<b>Assignment (Homework)</b>	3	1	3
<b>Project Work</b>	NA	NA	NA
<b>Seminar</b>	2	1	2
<b>Internship</b>	NA	NA	NA
<b>Technical Visit</b>	NA	NA	NA
<b>Web Based Learning</b>	NA	NA	NA
<b>Implementation/Application/Practice</b>	NA	NA	NA
<b>Practice at a workplace</b>	NA	NA	NA
<b>Occupational Activity</b>	NA	NA	NA
<b>Social Activity</b>	NA	NA	NA
<b>Thesis Work</b>	NA	NA	NA
<b>Field Study</b>	NA	NA	NA
<b>Report Writing</b>	2	1	2
<b>Final Exam</b>	1	3	3
<b>Preparation for the Final Exam</b>	1	3	3
<b>Mid-Term Exam</b>	1	2	2
<b>Preparation for the Mid-Term Exam</b>	1	2	2
<b>Short Exam (Quizzes)</b>	2	0.5	1
<b>Preparation for the Short Exam</b>	2	1	2
<b>TOTAL WORKLOAD OF THE COURSE UNIT</b>	<b>31</b>	<b>18.5</b>	<b>50</b>
<b>Workload (h) / 25</b>			<b>50÷25</b>
<b>ECTS Credits allocated for the Course Unit</b>			<b>2</b>



Ministry of Higher Education and  
Scientific Research - Iraq  
Northern Technical University  
Technical Engineering College for Computer and AI/ Mosul  
Department of Artificial Intelligence



## 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 ARTIFICIAL INTELLIGENCE	✓ Seminar	
Module Leader	Msr. Nazik Jamal Ahmed	Semester of Delivery	1
Module Leader's Acad. Title	Lecturer	College	NORTHERN TECHNICAL UNIVERSITY TECHNICAL ENGINEERING COLLEGE FOR COMPUTER AND AI/ MOSUL
Module Tutor	None	e-mail	nazik.ahmed@ntu.edu.iq
Peer Reviewer Name	None	Module Leader's Qualification	PhD.
Review Committee Approval	15/10/2024	e-mail	None
		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.
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<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Students will heighten their awareness of the correct usage of English grammar in writing and speaking.</p> <p>Students will improve their speaking ability in English both in terms of fluency and comprehensibility.</p> <p>Students will give oral presentations and receive feedback on their performance.</p> <p>Students will increase their reading speed and comprehension of academic articles.</p> <p>Students will improve their reading fluency skills through extensive reading.</p> <p>Students will enlarge their vocabulary by keeping a vocabulary journal.</p>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <p>Part 1 – <b>Grammar</b> [4 hrs] Tenses, Present tenses: Present Simple, Present Continuous</p> <p>Part 2 – <b>Vocabulary</b> [6 hrs] Irregular verbs, making connections, Nouns, verbs, and adjectives, Making negatives.</p> <p>Part 3 – <b>Speaking</b> [6 hrs] Information gap, people's lifestyles, comparing cities.</p> <p>Part 4 – <b>Listening</b> [4 hrs] Telling stories, Town survey, attitudes to shopping, comparing cities.</p> <p><b>Revision</b> [2 hrs]</p>

### Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

الحمل الدراسي للطالب

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

### 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 بيتية	4	10% (10)	5, 8, 10, 13	LO # 5, 8 and 12
	Assignments بالكلية	1	10% (10)	5	LO # 1- 4
	Report	1	10% (10)	8	LO # 1- 7
Midterm Exam		2 hr	10% (10)	15	LO # 1-14

<b>Summative assessment</b>	<b>Final Exam</b>	3 hr	50% (50)	15	All
<b>Total assessment</b>			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	<b>Material Covered</b>
<b>Week 1</b>	Grammar: Tenses, Questions, Questions words Vocabulary: Using a bilingual dictionary, Parts of speech, and Words with more than one meaning. Everyday English: Social expressions.
<b>Week 2</b>	Reading: the many ways we communicate Speaking: Information gap Listening: Neighbors
<b>Week 3</b>	Grammar: Present tenses: Present Simple, Present Continuous, have/have got Vocabulary: Describing countries, Collocation Everyday English: Making conversation
<b>Week 4</b>	Reading: three people talk about their experiences Speaking: people's lifestyles Listening: what annoys you about the people in your life?
<b>Week 5</b>	Grammar: Past tenses: Past Simple, Past Continuous Vocabulary: Irregular verbs, making connections, Nouns, verbs, and adjectives, Making negatives. Everyday English: Time expressions
<b>Week 6</b>	Reading: Newspaper stories Speaking: Telling stories Listening: A radio drama
<b>Week 7</b>	Grammar: Quantity, Articles Vocabulary: Buying things Everyday English: Prices and shopping
<b>Week 8</b>	Reading: 'The best shopping street in the world' Speaking: Town survey, attitudes to shopping Listening: Buying things
<b>Week 9</b>	Grammar: Verb patterns 1, Future intentions Vocabulary: Hot verbs Everyday English: How do you feel?
<b>Week 10</b>	Reading: Hollywood kids Speaking: Being a teenager Listening: You've got a friend
<b>Week 11</b>	Grammar: Comparative and superlative adjectives Vocabulary: Synonyms and antonyms Everyday English: Directions
<b>Week 12</b>	Reading: 'A Tale of two millionaires' Speaking: comparing cities Listening: Living in another country
<b>Week 13</b>	Grammar: Present Perfect and Past Simple Vocabulary: Past participles, Adverbs, Word pairs

	Everyday English: Short answers
Week 14	Review-1
Week 15	Review-2

### 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: <a href="https://youtube.com/playlist?list=PLzQuq2pV17x9JD3wR8mk5gst_1EQ1myF6">https://youtube.com/playlist?list=PLzQuq2pV17x9JD3wR8mk5gst_1EQ1myF6</a>	

#### APPENDIX:

### GRADING SCHEME

مخطط الدرجات

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

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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.

## ARTIFICIAL INTELLIGENCE Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
BAITE103-S1	Artificial Intelligence	1	2	2	5

### GENERAL INFORMATION

Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Assist. Prof. Dr. Raid Rafi Al-Nima
Instructor(s) of the Course Unit	Assist. Prof. Dr. Raid Rafi Al-Nima

### OBJECTIVES AND CONTENTS

<b>Objectives of the Course Unit:</b>	Introduce the student to general artificial intelligence fundamentals.
<b>Contents of the Course Unit:</b>	Artificial intelligence, machine learning, principles and applications

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	Introduction to artificial intelligence
2	Artificial intelligence types
3	Artificial intelligence applications
4	Introduction to machine learning
5	Machine learning types
6	Machine learning applications
7	Principles of neural networks
8	Advanced neural networks
9	Principles of fuzzy logic
10	Introduction to optimizations
11	Optimizations types
12	Optimizations applications
13	Artificial intelligence ethics
14	Artificial intelligence future
15	Revision

### WORKLOAD & ECTS CREDITS OF THE COURSE UNIT:

### BAITE103-S1 ARTIFICIAL INTELLIGENCE

#### WORKLOAD FOR LEARNING & TEACHING ACTIVITIES

TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	15	2	30
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	NA	NA	NA
Reading	NA	NA	NA
Assignment (Homework)	4	10	40
Project Work	NA	NA	NA
Seminar	NA	NA	NA
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	NA	NA	NA
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA

<b>Report Writing</b>	NA	NA	NA
<b>Final Exam</b>	1	3	3
<b>Preparation for the Final Exam</b>	1	15	15
<b>Mid-Term Exam</b>	1	2	2
<b>Preparation for the Mid-Term Exam</b>	1	6	6
<b>Short Exam (Quizzes)</b>	1	1	1
<b>Preparation for the Short Exam</b>	1	1	1
<b>TOTAL WORKLOAD OF THE COURSE UNIT</b>	<b>40</b>	<b>36</b>	<b>125</b>
<b>Workload (h) / 25</b>			<b>125÷25</b>
<b>ECTS Credits allocated for the Course Unit</b>			<b>5</b>



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	<b>ARTIFICIAL INTELLIGENCE</b>	Module Delivery	
Module Type	CORE	✓ Theory	
Module Code	<b>BAITE103-S1</b>	✓ Lecture	
ECTS Credits	5	Lab	
SWL (hr/sem)	<b>30</b>	Tutorial	
Module Level	1	Practical	
Administering Department	<b>DEPARTMENT OF ARTIFICIAL INTELLIGENCE TECHNICAL ENGINEERING</b>	College	<b>NORTHERN TECHNICAL UNIVERSITY TECHNICAL COLLEGE OF ENGINEERING FOR COMPUTER AND ARTIFICIAL INTELLIGENCE/MOSUL</b>
Module Leader	<b>Assist. Prof. Dr. Raid Rafi Al-Nima</b>	e-mail	<b>raidrafi3@ntu.edu.iq</b>
Module Leader's Acad. Title	<b>Assistant Prof.</b>	Module Leader's Qualification	<b>PhD.</b>
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	/ /	Version Number	1.0

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	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 understand the basics of artificial intelligence. To enable the learner to understand the basics of machine learning. To develop the learner knowledge regarding the artificial intelligence's applications, ethics and future developments.

<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	Students will get the basic ideas of artificial intelligence. Students will get the basic ideas of machine learning. Students will enlarge their knowledge regarding the artificial intelligence's applications. Students will enlarge their knowledge regarding the artificial intelligence's ethics. Students will enlarge their knowledge regarding the artificial intelligence's future developments.
<b>Indicative Contents</b> المحتويات الإرشادية	Indicative content includes the following: <u>Part 1 – Basics of artificial intelligence</u> [6 hrs] Definitions, Ideas, Types and applications. <u>Part 2 – Basics of machine learning</u> [6 hrs] Definitions, Ideas, Types and applications. <u>Part 3 – Basics of neural networks</u> [4 hrs] Definitions, Ideas, Types and applications. <u>Part 4 – Basics of fuzzy logic</u> [2 hrs] Definitions, Ideas, Types and applications. <u>Part 5 – Basics of optimization</u> [6 hrs] Definitions, Ideas, Types and applications. <u>Revision</u> [4 hrs]

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	The main strategy that will be adopted in delivering this module is to provide bases information in artificial intelligence for students, while at the same time they may refine and expand their critical thinking skills. This can be obtained via lectures, homeworks, quizzes and examinations.
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### Student Workload (SWL)

#### الحمل الدراسي للطالب

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	35	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	7
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	90	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	32
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

### Module Evaluation

#### تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	1	10% (10)	5	LO # 1, 2, 3 and 4
	<b>Assignments (Homeworks)</b>	3	10% (10)	3, 6, 12	LO # 1-11
	<b>Report</b>	1	10% (10)	8	LO # 1-7
	<b>Assignment</b> داخل الكلية	1	10% (10)	11	LO # 1-10

<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	7	LO # 1-7
	<b>Final Exam</b>	3 hr	50% (50)	15	All
<b>Total assessment</b>			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
<b>Week 1</b>	Introduction to artificial intelligence
<b>Week 2</b>	Artificial intelligence types
<b>Week 3</b>	Artificial intelligence applications
<b>Week 4</b>	Introduction to machine learning
<b>Week 5</b>	Machine learning types
<b>Week 6</b>	Machine learning applications
<b>Week 7</b>	Principles of neural networks
<b>Week 8</b>	Advanced neural networks
<b>Week 9</b>	Principles of fuzzy logic
<b>Week 10</b>	Introduction to optimizations
<b>Week 11</b>	Optimizations types
<b>Week 12</b>	Optimizations applications
<b>Week 13</b>	Artificial intelligence ethics
<b>Week 14</b>	Artificial intelligence future
<b>Week 15</b>	Revision

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	
<b>Week 2</b>	
<b>Week 3</b>	
<b>Week 4</b>	
<b>Week 5</b>	
<b>Week 6</b>	
<b>Week 7</b>	
<b>Week 8</b>	
<b>Week 9</b>	
<b>Week 10</b>	
<b>Week 11</b>	
<b>Week 12</b>	
<b>Week 13</b>	
<b>Week 14</b>	

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?

<b>Required Texts</b>	L. V. Fausett, " <i>Fundamentals of neural networks: architectures, algorithms and applications</i> ", Prentice-Hall, Inc., 1994.	Yes
<b>Recommended Texts</b>	Raid Rafi Omar Al-Nima, "Signal Processing and Machine Learning Techniques for Human Verification Based on Finger Textures", PhD thesis, School of Engineering, Newcastle University, UK, 2017.	Yes
<b>Websites</b>		

**APPENDIX:**

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

## COMPUTER PROGRAMMING Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
BAITE104-S1	Computer Programming	1	4	3	5

GENERAL INFORMATION	
Language of Instruction:	English
Level of the Course Unit:	Bachelor's Degree
Type of the Course:	Compulsory
Mode of Delivery of the Course Unit	Face to Face
Coordinator of the Course Unit	Mohammed Basil Shukur
Instructor(s) of the Course Unit	Mohammed Basil Shukur

OBJECTIVES AND CONTENTS	
<b>Objectives of the Course Unit:</b>	Introduce the students with computer programming techniques using C++ language, and how it can be used to solve problems related to their specialization.
<b>Contents of the Course Unit:</b>	To learn the 1- Introduction to C++. 2- Operators & Making Decisions 3- Looping & Arrays 4- Pointers & Functions.

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	Introduction to C++ (Structure of a program)
2	Variables, Data Types, Declaration of variables, Scope of variables, Initialization of variables, Expressions and Basic Input/Output.
3	Operators (Assignment, Arithmetic operators, Compound assignment, Increase and decrease, Relational and equality operators, Conditional operator)
4	Making Decisions (if...else and switch).
5	Looping (while loop and for loop).
6	Bitwise Operators and Explicit type casting operator
7	Arrays (Single Dimensional arrays, Arrays as parameters)
8	Arrays (two Dimensional arrays, Arrays as parameters)
9	Character Sequences and String handling.
10	Structure
11	Pointers (Reference operator, dereference operator, Declaring variables of pointer types,)
12	Pointers and arrays, Pointers to pointers, void pointers and Pointers to functions
13	Functions (Local and global variables, Arguments passed by value and by reference, Default values in parameters)
14	Overloaded functions and Recursive functions.
15	<b>Revision</b>

No.	PRACTICAL PART
1	<b>Lab 1:</b> Introduction to C++ program using visual studio .
2	<b>Lab 2:</b> my first program and how solve a problem.
3	<b>Lab 3:</b> if...else and switch programs
4	<b>Lab 4:</b> while loop and for loop programs
5	<b>Lab 5:</b> Bitwise Operators programs
6	<b>Lab 6:</b> Single Dimensional arrays
7	<b>Lab 7:</b> two Dimensional arrays ..part1
8	<b>Lab 8:</b> two Dimensional arrays..part2
9	<b>Lab 9:</b> Character and String programs
10	<b>Lab 10:</b> how implement a Structure
11	<b>Lab 11:</b> Pointers and arrays
12	<b>Lab 12:</b> Functions..part1
13	<b>Lab 13:</b> Functions..part2
14	<b>Lab 14:</b> Review

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT :		BCTE103-S2	COMPUTER PROGRAMMING
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
<b>Lecture &amp; In-Class Activities</b>	<b>15</b>	<b>2</b>	<b>30</b>
<b>Preliminary &amp; Further Study</b>	NA	NA	NA
<b>Land Surveying</b>	NA	NA	NA
<b>Group Work</b>	NA	NA	NA
<b>Laboratory</b>	<b>14</b>	<b>2</b>	<b>28</b>
<b>Reading</b>	NA	NA	NA
<b>Assignment (Homework)</b>	<b>2</b>	<b>2</b>	<b>4</b>
<b>Project Work</b>	NA	NA	NA
<b>Seminar</b>	<b>1</b>	<b>3</b>	<b>3</b>
<b>Internship</b>	NA	NA	NA
<b>Technical Visit</b>	NA	NA	NA
<b>Web Based Learning</b>	NA	NA	NA
<b>Implementation/Application/Practice</b>	NA	NA	NA
<b>Practice at a workplace</b>	NA	NA	NA
<b>Occupational Activity</b>	NA	NA	NA
<b>Social Activity</b>	NA	NA	NA
<b>Thesis Work</b>	NA	NA	NA
<b>Field Study</b>	NA	NA	NA
<b>Report Writing</b>	6	3	18
<b>Final Exam</b>	1	3	3
<b>Preparation for the Final Exam</b>	1	14	14
<b>Mid-Term Exam</b>	1	2	2
<b>Preparation for the Mid-Term Exam</b>	1	9	9
<b>Short Exam (Quizzes)</b>	4		
<b>Preparation for the Short Exam</b>	4	3	12
<b>TOTAL WORKLOAD OF THE COURSE UNIT</b>	<b>51</b>	<b>43</b>	<b>125</b>
<b>Workload (h) / 25</b>			<b>125÷25</b>
<b>ECTS Credits allocated for the Course Unit</b>			<b>5</b>



## MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

### Module Information

معلومات المادة الدراسية

<b>Module Title</b>	<b>COMPUTER PROGRAMMING</b>	<b>Module Delivery</b>	
<b>Module Type</b>	CORE	✓ Theory	
<b>Module Code</b>		✓ Lecture	
<b>ECTS Credits</b>	5	✓ Lab	
<b>SWL (hr/sem)</b>	125	✓ Tutorial	
		✓ Practical	
		✓ Seminar	
<b>Module Level</b>	1	<b>Semester of Delivery</b>	1
<b>Administering Department</b>	<b>DEPARTMENT OF ARTIFICIAL INTELLIGENCE TECHNIQUES ENGINEERING</b>	<b>College</b>	<b>NORTHERN TECHNICAL UNIVERSITY / TECHNICAL ENGINEERING COLLEGE FOR COMPUTER AND AI / MOSUL</b>
<b>Module Leader</b>	Mohammed Basil Shukur	<b>e-mail</b>	mohammed.basil@ntu.edu.iq
<b>Module Leader's Acad. Title</b>	Lecturer	<b>Module Leader's Qualification</b>	M.Sc.
<b>Module Tutor</b>	None	<b>e-mail</b>	None
<b>Peer Reviewer Name</b>	None	<b>e-mail</b>	None
<b>Review Committee Approval</b>		<b>Version Number</b>	1.0

### Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

<b>Prerequisite module</b>	None	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Objectives</b> 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.
<b>Module Learning Outcomes</b> 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

	<p>able to break down complex problems into smaller, manageable tasks and implement them in code.</p> <p>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.</p> <p>5-Code optimization and efficiency: Students should be able to optimize their C++ code for 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><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> <li>• <u>Part A - Introduction to C++.</u> [14 hrs]</li> <li>• <u>Part B- Operators &amp; Making Decisions</u> [12 hrs]</li> <li>• <u>Part C- Looping &amp; Arrays</u> [16 hrs]</li> <li>• <u>Part D- Looping &amp; Arrays</u> [10 hrs]</li> <li>• Revision problem classes [6 hrs]</li> </ul>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<p><b>Strategies</b></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><b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل</p>	63	<p><b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً</p>	4
<p><b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	62	<p><b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً</p>	4
<p><b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل</p>	125		

## Module Evaluation

تقييم المادة الدراسية

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

<b>Week 10</b>	Lab 10: how implement a Structure
<b>Week 11</b>	Lab 11: Pointers and arrays
<b>Week 12</b>	Lab 12: Functions..part1
<b>Week 13</b>	Lab 13: Functions..part2
<b>Week 14</b>	Lab 14: Review

## Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	The Complete Reference, 4th Edition – Herbert schildt	No
<b>Recommended Texts</b>	complete c++ programming fundamentals with examples projects- emenwa global	No
<b>Websites</b>	non	

### APPENDIX:

## GRADING SCHEME

مخطط الدرجات

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

## DIGITAL LOGIC Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
	<b>Digital Logic</b>	1	4	3	6

### GENERAL INFORMATION

Language of Instruction:	<b>English</b>
Level of the Course Unit:	<b>Bachelor's Degree</b>
Type of the Course:	<b>Compulsory</b>
Mode of Delivery of the Course Unit	<b>Face to Face</b>
Coordinator of the Course Unit	<b>Marwa Riyadh Ahmed</b>
Instructor(s) of the Course Unit	<b>Marwa Riyadh Ahmed</b>

### OBJECTIVES AND CONTENTS

<b>Objectives of the Course Unit:</b>	<ol style="list-style-type: none"> <li>1. To learn the basic techniques and methodologies for designing and analyzing digital systems and how to apply these techniques to build specific circuits.</li> <li>2. Define the problem (Inputs and Outputs), write its functions</li> <li>3. Implement functions using Combinational digital circuit.</li> <li>4. Minimize functions using any type of minimizing algorithms (Boolean algebra, Karnaugh-Map or Tabulation Method).</li> <li>5. Have knowledge in analyzing and designing procedures of Combinational digital circuits.</li> </ol>
<b>Contents of the Course Unit:</b>	<ol style="list-style-type: none"> <li>1- Numbers Systems, Operations, and Codes.</li> <li>2- Logic Gates</li> <li>3- Boolean Algebra and Logic Simplification</li> <li>4- Combinational Logic Analysis</li> </ol>

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	<b>Numbers Systems, Operations, and Codes:</b> Decimal Numbers, Binary numbers.
2	<b>Numbers Systems, Operations, and Codes:</b> Hexadecimal Numbers, Octal numbers.
3	<b>Numbers Systems, Operations, and Codes:</b> Data representation ( integer and fraction) using different number systems. Conversion Between Different Numbers Systems .
4	<b>Numbers Systems, Operations, and Codes:</b> Arithmetic operations using 9's and 10's Complements of Decimal Numbers. Arithmetic operations using 1's and 2's Complements of Binary Numbers.
5	<b>Numbers Systems, Operations, and Codes:</b> Signed Numbers, Arithmetic Operations with Signed Numbers.
6	<b>Numbers Systems, Operations, and Codes:</b> Digital Codes (BCD, Excess-3, Parity, Gray ..... etc.).
7	<b>Logic Gates:</b> The Inverter (NOT Gate), The AND Gate, The OR Gate.
8	<b>Logic Gates:</b> The NAND Gate, The NOR Gate, The Exclusive-OR Gate and Exclusive-NOR Gate.
9	<b>Boolean Algebra and Logic Simplification:</b> Boolean Operations and Expressions.
10	<b>Boolean Algebra and Logic Simplification:</b> Laws and Rules of Boolean Algebra.
11	<b>Boolean Algebra and Logic Simplification</b> Simplification Using Boolean Algebra. DeMorgan's theorems.
12	<b>Boolean Algebra and Logic Simplification :</b> The Karnaugh Map ( 1, 2, 3 and 4 variables ) , SOP and POS Minimization.
13	<b>Combinational Logic Analysis:</b> Basic Combinational Logic Circuits.

	Implementing Combinational Logic.
14	<b>Combinational Logic Analysis:</b> Combinational Logic Using NAND and NOR Gates. Logic Circuit Operation with Pulse Waveform Inputs.
15	<b>Combinational Logic Analysis:</b> Logic Circuit Operation with Pulse Waveform Inputs.

No.	PRACTICAL PART
1	<b>Lab 1:</b> Introduction to digital laboratory kit operation
2	<b>Lab 2:</b> Logic Gates (AND, OR, NOT, NAND, NOR).
3	<b>Lab 3:</b> Logic Gates (XOR, XNOR).
4	<b>Lab 4:</b> Design of (AND, OR, NOT) gates Using NAND gates.
5	<b>Lab 5:</b> Design of (AND, OR, NOT) gates Using NOR gates.
6	<b>Lab 6:</b> Implementation of logic circuits using NAND-gate only.
7	<b>Lab 7:</b> Implementation of logic circuits using NOR-gate only.
8	<b>Lab 8:</b> Implementation of DeMorgan theory, 1st Law
9	<b>Lab 9:</b> Implementation of DeMorgan theory, 2nd Law
10	<b>Lab 10:</b> Design of a combinational logic circuits . Part 1
11	<b>Lab 11:</b> Design of a combinational logic circuits. Part 2
12	<b>Lab 12:</b> Realization of Boolean equation. Part 1
13	<b>Lab 13:</b> Realization of Boolean equation. Part 2
14	<b>Lab 14:</b> Review

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT :		BCTE101-S1	DIGITAL LOGIC
WORKLOAD FOR LEARNING & TEACHING ACTIVITIES			
TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	4	2	8
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	14	2	28
Reading	NA	NA	NA
Assignment (Homework)	5	1	5
Project Work	NA	NA	NA
Seminar	2	1	2
Internship	NA	NA	NA
Technical Visit	1	5	5
Web Based Learning	5	2	10
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	14	1	14
Final Exam	1	3	3
Preparation for the Final Exam	1	22	22
Mid-Term Exam	1	2	2
Preparation for the Mid-Term Exam	1	15	15
Short Exam (Quizzes)	8	0.25	2
Preparation for the Short Exam	4	1	4
<b>TOTAL WORKLOAD OF THE COURSE UNIT</b>	<b>86</b>	<b>63</b>	<b>150</b>
Workload (h) / 25			<b>150÷25</b>
<b>ECTS Credits allocated for the Course Unit</b>			<b>6</b>





## MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

### Module Information

معلومات المادة الدراسية

<b>Module Title</b>	<b>DIGITAL LOGIC</b>	<b>Module Delivery</b>	
<b>Module Type</b>	CORE	✓ Theory	
<b>Module Code</b>	<b>BCTE101-S1</b>	✓ Lecture	
<b>ECTS Credits</b>	6	✓ Lab	
<b>SWL (hr/sem)</b>	<b>150</b>	✓ Tutorial	
<b>Module Level</b>	1	✓ Practical	
<b>Administering Department</b>	DEPARTMENT OF ARTIFICIAL INTELLIGENCE	<b>College</b>	Northern Technical University TECHNICAL ENGINEERING COLLEGE FOR COMPUTER AND AI/ MOSUL
<b>Module Leader</b>	Marwa Riyadh Ahmed	<b>e-mail</b>	Marwa.riyadh@ntu.edu.iq
<b>Module Leader's Acad. Title</b>	Lecturer	<b>Module Leader's Qualification</b>	M.Sc.
<b>Module Tutor</b>	None	<b>e-mail</b>	None
<b>Peer Reviewer Name</b>	None	<b>e-mail</b>	None
<b>Review Committee Approval</b>	16/10/2024	<b>Version Number</b>	1.0

### Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

<b>Prerequisite module</b>	None	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Objectives</b> أهداف المادة الدراسية	<ol style="list-style-type: none"><li>1. To learn the basic techniques and methodologies for designing and analyzing digital systems and how to apply these techniques to build specific circuits.</li><li>2. Define the problem (Inputs and Outputs), write its functions</li><li>3. Implement functions using Combinational digital circuit.</li><li>4. Minimize functions using any type of minimizing algorithms (Boolean algebra, Karnaugh-Map or Tabulation Method).</li><li>5. Have knowledge in analyzing and designing procedures of Combinational digital circuits.</li></ol>
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<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Learning about the different number systems.</li> <li>2. Learning the arithmetic operations related to different number systems.</li> <li>3. Learning the different logic gates of computer system and their work.</li> <li>4. Ability to design, simplify and implement different logical and arithmetic circuits that considered the basic of digital system.</li> <li>5. Ability to design, simplify and implement different sequential circuits, counters and shift registers.</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> <li>• <u>Part 1 – Numbers Systems, Operations, and Codes</u> 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]</li> <li>• <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]</li> <li>• <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]</li> <li>• <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]</li> <li>• Revision problem classes [6 hrs]</li> </ul>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<p><b>Strategies</b></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><b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل</p>	<p>60</p>	<p><b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا</p>	<p>4</p>
<p><b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	<p>90</p>	<p><b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	<p>6</p>
<p><b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل</p>	<p>150</p>		

## Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10% (10)	4,6,13	LO #1 - 13
	Assignments	2	10% (10)	6,10	LO # 1-10
	Projects / Lab.	14	10% (10)	Continuous	All
	Report	1	10% (10)	15	LO # 1-15
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	<b>1- Numbers Systems, Operations, and Codes:</b> Decimal Numbers, Binary numbers.
Week 2	<b>1- Numbers Systems, Operations, and Codes:</b> Hexadecimal Numbers, Octal numbers.
Week 3	<b>1- Numbers Systems, Operations, and Codes:</b> Data representation ( integer and fraction) using different number systems. Conversion Between Different Numbers Systems .
Week 4	<b>1- Numbers Systems, Operations, and Codes:</b> 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	<b>1- Numbers Systems, Operations, and Codes:</b> Signed Numbers, Arithmetic Operations with Signed Numbers.
Week 6	<b>1- Numbers Systems, Operations, and Codes:</b> Digital Codes (BCD, Excess-3, Parity, Gray ..... etc.).
Week 7	<b>2- Logic Gates:</b> The Inverter (NOT Gate), The AND Gate, The OR Gate.
Week 8	<b>2- Logic Gates:</b> NAND Gate, NOR Gate, Exclusive-OR Gate and Exclusive-NOR Gates.
Week 9	<b>3- Boolean Algebra and Logic Simplification:</b> Boolean Operations and Expressions.
Week10	<b>3- Boolean Algebra and Logic Simplification:</b> Laws and Rules of Boolean Algebra.
Week11	<b>3- Boolean Algebra and Logic Simplification</b> Simplification Using Boolean Algebra. DeMorgan's theorems.
Week12	<b>3- Boolean Algebra and Logic Simplification</b> The Karnaugh Map ( 1, 2, 3 and 4 variables ), SOP and POS Minimization.
Week13	<b>4- Combinational Logic Analysis:</b> Basic Combinational Logic Circuits. Implementing Combinational Logic.
Week14	<b>4- Combinational Logic Analysis:</b> Combinational Logic Using NAND and NOR Gates. Logic Circuit Operation with Pulse Waveform Inputs.
Week15	<b>Final Exam</b>

## 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).

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

### Learning and Teaching Resources

مصادر التعلم والتدريس

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

#### APPENDIX:

### GRADING SCHEME

مخطط الدرجات

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

## MATHEMATICS Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
BCTE102-S1	<b>Mathematics</b>	1	3	3	5

<b>GENERAL INFORMATION</b>	
Language of Instruction:	<b>English</b>
Level of the Course Unit:	<b>Bachelor's Degree</b>
Type of the Course:	<b>Compulsory</b>
Mode of Delivery of the Course Unit	<b>Face to Face</b>
Coordinator of the Course Unit	<b>Ayhan Ahmed Khaleel</b>
Instructor(s) of the Course Unit	<b>Ayhan Ahmed Khaleel</b>

<b>OBJECTIVES AND CONTENTS</b>	Help the student to understand the laws and issues necessary for the purpose of solving simple and complex electrical circuits.
<b>Objectives of the Course Unit:</b>	To learn the
<b>Contents of the Course Unit:</b>	1- Matrix and Determinants 2- Review of Functions 3- Derivatives 4- Integration

Week	<b>KEY LEARNING OUTCOMES OF THE COURSE UNIT</b> On successful completion of this course unit, students/learners will or will be able to dealing with:
1	Matrix, properties, and operations
2	Determinants and properties of determinants Inverse of square matrix by determinants
3	Solving linear System equations using the inverse of the coefficient matrix and Cramer's rule
4	Algebraic functions
5	Review of natural logarithm, the exponential function, trigonometric functions
6	inverse trigonometric functions and hyperbolic functions
7	Derivatives formula and chain rule.
8	Derivatives of natural logarithm, the exponential function, trigonometric functions
9	inverse trigonometric functions and hyperbolic functions.
10	Applications of differentiation.
11	Review of Integration, Indefinite and Definite Integral
12	Integration method
13	Integration method
14	Applications of integration, approximation(trapezoidal rule, Simpson's rule ) Area between curves
15	<b>Revision</b>

<b>WORKLOAD &amp; ECTS CREDITS OF THE COURSE UNIT :</b>		<b>BCTE102-S1</b>	<b>MATHEMATICS</b>
<b>WORKLOAD FOR LEARNING &amp; TEACHING ACTIVITIES</b>			
<b>TYPE OF THE LEARNING ACTIVITIES</b>	<b>LEARNING ACTIVITIES (# OF WEEK)</b>	<b>DURATION (HOURS, H)</b>	<b>WORKLOAD (H)</b>
<b>Lecture &amp; In-Class Activities</b>	15	3	45
<b>Preliminary &amp; Further Study</b>	NA	NA	NA
<b>Land Surveying</b>	NA	NA	NA
<b>Group Work</b>	NA	NA	NA
<b>Laboratory</b>	NA	NA	NA
<b>Reading</b>	NA	NA	NA
<b>Assignment (Homework)</b>	13	1	13
<b>Project Work</b>	NA	NA	NA
<b>Seminar</b>	NA	NA	NA
<b>Internship</b>	NA	NA	NA
<b>Technical Visit</b>	NA	NA	NA
<b>Web Based Learning</b>	5	2	10
<b>Implementation/Application/Practice</b>	NA	NA	NA
<b>Practice at a workplace</b>	NA	NA	NA
<b>Occupational Activity</b>	NA	NA	NA
<b>Social Activity</b>	NA	NA	NA
<b>Thesis Work</b>	NA	NA	NA
<b>Field Study</b>	NA	NA	NA
<b>Report Writing</b>	NA	NA	NA
<b>Final Exam</b>	1	3	3
<b>Preparation for the Final Exam</b>	1	20	20
<b>Mid-Term Exam</b>	1	2	2
<b>Preparation for the Mid-Term Exam</b>	1	16	16
<b>Short Exam (Quizzes)</b>	8	0.5	4
<b>Preparation for the Short Exam</b>	8	1.5	12
<b>TOTAL WORKLOAD OF THE COURSE UNIT</b>	<b>53</b>	<b>49</b>	<b>125</b>
<b>Workload (h) / 25</b>			<b>125÷25</b>
<b>ECTS Credits allocated for the Course Unit</b>			<b>5</b>



## MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	MATHEMATICS	Module Delivery	
Module Type	BASIC	✓ Theory ✓ Lecture Lab ✓ Tutorial Practical ✓ Seminar	
Module Code	BCTE102-S1		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	1
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 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	<ol style="list-style-type: none"><li>1. Learning about the basic Matrix and Determinants</li><li>2. Learning the Algebraic functions, natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions.</li><li>3. Learning the Derivatives formula and chain rule.</li><li>4. Learning the Integration, Indefinite and Definite Integral</li></ol>

	5. Learning the Integration method
<b>Indicative Contents</b> المحتويات الإرشادية	<p>Indicative content includes the following:</p> <p><b>Part A</b> – 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]</p> <p><b>Part B</b> – Algebraic functions Review of natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions. [10 hrs]</p> <p><b>Part C</b> – Derivatives of natural logarithm, the exponential function, trigonometric functions, inverse trigonometric functions and hyperbolic functions. Applications of differentiation. [20 hrs]</p> <p><b>Part D:</b> Review of Integration, Indefinite and Definite Integral, Integration method and Applications of integration, approximation (trapezoidal rule, Simpson's rule ) Area between curves [10 hrs] Revision problem classes [6 hrs]</p>

### Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<b>Strategies</b>	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

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

### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	8	10% (10)	2,6,8,10	LO #1-10
	<b>Assignments</b>	13	10% (10)	Continuous	All
	<b>Projects / Lab. Report</b>	0	0		
		0	0		
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	20% (20)	7	LO # 1-7
	<b>Final Exam</b>	3 hr	60% (60)	16	All
<b>Total assessment</b>			100% (100 Marks)		

## Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي 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	<a href="https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx">https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx</a>	

### APPENDIX:

#### GRADING SCHEME

مخطط الدرجات

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

Note:

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



## FUNDAMENTALS OF ELECTRICAL ENGINEERING Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
BCTE105-S1	<b>Electrical Engineering Fundamentals</b>	1	4	3	5

GENERAL INFORMATION	
Language of Instruction:	<b>English</b>
Level of the Course Unit:	<b>Bachelor's Degree</b>
Type of the Course:	<b>Compulsory</b>
Mode of Delivery of the Course Unit	<b>Face to Face</b>
Coordinator of the Course Unit	<b>Dr.Aasef A.Saleh</b>
Instructor(s) of the Course Unit	<b>Dr. Aasef A.Saleh</b>

OBJECTIVES AND CONTENTS	
<b>Objectives of the Course Unit:</b>	To provide the fundamental concept of DC electrical circuits.
<b>Contents of the Course Unit:</b>	1-General Electric System. 2- DC circuits. 3- Network Theorems

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	<b>1- General Electric System:</b> Constituent parts of an electrical system (source, load, communication & control), Current flow in a circuit, Electromotive force and potential difference, Electrical units.
2	<b>1- General Electric System:</b> Ohm's law, Resistors, Resistivity, Temperature rise & Temperature coefficient of resistance, Voltage & Current sources
3	<b>2- DC circuits:</b> Series circuits , Parallel circuits.
4	<b>2- DC circuits:</b> Kirchhoff's laws.
5	<b>2- DC circuits:</b> Power and energy .
6	<b>3- Network Theorems:</b> Star-delta & delta-star transformation
7	<b>3- Network Theorems:</b> Sources transformations
8	<b>3- Network Theorems:</b> Mesh analysis.
9	<b>3- Network Theorems:</b> Nodal analysis.
10	<b>3- Network Theorems:</b> Superposition theorem.
11	<b>3- Network Theorems:</b> Thevni's theorem
12	<b>3- Network Theorems:</b> Nortan's theorem
13	<b>3- Network Theorems:</b> Maximum power transfer theorem.
14	<b>3- Network Theorems:</b> Reciprocity theorem
15	<b>Revision</b>

No.	PRACTICAL PART
1	<b>Lab 1:</b> Connection of resistances in series and parallel.
2	<b>Lab 2:</b> Verification of Ohm's law using hardware .
3	<b>Lab 3:</b> Verification of Ohm's law using digital simulation.
4	<b>Lab 4:</b> Verification of Kirchhoff's current law and Voltage law using hardware.
5	<b>Lab 5:</b> Verification of Kirchhoff's current law and Voltage law using digital simulation.
6	Lab 6: Determination of mesh currents using hardware.
7	Lab 7: Determination of mesh currents using digital simulation.
8	<b>Lab 8:</b> Measurement of nodal voltages using hardware and digital simulation.
9	<b>Lab 9:</b> Verification of superposition theorem using hardware .
10	<b>Lab 10:</b> Verification of superposition theorem using digital simulation.
11	<b>Lab 11:</b> Verification of Thevni's theorem using hardware.
12	<b>Lab 12:</b> Verification of Thevni's theorem using hardware.
13	<b>Lab 13:</b> Verification of Nortan's using hardware.
14	<b>Lab 14:</b> Verification of Nortan's using digital simulation.

**WORKLOAD & ECTS CREDITS OF THE COURSE UNIT : BCTE105-S1 ELECTRICAL ENGINEERING FUNDAMENTALS**

**WORKLOAD FOR LEARNING & TEACHING ACTIVITIES**

TYPE OF THE LEARNING ACTIVITIES	LEARNING ACTIVITIES (# OF WEEK)	DURATION (HOURS, H)	WORKLOAD (H)
<b>Lecture &amp; In-Class Activities</b>	15	2	30
<b>Preliminary &amp; Further Study</b>	2	2	4
<b>Land Surveying</b>	NA	NA	NA
<b>Group Work</b>	NA	NA	NA
<b>Laboratory</b>	14	2	28
<b>Reading</b>	NA	NA	NA
<b>Assignment (Homework)</b>	2	1	2
<b>Project Work</b>	NA	NA	NA
<b>Seminar</b>	2	1	2
<b>Internship</b>	NA	NA	NA
<b>Technical Visit</b>	NA	NA	NA
<b>Web Based Learning</b>	2	2	4
<b>Implementation/Application/Practice</b>	NA	NA	NA
<b>Practice at a workplace</b>	NA	NA	NA
<b>Occupational Activity</b>	NA	NA	NA
<b>Social Activity</b>	NA	NA	NA
<b>Thesis Work</b>	NA	NA	NA
<b>Field Study</b>	NA	NA	NA
<b>Report Writing</b>	6	2	12
<b>Final Exam</b>	1	3	3
<b>Preparation for the Final Exam</b>	1	20	20
<b>Mid-Term Exam</b>	1	2	2
<b>Preparation for the Mid-Term Exam</b>	1	12	12
<b>Short Exam (Quizzes)</b>	3	0.5	1.5
<b>Preparation for the Short Exam</b>	3	1.5	4.5
<b>TOTAL WORKLOAD OF THE COURSE UNIT</b>	<b>53</b>	<b>51</b>	<b>125</b>
<b>Workload (h) / 25</b>			<b>125÷25</b>
<b>ECTS Credits allocated for the Course Unit</b>			<b>5</b>



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>FUNDAMENTALS OF ELECTRICAL ENGINEERING</b>	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	<b>BCTE105-S1</b>		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1		
Administering Department	<b>DEPARTMENT OF ARTIFICIAL INTELLIGENCE</b>	College	<b>NORTHERN TECHNICAL UNIVERSITY/ TECHNICAL COLLEGE OF ENGINEERING FOR COMPUTER AND ARTIFICIAL INTELLIGENCE</b>
Module Leader	Aasef A.Saleh	e-mail	<a href="mailto:Aasef.alhyali68@ntu.edu.iq">Aasef.alhyali68@ntu.edu.iq</a>
Module Leader's Acad. Title	Assistant Prof.	Module Leader's Qualification	PhD
Module Tutor	None	e-mail	None
Peer Reviewer Name	None	e-mail	None
Review Committee Approval	15/10/2024	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

<b>Module Objectives</b> 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.
<b>Module Learning Outcomes</b> 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.
<b>Indicative Contents</b> المحتويات الإرشادية	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> <li>• <u>Part A – General Electric System.</u> Constituent parts of an electrical system (source, load, communication &amp; control), Current flow in a circuit, Electromotive force and potential difference, Electrical units. Ohm’s law, Resistors, Resistivity, Temperature rise &amp; Temperature coefficient of resistance, Voltage &amp; Current sources [8 hrs]</li> <li>• <u>Part B DC circuits.</u> Series circuits, Parallel circuits. Kirchoff’s laws. Power and energy [14 hrs]</li> <li>• <u>Part C Network Theorems</u> . Star-delta &amp; delta-star transformation. Sources transformations Mesh analysis. Nodal analysis. Superposition theorem. Thevenin’s theorem. Norton’s theorem. Maximum power transfer theorem. [32 hrs]</li> <li>• Revision problem classes [4 hrs]</li> </ul>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	<ol style="list-style-type: none"> <li>1-<b>Hands-on Experiments:</b> Engage students in practical experiments to deepen their understanding of circuits.</li> <li>2-<b>Simulation Software:</b> Use circuit simulation software for virtual circuit design and analysis.</li> <li>3-<b>Problem-solving Exercises:</b> Include various problem-solving exercises to apply circuit analysis techniques.</li> <li>4-<b>Group Projects:</b> Assign collaborative projects for circuit design and construction.</li> <li>5-<b>Real-world Applications:</b> Discuss practical applications of circuits in different devices and systems.</li> <li>5-<b>Interactive Discussions:</b> Encourage student participation and critical thinking through open-ended questions.</li> <li>6-<b>Conceptual Understanding:</b> Focus on intuitive understanding alongside mathematical analysis.</li> <li>7-<b>Assessment Variety:</b> Use diverse assessment methods to gauge student understanding.</li> <li>8-<b>Office Hours and Support:</b> Offer individualized assistance through office hours or online support.</li> </ol>
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### Student Workload (SWL)

#### الحمل الدراسي للطالب

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	58	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	4
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

### Module Evaluation

#### تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	3	10% (10)	5, 10	LO #1, 2, 10 and 11
	<b>Assignments</b>	2	10% (10)	3, 12	LO # 3, 4, 6 and 7

	<b>Projects / Lab.</b>	15	10% (10)	Continuous	All
	<b>Report</b>	1	10% (10)	13	LO # 5, 8 and 10
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	7	LO # 1-7
	<b>Final Exam</b>	3 hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	<b>Material Covered</b>
<b>Week 1</b>	Constituent parts of an electrical system, Current flow in a circuit, Electromotive force and potential difference, Electrical units.
<b>Week 2</b>	Ohm's law, Resistors, Resistivity, Temperature rise & Temperature coefficient of resistance, Voltage & Current sources
<b>Week 3</b>	Series circuits , Parallel circuits.
<b>Week 4</b>	Kirchhoff's laws.
<b>Week 5</b>	Power and energy.
<b>Week 6</b>	Star-delta & delta-star transformation
<b>Week 7</b>	Sources transformations
<b>Week 8</b>	Mesh analysis.
<b>Week 9</b>	Nodal analysis.
<b>Week 10</b>	Superposition theorem.
<b>Week 11</b>	Thevenin's theorem
<b>Week 12</b>	Nortan's theorem
<b>Week 13</b>	Maximum power transfer theorem.
<b>Week 14</b>	Reciprocity theorem
<b>Week 15</b>	<b>Final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

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

### Learning and Teaching Resources

مصادر التعلم والتدريس

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

**APPENDIX:**

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

## DEMOCRACY AND HUMAN RIGHTS Programme Course Description

CODE	NAME OF THE COURSE UNIT	SEMESTER	IN-CLASS HOURS (T+P)	CREDIT	ECTS CREDIT
NTU100	<b>Democracy and Human Rights</b>	1	2	2	2

GENERAL INFORMATION	
Language of Instruction:	<b>Arabic</b>
Level of the Course Unit:	<b>Bachelor's Degree</b>
Type of the Course:	<b>Compulsory</b>
Mode of Delivery of the Course Unit	<b>Face to Face</b>
Coordinator of the Course Unit	<b>Dr .Eesha I. Mohammed</b>
Instructor(s) of the Course Unit	<b>Dr .Eesha I. Mohammed</b>

OBJECTIVES AND CONTENTS	
<b>Objectives of the Course Unit:</b>	أهداف مادة حقوق الانسان والديمقراطية: تعريف الطالب بحقوق الانسان والديمقراطية ومضامينها وتصنيف الحريات العامة
<b>Contents of the Course Unit:</b>	المحتويات: تعريف الطالب على مفهوم الحقوق والديمقراطية على الصعيد الوطني والاقليمي والعالمي

Week	KEY LEARNING OUTCOMES OF THE COURSE UNIT On successful completion of this course unit, students/learners will or will be able to dealing with:
1	حقوق الانسان ، تعريفها ، اهدافها حقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين
2	حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الاسلام
3	حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة
4	الاعتراف الاقليمي بحقوق الانسان : الاتفاقية الاوروبية لحقوق الانسان 1950 ، الاتفاقية الامريكية لحقوق الانسان 1969 ، الميثاق الافريقي لحقوق الانسان 1981 ، الميثاق العربي لحقوق الانسان 1994
5	حقوق الانسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين حقوق الانسان ، المنظمات الوطنية لحقوق الانسان (
6	حقوق الانسان في الدساتير العراقية بين النظرية والواقع
7	حقوق الانسان الاقتصادية والاجتماعية والثقافية و حقوق الانسان المدنية والسياسية
8	حقوق الانسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين
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
10	ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي : - دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات - دور المنظمات الاقليمية ( الجامعة العربية ، الاتحاد الأوروبي ، الاتحاد الافريقي ، منظمة الدول الأمريكية ، منظمة آسيان ) دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان
11	مصطلح الديمقراطية ، نشأته ، دلالاته ، تاريخ الديمقراطية.
12	الاسلام والديمقراطية ومساوى الحكم الاستبدادي .
13	الانتقادات الموجهة للديمقراطية، ومحاسن النظام الديمقراطي.
14	الأنظمة الديمقراطية في العالم/الديمقراطية في العالم الثالث/ المشاكل التي تواجه البلدان العربية في التحول الديمقراطي
15	مراجعة

<b>WORKLOAD &amp; ECTS CREDITS OF THE COURSE UNIT :</b>		<b>NTU100</b>	<b>DEMOCRACY AND HUMAN RIGHTS</b>	
<b>WORKLOAD FOR LEARNING &amp; TEACHING ACTIVITIES</b>				
<b>TYPE OF THE LEARNING ACTIVITIES</b>	<b>LEARNING ACTIVITIES (# OF WEEK)</b>	<b>DURATION (HOURS, H)</b>	<b>WORKLOAD (H)</b>	
<b>Lecture &amp; In-Class Activities</b>	14	2	28	
<b>Preliminary &amp; Further Study</b>	NA	NA	NA	
<b>Land Surveying</b>	NA	NA	NA	
<b>Group Work</b>	NA	NA	NA	
<b>Laboratory</b>	NA	NA	NA	
<b>Reading</b>	3	1	3	
<b>Assignment (Homework)</b>	NA	NA	NA	
<b>Project Work</b>	NA	NA	NA	
<b>Seminar</b>	NA	NA	NA	
<b>Internship</b>	NA	NA	NA	
<b>Technical Visit</b>	NA	NA	NA	
<b>Web Based Learning</b>	NA	NA	NA	
<b>Implementation/Application/Practice</b>	NA	NA	NA	
<b>Practice at a workplace</b>	NA	NA	NA	
<b>Occupational Activity</b>	NA	NA	NA	
<b>Social Activity</b>	NA	NA	NA	
<b>Thesis Work</b>	NA	NA	NA	
<b>Field Study</b>	NA	NA	NA	
<b>Report Writing</b>	NA	NA	NA	
<b>Final Exam</b>	1	3	3	
<b>Preparation for the Final Exam</b>	1	10	10	
<b>Mid-Term Exam</b>	1	2	2	
<b>Preparation for the Mid-Term Exam</b>	1	5	5	
<b>Short Exam (Quizzes)</b>	3	0.5	1.5	
<b>Preparation for the Short Exam</b>	3	0.5	1.5	
<b>TOTAL WORKLOAD OF THE COURSE UNIT</b>	<b>30</b>	<b>23.5</b>	<b>50</b>	
<b>Workload (h) / 25</b>			<b>54÷25</b>	
<b>ECTS Credits allocated for the Course Unit</b>			<b>2</b>	



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

#### Module Information

#### معلومات المادة الدراسية

<b>Module Title</b>	<b>Human rights and Democracy</b>	<b>Module Delivery</b>	
<b>Module Type</b>	SUPPLEMENT	✓ Theory ✓ Lecture Lab Tutorial Practical ✓ Seminar	
<b>Module Code</b>	<b>NTU100</b>		
<b>ECTS Credits</b>	2		
<b>SWL (hr/sem)</b>	<b>50</b>		
<b>Module Level</b>	1	<b>Semester of Delivery</b>	1
<b>Administering Department</b>	<b>DEPARTMENT OF COMPUTER TECHNIQUES ENGINEERING</b>	<b>College</b>	<b>NORTHERN TECHNICAL UNIVERSITY ENGINEERING TECHNICAL COLLEGE/MOSUL</b>
<b>Module Leader</b>	<b>Dr. Eesha I. Mohammed</b>	<b>e-mail</b>	aysha.ibrahim@ntu.edu.iq
<b>Module Leader's Acad. Title</b>	Assist Prof.	<b>Module Leader's Qualification</b>	PHD
<b>Module Tutor</b>	None	<b>e-mail</b>	None
<b>Peer Reviewer Name</b>	None	<b>e-mail</b>	None
<b>Review Committee Approval</b>	21/06/2023	<b>Version Number</b>	1.0

#### Relation With Other Modules

#### العلاقة مع المواد الدراسية الأخرى

<b>Prerequisite module</b>	None	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	

#### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Objectives</b> أهداف المادة الدراسية	تهدف الديمقراطية وحقوق الانسان للحفاظ على كرامة الفرد وحقوقه الأساسية وتعزيزها كما تحقق العدالة الاجتماعية وتشجيع التنمية الاقتصادية والاجتماعية للمجتمع وتماسكه فضلاً عن توطيد الأمان الوطني وإرساء مناخ موات للسلام الدولي وذلك لان حقوق الانسان 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.
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<b>1</b> - فهم ومعرفة وأدراك حقوقه التي أقرها الله له وللإنسان جميعاً وبالتالي فهي هبة وليس مكسب من أحد ولا يحق لأي شخص انتزاعها. <b>2</b> - يعبر الطالب بأسلوبه الخاص عن هذه الحقوق ويدافع عنها. <b>3</b> - 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 <b>4</b> - فهم اهم النظم السياسية والتي تعد ضمانه لحقوق الانسان وحرياته السياسية ومحاولة تطبيقه على ارض الواقع الا وهو النظام الديمقراطي.

<b>Indicative Contents</b> المحتويات الإرشادية	<ul style="list-style-type: none"> <li>❖ حقوق الانسان في التاريخ المعاصر والحديث: الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة (4 ساعات)</li> <li>❖ حقوق الانسان، تعريفها، اهدافها وحقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين (6 ساعات)</li> </ul> <p style="text-align: center;">ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي:</p> <ul style="list-style-type: none"> <li>- دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات</li> <li>- دور المنظمات الاقليمية (الجامعة العربية، الاتحاد الأوربي، الاتحاد الافريقي، منظمة الدول الأمريكية، منظمة آسيان)</li> <li>❖ دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان (12 ساعة)</li> <li>❖ المشاكل والمعوقات ونقاشات الطلبة (6 ساعات)</li> </ul>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	<ul style="list-style-type: none"> <li>- استراتيجيات التفكير حسب قدرة الطالب</li> <li>2- استراتيجيات مهارة التفكير العالية</li> <li>3- استراتيجيات التفكير الناقد في التعلم</li> <li>4- العصف الذهني</li> </ul>
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### Student Workload (SWL)

#### الحمل الدراسي للطلاب

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

### Module Evaluation

#### تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	<b>Assignments</b> داخل الكلية	1	10% (10)	6	LO #1-7
	<b>Assignments</b> بيئية	1	10% (10)	8	LO #1-9
	<b>Report</b>	1	10% (10)	15	LO #1-14
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	20% (20)	7	LO # 1-7
	<b>Final Exam</b>	3 hr	60% (60)	16	All
<b>Total assessment</b>			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

#### المنهاج الاسبوعي النظري

	<b>Material Covered</b>
<b>Week 1</b>	حقوق الانسان، تعريفها، اهدافها

	حقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين
Week 2	حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الإسلام
Week 3	حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة
Week 4	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 الامم 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 العليايوي والدكتور سلمان كاظم البهادلي	Yes
Recommended Texts	الديمقراطية وحقوق الانسان في الاسلام للدكتور راشد الغنوشي	No
Websites	<a href="https://www.neelwafurat.com">https://www.neelwafurat.com</a> <a href="https://studies.aljazeera.net">https://studies.aljazeera.net</a>	

**APPENDIX:****GRADING SCHEME**

مخطط الدرجات

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