

**Ministry of Higher Education and Scientific Research  
Scientific Supervision and Scientific Evaluation Apparatus  
Directorate of Quality Assurance and Academic Accreditation  
Accreditation Department**



# **Academic Program and Course Description Guide**

2026

## **Introduction:**

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

## **Concepts and terminology:**

**Academic Program Description:** The academic program description provides a brief summary of its vision, mission, and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

**Course Description:** Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

**Program Vision:** An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic, and applicable.

**Program Mission:** Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

**Program Objectives:** They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

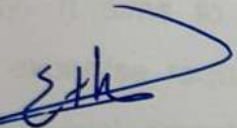
**Curriculum Structure:** All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.


**Learning Outcomes:** A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

**Teaching and learning strategies:** They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

## Academic Program Description Form

University Name: Southern Technical University  
Faculty/Institute: Technical Institute of Technological – Basrah  
Scientific Department: Computer Networking and Software Technologies  
Academic or Professional Program Name: Technical Diploma  
Final Certificate Name: Technical Diploma in Computer Networks and Software Technologies  
Academic System: semesters  
Description Preparation Date: 04/27/2026  
File Completion Date: 04/27/2026

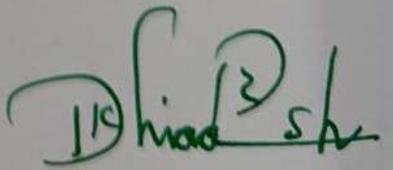
Signature:   
Head of Department Name:  
Ethar Abduljabbar Hadi  
Date: 10/15/2026

Signature:   
Scientific Associate Name:  
Mohammed Hamaid Radhi  
Date:

The file is checked by: Anwar A. Abood  
Department of Quality Assurance and University Performance  
Director of the Quality Assurance and University Performance Department:

Date: 11-5-2026

Signature: 



Approval of the Dean

Assist. Prof. Dr. Diyah K. S.

### **1. Program Vision**

The Department seeks to establish itself as a leading academic unit within the institute by delivering high-quality education and conducting advanced research in networking and software technologies. It strives for excellence in the fields of information and communication technology, in accordance with internationally recognized quality standards.

### **2. Program Mission**

The Department is committed to advancing scientific knowledge in networking and software, and to transferring these developments to students and the wider community. It aims to graduate competent professionals equipped with the technical expertise required to contribute effectively to society and to support sustainable development through innovative and practice-oriented education.

### **3. Program Objectives**

- To provide a stimulating learning environment that equips students with the ability to design, implement, and manage networks for societal benefit.
- To develop students' analytical and problem-solving skills, enabling them to propose solutions that address contemporary labor market needs.
- To enhance practical competencies in computer systems, preparing graduates to meet emerging technological challenges.
- To integrate theoretical foundations with practical applications, thereby strengthening students' programming proficiency and professional readiness

#### 4. Program Accreditation

None

#### 5. Other external influences

None

#### 6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	28	88		
College Requirements				
Department Requirements	✓			
Summer Training	✓			
Other				

\* This can include notes whether the course is basic or optional.

#### 1. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First Year/ First Semester	None	Programming in C++/1	2	2
First Year/ First Semester	None	Computer Fundamentals/1	1	1
First Year/ First Semester	None	Basic of Computer Networks	2	2
First Year/ First Semester	None	Logical Design	2	2
First Year/ First Semester	None	Mathematics and Numerical Analysis	2	2
First Year/ First Semester	None	Human rights and democracy	2	0
First Year/ Second Semester	None	Programming in C++/2	2	2
First Year/ Second Semester	None	Programming in Python	2	2

First Year/ Second Semester	None	Data Communication	2	0
First Year/ Second Semester	None	Fundamentals in Web Design	2	2
First Year/ Second Semester	None	Wireless Networks	2	2
First Year/ Second Semester	None	English Language	2	0
First Year/ Second Semester	None	Arabic Language/1	2	0
Second Year/ First Semester	None	Network Performance Analysis	2	2
Second Year/ First Semester	None	SQL Database Basics	2	2
Second Year/ First Semester	None	Information Security and Encryption	2	0
Second Year/ First Semester	None	Switching and Routing Network	2	2
Second Year/ First Semester	None	Advanced PHP website design	2	2
Second Year/ First Semester	None	English for Computer Technology Studies	2	0
Second Year/ First Semester	None	Crimes of Baath regime in Iraq	2	0
Second Year/ First Semester	None	Graduation Project	2	0
Second Year/ Second Semester	None	Network Management	2	2
Second Year/ Second Semester	None	Artificial Intelligence	2	2
Second Year/ Second Semester	None	Cyber Security	2	0
Second Year/ Second Semester	None	Ethical Hacking Fundamentals	2	2
Second Year/ Second Semester	None	Cloud computing	2	0
Second Year/ Second Semester	None	Advanced SQL Database	2	2
Second Year/ Second Semester	None	Arabic Language/2	2	0
Second Year/ Second Semester	None	Graduation Project	2	0

## 2. Expected learning outcomes of the program

### Knowledge

Preparing and qualifying computer network technicians capable of designing and establishing different types of computer networks. Teaching modern and advanced curricula in computer networks. Providing a laboratory environment that ensures the application of all scientific experiments related to computer networks and the Internet.

Preparing qualified technical staff to use the computer, prepare and audit data, and enter it into the computer.

## Skills

- |   |  |
|---|--|
| <ol style="list-style-type: none"><li>1. Network design and implementation.</li><li>2. Manage and maintain basic networks.</li><li>3. Know how to use devices such as switches and routers to organize network traffic and create resilient networks.</li><li>4. Identify the advantages and disadvantages of the current network.</li><li>5. Implement network security, standards, and protocols.</li></ol> | <ol style="list-style-type: none"><li>6. Troubleshoot network problems.</li><li>7. Support the creation of virtual networks.</li><li>8. Participate in testing, auditing, and debugging programmed systems.</li><li>9. Participate in the preparation and design of software systems</li></ol> |
|---|--|

## Ethics

Developing students' ability to share ideas

This era is characterized by our heavy reliance on information technology for communication and interaction, and given the role that computer networks play in our constant connection to the Internet, there is a need in the labor market for specialists in computer networks and network security to protect these networks from hacking.

## 3. Teaching and Learning Strategies

1. Applying the theoretically studied topics on a practical level in computer labs.
2. Assigning students to write scientific reports, prepare applied research and work on the Internet.
3. Scientific visits to computer centers in institutions and government departments.
4. Summer training.

## 4. Evaluation methods

1. Daily assessment, oral, written, and practical tests.
2. Midterm and final exams.
3. Homework.

## 5. Faculty

### Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Lecturer	Computer Engineering	Electrical and Telecommunications			1	-
Assistant Lecturer	Computer Science	Genetic algorithms			1	-
Assistant Lecturer	Computer Science	Databases			1	-
Assistant Lecturer	Computer Science	Computer Information Systems			1	-
Assistant Lecturer		Physical Education			1	-
Assistant Lecturer		Arts			1	-
		law			-	1

### Professional Development

#### Mentoring new faculty members

#### Professional development of faculty members

Training courses and teaching methods courses.

## **6. Acceptance Criterion**

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

## **7. The most important sources of information about the program**

## **8. Program Development Plan**

– Following up on global scientific developments, developments in programming methods and techniques, and modern programming languages.

## Program Skills Outline

				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First Year/ First Semester		Programming in C++/1	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Computer Fundamentals/1	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Basic of Computer Networks	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Logic Design	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Mathematics and Numerical Analysis	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Human rights and democracy	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
First Year/ Second Semester		Programming in C++/2	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Programming in Python	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Data Communication	Basic												
		Web Design Fundamentals	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Wireless Networks	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		English Language	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Arabic Language/1	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	

## Program Skills Outline

				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second Year/ First Semester		Network Performance Analysis	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		SQL Database Basics	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		<b>Information Security and Encryption</b>	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Switching and Routing Network	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Advanced PHP website design	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		English for Computer Technology Studies	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Crimes of Baath regime in Iraq	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Graduation Project	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Second Year/ Second Semester		Network Management	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		<b>Artificial Intelligence</b>	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Cyber Security	Basic												
		Ethical Hacking Fundamentals	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

		Cloud computing	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Advanced SQL Database	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Arabic Language/2	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Graduation Project	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

## Course Description Form

<b>1. Course Name:</b>					
Programming in C++ language/1					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
Semester					
<b>4. Description Preparation Date:</b>					
26/02/2026					
<b>5. Available Attendance Forms:</b>					
In-person only					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours (theoretical + practical) at a rate of 4 hours per week (2 theoretical + 2 practical)/ 4 Units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Sahar Sami Fadhil Email: <a href="mailto:sahar.fadhil@stu.edu.iq">sahar.fadhil@stu.edu.iq</a>					
<b>8. Course Objectives</b>					
This course aims to teach programming in C++.					
<b>9. Teaching and Learning Strategies</b>					
In-person lectures, short tests, assignments, and practical application in the laboratory					
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 hours Theoretical + 2 hours Practical	The student is able to master the craft of programming in general, and programming in C++ in particular.	Abstract of programming languages	1-Explaining The scientific material 2-Asking questions related to the material	Weekly And Daily Written exams, mid-term exam and end-of-semester exam

2	2 hours Theoretical + 2 hours Practical		Basic essentials for C++ language/ C++ language concept		
3	2 hours Theoretical + 2 hours Practical		Basic element and tools of C++ language		
4	2 hours Theoretical + 2 hours Practical		Data types in C++, and they represent methods in memory		
5	2 hours Theoretical + 2 hours Practical		Expression types in C++ language, how formulate expression :  Arithmetic expression/deferent arithmetic operation and its priorities / conversion manner of arithmetic expression to Arithmetic expression in C++ language/different examples		
6	2 hours Theoretical + 2 hours Practical		Relational expression/ relational operations and its priorities/ formulate Relational expression  Logical expression/ logical operation and its priorities/ formulate Logical expression  Compound expression/ priorities table of public operations/ deferent examples		
7 & 8	4 hours Theoretical + 4 hours Practical		Give the primary values of constants and variables  Spaces and brackets  Type of comments  Special tools		
9	2 hours Theoretical + 2 hours Practical		Assignment statement,  Arithmetic expression(equation)  counters, counter types		

			deferent images for equations belong to C++ language		
10&11	4 hours Theoretical + 4 hours Practical		Formatted Input and output functions output text Output numeric values Output Arithmetic expression un Formatted Input and output functions		
12	2 hours Theoretical + 2 hours Practical		If conditional statement If...else statement Nested conditional		
13	2 hours Theoretical + 2 hours Practical		switch conditional statement nested conditional statement		
14&15	4 hours Theoretical + 4 hours Practical		for loop, Nested for		

## 11. Course Evaluation

The distribution is as follows:

20 points for the theoretical mid-term exam  
 20 points = the practical = = =  
 10 points for student activity during the semester  
 Total 50 points for the annual effort

50 points for the final exam  
 40 points for the theoretical exam at the end of the semester  
 10 points for the practical exam at the end of the semester

## 12. Learning and Teaching Resources

E-books and topics found on scientific and software websites on the Internet

## Course Description Form

1. Course Name:					
Computer Fundamental \ 1					
2. Course Code:					
3. Semester / Year: Semester					
First class / Frist Semester					
4. Description Preparation Date:					
26/02/2026					
5. Available Attendance Forms:					
Attendance Only					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours during the semester (theoretical + practical), 2 hours weekly					
7. Course administrator's name (mention all, if more than one name)					
Name: Zainab Mohammed Jiwar					
Email: <a href="mailto:zainab.m.jiwar@stu.edu.iq">zainab.m.jiwar@stu.edu.iq</a>					
8. Course Objectives					
<p>1. Developing students' basic computer skills for use in work or educational environments.</p> <p>2. Performing basic tasks on Windows after becoming familiar with its features and functions.</p> <p>3. Using Microsoft Word to enter and format text professionally.</p> <p>4. Preparing and delivering a complete and coherent presentation to an audience using PowerPoint.</p>					
9. Teaching and Learning Strategies					
<b>Strategy</b>		<p>1) Teaching Strategy Collaborative Concept Planning.</p> <p>2) Teaching Strategy Brainstorming.</p> <p>3) Teaching Strategy Notes Series</p>			
10. Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1 - 6	12	– An introduction to the Windows operating system and its features. Windows operating	Introduction to the Windows operating system	Lecture and Lab	Daily Exams and Assignments

		<p>system functions and a comparison of different versions.</p> <ul style="list-style-type: none"> <li>– Understanding the basic screen components, including the desktop, icons, folder shortcuts, files, and their types. The taskbar, its contents, menu, and how to shut down the computer.</li> <li>– The concept of a window, its components, and how to perform operations like . Maximize, Minimize, and Close.</li> <li>– Working with main desktop icons such as My Computer, Documents, and Recycle Bin, and the importance of each.</li> <li>– Performing copy, cut, and paste operations for folder icons, files, and other components.</li> <li>– Using the Control Panel.</li> <li>– Mouse, Add Printer, Regional Settings, Display, and changing the screen background. Screen saver, display, settings, and appearance.</li> <li>– Adding and uninstalling programs.</li> <li>– Using the Paint program to draw, view, and save graphics and images.</li> </ul>			
7 - 11	10	<ul style="list-style-type: none"> <li>– Word: Its Features, Benefits, and Operation.</li> <li>– Toolbar and its Contents; Creating, working with, Saving, and Editing Documents.</li> <li>– Finding and Replace; Page Setup, Formatting, and Numbering; Using the Dictionary and Spell Checker; Creating and Working with Tables; and Previewing Before Printing.</li> </ul>	Microsoft Word printing program	Lecture and Lab	Daily Exams and Assignments

12 - 15	8	<ul style="list-style-type: none"> <li>– PowerPoint: Its Importance, Features, and Operation.</li> <li>– Main Screen Components, Toolbar, and Slide Setup.</li> <li>– Creating and Saving Presentations; and Working with Various Multimedia (Images, Audio, Videos).</li> </ul>	Microsoft PowerPoint slide preparation program	Lecture and Lab	Daily Exams and Assignments
11. Course Evaluation					
50 marks for mid-term exams (20 theoretical + 20 practical + 10 activity). 50 marks for final exams (40 theoretical + 10 practical)					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Lectures of the course material prepared by the lecturer		
Main references (sources)			كتاب الورد من البداية حتى الاحتراف - كتب PDF (alarabimag.com)		
Recommended books and references (scientific journals, reports...)			Introducing Windows 10 for IT Professionals Technical Overview		
Electronic References, Websites			Microsoft Office: Word, Excel, PowerPoint من الصفر للاحتراف   Udemy		

## Course Description Form

<b>Course Name:</b>	
Basic of Computer Networks	
<b>Course Code:</b>	
<b>Semester / Year:</b>	
Semester 1 / year: First	
<b>Description Preparation Date:</b>	
10/ 03/ 2026	
<b>Available Attendance Forms:</b>	
Attendance only	
<b>Number of Credit Hours (Total) / Number of Units (Total)</b>	
60 hours/4 hour weekly/4	
<b>Course administrator's name (mention all, if more than one name)</b>	
Name: Kamil Audah Kareem Email: <a href="mailto:kamil.kareem@stu.edu.iq">kamil.kareem@stu.edu.iq</a>	
<b>Course Objectives</b>	
<ol style="list-style-type: none"> <li>1. Developing a basic understanding of Network systems: Enabling students to understand the fundamental principles of how network systems work.</li> <li>2. Applying theoretical concepts: Enhancing the ability to apply theoretical concepts in the design and analysis of measuring device faults.</li> <li>3. Developing practical skills: Providing hands-on training through laboratory experiments, allowing students to acquire the necessary skills to build and test network services and devices.</li> <li>4. Enhancing critical thinking: Encouraging students to think critically and analytically in solving network-related problems.</li> <li>5. Preparing students for the job market: Equipping students with the knowledge and skills required for entering the Networks field in the job market.</li> <li>6. Promoting lifelong learning: Motivating students to pursue self-learning and skill development in the field of Computer networks.</li> </ol>	
<b>Teaching and Learning Strategies</b>	
<ol style="list-style-type: none"> <li>1. Cooperative Concept Planning Strategy.</li> <li>2. Brainstorming Teaching Strategy.</li> <li>3. Note-taking Sequence Strategy.</li> </ol>	
<b>Course Structure</b>	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4hours	1. Understanding Network Architecture and Protocols	1. Introduction to computer networks and their applications.	1. Conducting laboratory on microwave system. This enhances theoretical understanding and develops practical skills.	Weekly, Monthly, Daily, and Written Exams, and Final Term Exam.
2	4hours	2. Developing Network Design and Troubleshooting Skills.	2. Explain the conceptual frameworks of networking.	2. Seeking feedback from instructors and peers to identify strengths and weaknesses.	
3	4hours	3. Proficiency with Networking Hardware and Software Tools	3. Understanding how data moves from an application on one device to another through encapsulation, addressing, and routing	3. Reviewing concepts periodically and applying them to new problems to reinforce memory and understanding.	
4	4hours	4. Analyzing Network Security and Performance	4. Design logical network topologies and resolve connectivity issues.	4. Using educational software and interactive applications to better understand concepts, such as circuit simulations.	
5	4hours		5. Configuring hardware like routers and switches, as well as using software diagnostics.	5. Encouraging self-research on new topics in electronics and exploring recent developments.	
6	4hours		6. Analyze traffic patterns for efficiency and implement fundamental security measures		
7	4hours				
8	4hours				
9	4hours				
10	4hours				
11	4hours				
12	4hours				
13	4hours				
14	4hours				

### Course Evaluation

Distribution as follows: 20 points for Midterm Theoretical Exams for the first semester, 20 points for Midterm Practical Exams for the first semester, 10 points for Daily Exams and Continuous Assessment, and 50 points for the Final Exam.

### Learning and Teaching Resources

Required textbooks (curricular books, if any)	Data Communications and Networking - Behrouz A. Forouzan
Main references (sources)	A Top-Down Approach: Computer Networking James F Kurose and Keith W Ross
Recommended books and references (scientific journals, reports...)	Computer Networks, Andrew S. Tanenbaum
Electronic References, Websites	<a href="https://books.google.iq/books">https://books.google.iq/books</a>

## Course Description Form

<b>1. Course Name:</b>					
Logic Design					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First year/ First Semester					
<b>4. Description Preparation Date:</b>					
22/12/2025					
<b>5. Available Attendance Forms:</b>					
Attendance only					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours (theoretical + practical) at a rate of 4 hours per week (2 theoretical + 2 practical)					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Ethar Abduljabbar Hadi Email: <a href="mailto:ethar.hadi@stu.edu.iq">ethar.hadi@stu.edu.iq</a>					
<b>8. Course Objectives</b>					
<p>1- Teaching the student the components of the computer</p> <p>2- Teaching the student the types of numerical systems and how to convert between them.</p> <p>3- Teaching the student about logic gates and how to design logical circuits</p> <p>4- Teaching the student how to simplify logical circuits using the Boolean algebra method and the Karnaugh map method.</p>			<p>5- Teaching the student how to design the logical circuits found in the calculator in their simple and complex types.</p> <p>6- Teaching the student how to examine and represent these logical circuits using special programs for that.</p>		
<b>9. Teaching and Learning Strategies</b>					
Strategy		<p>1- Cooperative concept planning education strategy.</p> <p>2- Brainstorming education strategy.</p> <p>3- Notes series education strategy</p>			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2TH+2P	Basic principles of computer	Essential technical information.		Weekly And Daily

			Introduction, computer and software system, computer types.		exams, mid-term exam and end-of-semester exam
2	2TH+2P	Understanding Numeric systems	Numeric Methods include: Decimal method. Binary method. Convert decimal to binary. Four arithmetic operations in this method. The interest of this method in computers.		
3	2TH+2P	Understanding numerical conversion methods	Octal method. Convert from octal to decimal. Convert from decimal to octal. Convert from binary to octal. Hexadecimal method. Convert from binary to hexadecimal.		
4-5	2TH+2P	Representing numbers in the computer	Numeric representation in a computer: BCD codes, 4bit BCD codes Check level. Integer numeric representation, real numeric representation.		
6	2TH+2P	Understanding the logic gates	Gates: Or gate, and gate, nor gate, and gate, xor gate, xand gate, external edge diagram for an integrated circuit of gates		
7	2TH+2P	Understanding the simplification methods	Boolean algebra Boolean algebra and de morgan theory. Used Boolean algebra rules for simplified logical expression.		

8-9		Understanding the simplification Methods	Formula rules and karnuf map. Formula rules: Summation of multiply limits, multiply of sum limit Karnuf map for simplified functions: Of two variables, of three variables.		
10	2TH+2P	Understanding the Hardware parts	Hardware, study hardware parts. Characters and functions of the box and power supply Study characters, functions and parts of the motherboard.		
11	2TH+2P	The Memory	Study functions and types of memory: ROM AND ROM		
12	2TH+2P	Study bios setup, and update	Study bios setup, and update		
13	2TH+2P	Study the technical aspects of secondary storage units: H.D, F.D, C.D, DVD	Study the technical aspects of secondary storage units: H.D, F.D, C.D, DVD		
14-15	2TH+2P	Study characters and functions of slots cards (net, sound, video)	Study characters and functions of slots cards (net, sound, video)		

### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, or written exams, reports, etc.

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Digital Logic Design: Learn the Logic Circuits & Logic Design by Singh, Sonali  Digital Design and Computer Architecture Book by David Harris
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Course Description Form

<b>1. Course Name:</b>					
Mathematics and numerical analysis					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First year/ First Semester					
<b>4. Description Preparation Date:</b>					
9/10/2025					
<b>5. Available Attendance Forms:</b>					
Attendance only					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours (theoretical + practical) at a rate of 4 hours per week (2 theoretical + 2 practical)					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Mazin Salih Kadhim Email: mazin.s.kadhim@stu.edu.iq					
<b>8. Course Objectives</b>					
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		1- Cooperative concept planning education strategy. 2- Brainstorming education strategy. 3- Notes series education strategy			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1-2	2TH+2P		The concept of matrices, their types , and how to find their ranks.		Weekly And Daily exams, mid-term exam and end-of-semester exam
3-4	2TH+2P		The equality of matrices and the operations on them (addition,		

			subtraction and multiplication)		
5	2TH+2P		The determinant of matrix and its relation with their rank, sarus method to find the value of determinant.		
6-7	2TH+2P		The inverse matrix and its relation with rank, cofactors method to find the inverse matrix, Solving the system of linear equations simultaneously using the inverse matrix of the coefficients.		
8	2TH+2P		Differentiation rules of the algebraic, trigonometric, exponential and logarithmic functions, Derivative of a composite function "Chain rule", implicit differential and partial derivatives.		
9	2TH+2P		The approximate real root of non-linear equation in some interval applying the iteration and newton-raphson methods.		
10-12			Integration rules of algebraic, trigonometric, exponential and logarithmic functions, Integration by parts and integration by partial fractions.		
13-15	2TH+2P		The concept of sequence and infinite series and their types , ratio and root tests of their convergence and divergence.		

## 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ... etc.

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	<a href="#">Differential equations 4: Integrati factor method for Solving a linear D (youtube.com)</a>

## Course Description Form

1. Course Name:					
Human rights and democracy					
2. Course Code:					
3. Semester / Year:					
First year/ First Semester					
4. Description Preparation Date:					
9/10/2025					
5. Available Attendance Forms:					
Attendance only					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours (theoretical) at a rate of 2 hours per week .					
7. Course administrator's name (mention all, if more than one name)					
Name:					
Email:					
8. Course Objectives					
1- Introducing the student to democratic human rights and their contents.					
2- Introducing the student to the classification of public freedoms.					
3- Teaching and Learning Strategies					
<b>Strategy</b>		1- Cooperative concept planning education strategy.			
		2- Brainstorming education strategy.			
		3- Notes series education strategy			
4- Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2TH		Human rights, definition and objectives		Exams
2	2TH		Human rights contemporary and modern history		Exams
3	2TH		Non-governmental organizations And human rights		Exams
4	2TH		The relationship between human rights		Exams

			and public freedoms	
5	2TH		Modern Human Rights	Exams
6	2TH		Guarantees of respect and protection of human rights at international level	Exams
7	2TH		The legal basis of the rule of law	Exams
8	2TH		Historical development the concept of equality	Exams
9	2TH		Concepts of democracy	Exams
10	2TH		Democratic systems in world	Exams
11	2TH		Fundamental freedoms (intellectual, economic, social)	Exams
12	2TH		Political parties and public freedoms	Exams
13	2TH		The future of public freedoms	Exams
14	2TH		General concept consciousness	Exams
15	2TH		Genocide	Exams

#### 5- Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ... etc

#### 6- Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Course Description Form

<b>1. Course Name:</b>					
Programming in C++ language/2					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First year/ Second Semester					
<b>4. Description Preparation Date:</b>					
9/3/2026					
<b>5. Available Attendance Forms:</b>					
Attendance only					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours (theoretical + practical) at a rate of 4 hours per week (2 theoretical + 2 practical)					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Sahar Sami Fadhil Email: <a href="mailto:sahar.fadhil@stu.edu.iq">sahar.fadhil@stu.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>The student is able to master the craft of programming in general and programming in C++ in particular.</b>			1- The student's knowledge of the advantages and specifications of programming languages in general and C++ in particular. 2- The student's knowledge of the programming profession and what this profession requires in terms of applying the specifications and advantages of the language used to reach the desired results		
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		In-person lectures, short tests, assignments, and practical application in the laboratory			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2TH+2P	The student is able to master craft programming	while statement	1-Explaining The scientific material 2-Asking questions	Weekly And Daily Written

		in general and programming in C++ in particular.		related to material	exams, mid-term exam and end-of-semester exam
2	2TH+2P		do...while statement		
3	2TH+2P		control at repetition		
4	2TH+2P		One Dimensional array		
5	2TH+2P		two Dimensional array, square array		
6	2TH+2P		Symbolic array, and represent string type		
7	2TH+2P		Functions Global and local variable		
8 – 9	2TH+2P		functions of type void User defined functions		
10	2TH+2P		Library of standards functions String functions		
11-13	2TH+2P		graphics and screen Colors functions		
14-15	2TH+2P		Build workable integral system, include arrays and above mentioned functions		

## 11. Course Evaluation

The distribution is as follows:

20 Marks for the theoretical mid-term exam. 20 Marks for the practical mid-term exam.

10 points for student activity during the semester. 40 points for the theoretical exam at the end of the semester. 10 points for the practical exam at the end of the semester.

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	E-books and topics found on scientific and software websites on the Internet

## Course Description Form

<b>1. Course Name:</b>					
programming in Python					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First year/ Second Semester					
<b>4. Description Preparation Date:</b>					
9/3/2026					
<b>5. Available Attendance Forms:</b>					
Attendance only					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours (theoretical + practical) at a rate of 4 hours per week (2 theoretical + 2 practical)					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Hassan F. Abbas Email: hassan.f.abbas@stu.edu.iq					
<b>8. Course Objectives</b>					
1 -Teaching the student how to write a program in Python language 2- Teaching the student how to write Arithmetic Expressions. 3- How to use Conditional Statements. 4- Teaching the student concept of Objects , Lists , Tup Dictionaries .					
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		1- Cooperative concept planning education strategy. 2- Brainstorming education strategy. 3- Notes series education strategy			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2TH+2P	What is The Context of Software Development?	Learning Programming with Python	2theoretical 2 practical	Exams
2	2TH+2P	How to use variables	Values and Variables	2theoretical 2 practical	Exams

3	2TH+2P	How to write expression	Expressions and Arithmetic Expressions	2theoretical 2 practical	Exams
4-5	2TH+2P	How to write conditional statement	Conditional Statements	2theoretical 2 practical	Exams
6	2TH+2P	How to use Loop python	Iteration - Loops	2theoretical 2 practical	Exams
7	2TH+2P	What is functions python	Using Functions	2theoretical 2 practical	Exams
8-9		How to use objects	Using Objects - String, File Objects	2theoretical 2 practical	Exams
10	2TH+2P	How to use lists in python	- Using Lists - Building Lists	2theoretical 2 practical	Exams
11	2TH+2P	How to use tuples python	Tuples	2theoretical 2 practical	Exams
12	2TH+2P	How to use class	Class Design	2theoretical 2 practical	Exams

### 11.

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Course Description Form

<b>1. Course Name:</b>					
Web Design Fundamentals					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
First year/ Second Semester					
<b>4. Description Preparation Date:</b>					
10/3/2026					
<b>5. Available Attendance Forms:</b>					
Attendance only					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours (theoretical + practical) at a rate of 4 hours per week (2 theoretical + 2 practical)/4 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Ethar Abduljabbar Hadi Email: <a href="mailto:ethar.hadi@stu.edu.iq">ethar.hadi@stu.edu.iq</a>					
<b>8. Course Objectives</b>					
1- Teaching the student the characteristics of the Internet and the types of applications used on it. 2- Studying the protocol for transferring electronic pages, files, and e-mail on the Internet. 3- Studying the basics of HTM and programming using PHP and CSS. 4- Teaching the student to manage websites.					
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		1- Cooperative concept planning education strategy. 2- Brainstorming education strategy. 3- Notes series education strategy			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1-2	2TH+2P	Study the characteristics of the Internet and the types of applications used on it	The Internet and characteristics		Exams
3-5	2TH+2P	Study the protocol transferring electronic	Protocols		Exams

		pages, files and e-mail on Internet			
6-7	2TH+2P	Understanding how to write programming codes Using HTML	Studying the basics HTM		Exams
8-9	2TH+2P	Delete a web page	Delete a web page		Exams
10-11	2TH+2P	Understanding CSS, PHP	Programming using PHP and CSS		Exams
12-13	2TH+2P	Publish a Page on the Internet	Publish a Page on Internet		Exams
14-15	2TH+2P	Website Management	Website Management		Exams
<b>11. Course Evaluation</b>					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc					
<b>12. Learning and Teaching Resources</b>					
Required textbooks (curricular books, if any)					
Main references (sources)			HTML & CSS: The Fifth Edition ,Book by Thomas Powe		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites			<a href="https://www.w3schools.com/html/">https://www.w3schools.com/html/</a> <a href="https://www.w3schools.com/css/default.asp">https://www.w3schools.com/css/default.asp</a> <a href="https://www.w3schools.com/php/default.asp">https://www.w3schools.com/php/default.asp</a>		

## Course Description Form

<b>Course Name:</b>					
English Language /1					
<b>Course Code:</b>					
<b>Semester / Year:</b>					
Semester					
<b>Description Preparation Date:</b>					
14/ 02/ 2026					
<b>Available Attendance Forms:</b>					
Attendance only					
<b>Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours/2 hour weekly/2 unit					
<b>Course administrator's name (mention all, if more than one name)</b>					
Name: Mohammed LAITH					
Email: <a href="mailto:mohammed.laith@stu.edu.iq">mohammed.laith@stu.edu.iq</a>					
<b>Course Objectives</b>					
Teaching students how to construct sentences in English, interact with individuals from other countries who speak English, and prepare students to apply for government and local companies upon graduation					
<b>Teaching and Learning Strategies</b>					
<ol style="list-style-type: none"> <li>1. Cooperative Concept Planning Strategy.</li> <li>2. Brainstorming Teaching Strategy.</li> <li>3. Note-taking Sequence Strategy.</li> </ol>					
<b>Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2hours	-Ability to communicate effectively in spoken English, including clear pronunciation and appropriate	Unit 1 ( hello )	Regularly reviewing concepts and applying them to new problems to enhance memory and understanding	Weekly, Monthly, Daily and Written Exams, and Final Term Exam.
2	2hours		Unit 2 ( your world )		
3	2hours		personal information		
4	2hours		family and		
5	2hours		friends		
6	2hours		The way I live		
7	2hours		Every day		
8	2hours				

9	2hours	vocabulary for	Place I like	Using educational
10	2hours	various context	Where I live	programs and
11	2hours	- Ability to	Happy birthday	interactive
12	2hours	understand	we had a good	applications to
13	2hours	spoken English	time	better understand
14	2hours	conversations,	we can do it	the concepts
15		lectures, and discussions. Writing: Ability write clear and coherent texts, including essays, reports, and emails, using proper grammar and punctuation - Ability to read and comprehend variety of texts including articles, literature, and technical documents.	thank you very much here and now it's time to go Review	

### Course Evaluation

Distribution as follows: 30 points for midterm theoretical exams, 10 points for daily exams and continuous assessment, and 60 points for the final exam

### Learning and Teaching Resources

Required textbooks (curricular books, if any)

New Headway Beginner - Student's Book

Main references (sources)

Recommended books and references (scientific journals, reports...)

Electronic References, Websites

<https://zlibrary-asia.se/>

<https://www.researchgate.net/>

## Course Description Form

<b>1.Course Name:</b>	
Network Management	
<b>2.Course Code:</b>	
<b>3.Semester / Year:</b>	
2025–2026	
<b>4.Description Preparation Date:</b>	
30 / 04 / 2026	
<b>5.Available Attendance Forms:</b>	
Face-to-face only	
<b>6.Number of Credit Hours (Total) / Number of Units (Total)</b>	
60 hours per semester / 4 hours per week (2 hours theoretical + 2 hours practical) / Total units: 4	
<b>7.Course administrator's name (mention all, if more than one name)</b>	
Name: Walaa Amer Shawi Email: walaa.amer@stu.edu.iq	
<b>8.Course Objectives</b>	
<b>Course Objectives</b>	<p>At the end of this course, the student is expected to be able to:</p> <ul style="list-style-type: none"> <li>• <b>Develop a comprehensive understanding of network management concepts and their critical role in operating modern networks.</b></li> <li>• <b>Analyze network management functions based on the FCAPS Model framework.</b></li> <li>• <b>Explain the architecture of network management systems and their core components (Manager – Agent – MIB).</b></li> <li>• <b>Understand the Simple Network Management Protocol (SNMP) and how information is exchanged between network managers and devices.</b></li> <li>• <b>Analyze the Management Information Base (MIB) and its underlying data structure.</b></li> <li>• <b>Interpret modern data models used in network management, such as YANG data model.</b></li> <li>• <b>Understand the NETCONF protocol and its application in managing network devices.</b></li> </ul>

- Analyze network traffic using network flow analysis tools.
- Evaluate network performance using various performance metrics and indicators.
- Detect network faults using fault management techniques and Syslog.
- Understand the concept of network automation.
- Apply the principles of autonomous network management.

## 9. Teaching and Learning Strategies

<b>Strategy</b>	<p>Interactive theoretical lectures</p> <ul style="list-style-type: none"> <li>• Interactive theoretical lectures.</li> <li>• Classroom discussions to enhance critical thinking and knowledge exchange.</li> <li>• Problem-based learning (PBL) to develop analytical and decision-making skills.</li> <li>• Practical implementation using Cisco Packet Tracer.</li> <li>• Case study analysis to connect theoretical concepts with real-world scenarios.</li> <li>• Project-based learning through small-scale projects.</li> <li>• Demonstrations of network systems and protocols.</li> <li>• Self-directed learning through supplementary resources.</li> </ul>
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## 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduce the fundamental concept of network management and its primary objectives	Introduction to Network Management	Presentation supported by visual illustrations	In-class questioning, classroom discussion, in-class and out-of-class assignments, short quizzes and brief assessments, independent reports, and hands-on practical implementation.
2	4	Explain the significance of network management and the role of the network administrator	Network Management Overview	Presentation, visual aids, and hands-on practice	
3	4	Analyze the core functions of network management based on standard models	Network Management Functions (FCAPS)	Presentation, visuals, illustrative examples, analytical discussion, and practical exercises	
4	4	Describe the architectural design of network management systems	Network Management Architecture	Presentation, diagrams, examples, and detailed explanation	

5	4	Identify and explain the key components of network management systems	Network Management Components	Presentation, visuals, and practical implementation
6	4	Understand the operational mechanism of SNMP protocol	SNMP Protocol	Presentation, visual aids, and illustrative examples
7	4	Analyze SNMP operations and message structures (PDU format)	SNMP Operations & PDU Format	Presentation, diagrams, examples, message analysis, and hands-on practice
8	4	Explain the structure and role of the Management Information Base (MIB)	Management Information Base (MIB)	Presentation with hierarchical diagrams
9	4	Understand data modeling approaches in network management	Network Data Models	Lecture, examples, and tabular representations
10	4	Introduce the NETCONF protocol and its applications	NETCONF Protocol	Presentation, diagrams, and practical example
11	4	Analyze YANG as a data modeling language for network configuration	YANG Data Modeling	Lecture and model-based analysis
12	4	Analyze network traffic patterns using flow analysis techniques	Network Flow Analysis	Explanation and case study

## 11.Course Evaluation

20 marks → Theoretical exam  
20 marks → Practical exam  
10 marks → Class activities  
50 arks → Final exam

## 12.Learning and Teaching Resources

<b>Main References</b>	Mani Subramanian, <i>Network Management: Principles and Practice</i> , Addison-Wesley, 2000; Larry L. Peterson and Bruce S. Davie, <i>Computer Networks: A Systems Approach</i> , Morgan Kaufmann
<b>Recommended Supplementary References</b>	James F. Kurose and Keith W. Ross, <i>Computer Networking: A Top-Down Approach</i> , Pearson; William Stallings, <i>SNMP, SNMPv2, SNMPv3 and RMON 1 and 2</i> , Addison-Wesley; Cisco Networking Academy, <i>Introduction to Networks</i> ;

	Jian Ren and Tongtong Li, <i>Network Management</i> , Michigan State University Lecture Notes
<b>Educational Tools</b>	Cisco Packet Tracer; Wireshark; NetFlow Analyzer
<b>Online Resources</b>	Cisco Networking Academy website
<b>Teaching Aids</b>	Presentation slides; hands-on labs and case studies; visual materials (images and diagrams); real-world scenarios

## Course Description Form

<b>1. Course Name:</b>	
SQL Databases Basics	
<b>2.Course Code:</b>	
<b>3.Semester / Year: Semester</b>	
First Semester	
<b>4.Description Preparation Date:</b>	
26/02/2026	
<b>5.Available Attendance Forms:</b>	
In-person attendance only	
<b>6.Number of Credit Hours (Total) / Number of Units (Total)</b>	
60 ours during the semester (theoretical + practical), 4 hours weekly	
<b>7.Course administrator's name (mention all, if more than one name)</b>	
Name: Zainab Mohammed Jiwar Email: <a href="mailto:zainab.m.jiwar@stu.edu.iq">zainab.m.jiwar@stu.edu.iq</a>	
<b>8.Course Objectives</b>	
Cognitive objectives 1) The student will understand databases and their importance in storing and organizing data effectively 2) The student will be able to learn the SQL language and use it to create and manage databases, including creating, modifying, and querying data, and understanding different types of data, such as text, numeric, etc., and how to deal with them using SQL 3) The student will master how to design databases effectively, including defining tables and relationships between them, setting constraints, and writing SQL queries to retrieve data from databases.	Program Skill Objectives 1)The student will be able to write SQL queries to retrieve data from databases effectively and accurately 2)The student will apply exercises in designing databases using appropriate data models and defining tables and relationships between them. 3)The student will acquire skills in managing and maintaining databases, including adding, modifying, and deleting data
<b>9.Teaching and Learning Strategies</b>	
<b>Strategy</b>	1) Teaching Strategy Collaborative Concept Planning.

- 2) Teaching Strategy Brainstorming.  
3) Teaching Strategy Notes Series

### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understand the basic concepts of what databases are, their importance in organizing and managing data, learn the basics of the SQL language and how to install it on the computer, understand the concepts of data normalization, and the practical importance of applying them in database design	Introduction and installation of SQL, Data normalization	Lecture and Lab	Daily Exams and Assignments
2	4	Understand what SQL Wizards are and their role in facilitating the processes of writing SQL queries and creating databases more effectively and easily, and learn about the types of assistance available in database development environments	Using wizards, and HELP types	Lecture and Lab	Daily Exams and Assignments
3-4	8	Understand the types of data definition in SQL, create data tables, save and edit data, use different data types, and use commands and tool keys in the SQL environment in a skillful manner	Data definition types, creating data tables, saving, and editing. Input various data types using commands and keys	Lecture and Lab	Daily Exams and Assignments
5-7	12	Understand how to use the ALTER TABLE command in SQL to modify the structure of tables, including adding, modifying, and deleting columns and changing data types, browsing and displaying table data in an organized and understandable manner, which enables understanding the structure of the data and existing information, and editing data in tables	More on Alter table, Browse, Edit data	Lecture and Lab	Daily Exams and Assignments

8-11	16	Understand the concept of Manipulation Language (DML) and its role in modifying and managing data in databases using commands such as REPLACE, DELETE, PACK, RECALL, and ZAP.	Data Manipulation Language, Replace, Delete, Pack, Recall, Zap data	Lecture and Lab	Daily Exams and Assignments
12-15	16	Understand what indexing is in SQL and its role in improving the performance of data queries by accelerating search and filtering operations, and understand the process of data arrangement in SQL and its role in organizing data appropriately to improve query performance and enhance user experience.	Indexing & Sorting data	Lecture and Lab	Daily Exams and Assignments

### 11. Course Evaluation

50 marks for mid-term exams (20 practical + 20 theoretical + 10 activity). 50 marks for final exams (10 practical + 40 theoretical)

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures of the course material prepared by the lecturer
Main references (sources)	SQL: the complete reference. McGraw-Hill/Osborne, 2002
Recommended books and references (scientific journals, reports...)	<ul style="list-style-type: none"> <li>– Practical SQL: A Beginner's Guide to Storytelling with Data</li> <li>– SQL for Data Analysis: Advanced Techniques for Transforming Data into Insights 1st Edition</li> </ul>
Electronic References, Websites	<ul style="list-style-type: none"> <li>– <a href="https://www.w3schools.com/sql/default.asp">https://www.w3schools.com/sql/default.asp</a></li> <li>– <a href="https://learn.microsoft.com/en-us/sql/samples/sql-samples-where-are?view=sql-server-ver16">https://learn.microsoft.com/en-us/sql/samples/sql-samples-where-are?view=sql-server-ver16</a></li> </ul>

## Course Description Form

<b>1.Course Name:</b>	
SQL Databases	
<b>2.Course Code:</b>	
<b>3.Semester / Year: Semester</b>	
Second Semester	
<b>4.Description Preparation Date:</b>	
26/02/2026	
<b>5.Available Attendance Forms:</b>	
In-person attendance only	
<b>6.Number of Credit Hours (Total) / Number of Units (Total)</b>	
60 ours during the semester (theoretical + practical), 4 hours weekly	
<b>7.Course administrator's name (mention all, if more than one name)</b>	
Name: Zainab Mohammed Jiwar Email: <a href="mailto:zainab.m.jiwar@stu.edu.iq">zainab.m.jiwar@stu.edu.iq</a>	
<b>8.Course Objectives</b>	
<p>Cognitive objectives</p> <p>61 The student will understand complex data and how to deal with it using SQL, such as engineering and functional queries</p> <p>62 The student will be able to analyze data and use it to support decision-making processes in institutions and organizations</p> <p>63 The student will master how to write complex SQL queries to retrieve data from databases in different ways and join queries to link different tables and retrieve information in an accurate and specific manner</p>	<p>Program Skill Objectives</p> <p>4) The student will be able to organize and arrange data within databases using SQL through the use of tables, indexes, and constraints.</p> <p>5) The student will improve the performance of databases using performance indicators, modifying the structure of tables, and improving queries.</p> <p>6) The student will acquire the skill of developing their abilities in the field of managing and using databases effectively in various practical fields.</p>
<b>9.Teaching and Learning Strategies</b>	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1) Teaching Strategy Collaborative Concept Planning.</li> <li>2) Teaching Strategy Brainstorming.</li> <li>3) Teaching Strategy Notes Series</li> </ol>

## 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	16	Focus on understanding database management programs and their importance, reviewing data normalization concepts, identifying data integrity and its importance, reviewing commands for creating, deleting, adding, and displaying table data, and comparison operators (Between, In, Like, Is Null)	Introduction to Database Management System (DBMS), Data Integrity, Database Normalization, (Create, Drop, Insert, Select) table, WHERE statement, Order by statement, Comparison Operators (Between, In, Like, Is Null)	Lecture and Lab	Daily Exams and Assignments
5-7	12	They understand and effectively use logical and arithmetic operations and numeric and historical expressions in SQL to execute queries and operations on data accurately and efficiently.	Logic (And, Or, Not), Arithmetic Operations Boolean, Numeric, and Date Expressions	Lecture and Lab	Daily Exams and Assignments
8	4	Understanding and implementing basic database management operations in SQL, including creating, deleting, defining databases, and applying the necessary security measures	Create, Drop, Select Database	Lecture and Lab	Daily Exams and Assignments
9-12	16	Understanding JOINS and their role in SQL queries to	Understand JOINS, JOINS types	Lecture and Lab	Daily Exams and Assignments

		combine data from different tables based on their relationships and different types of JOINS, such as (INNER JOIN), (OUTER JOIN), (LEFT JOIN), (RIGHT JOIN), and others.			
13-15	12	Understanding what subqueries are and how to use them in SQL queries to achieve specific results based on data in another query, using them with one or more tables, and applying them in some SQL statements.	Sub-Query (One or More Tables), Sub-Query with (Select, Insert, Update, Delete) statements	Lecture and Lab	Daily Exams and Assignments

### 11. Course Evaluation

50 marks for mid-term exams (20 practical + 20 theoretical + 10 activity). 50 marks for final exams (10 practical + 40 theoretical)

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Lectures of the course material prepared by the lecturer
Main references (sources)	SQL: the complete reference. McGraw-Hill/Osborne, 2002
Recommended books and references (scientific journals, reports...)	<ul style="list-style-type: none"> <li>– Practical SQL: A Beginner's Guide to Storytelling with Data</li> <li>– SQL for Data Analysis: Advanced Techniques for Transforming Data into Insights 1st Edition</li> </ul>
Electronic References, Websites	<ul style="list-style-type: none"> <li>– <a href="https://www.w3schools.com/sql/default.asp">https://www.w3schools.com/sql/default.asp</a></li> <li>– <a href="https://learn.microsoft.com/en-us/sql/samples/sql-samples-where-are?view=sql-server-ver16">https://learn.microsoft.com/en-us/sql/samples/sql-samples-where-are?view=sql-server-ver16</a></li> </ul>

## Course Description Form

13. Course Name:	
Cloud Computing	
14. Course Code:	
15. Semester / Year: Semester	
Second Semester	
16. Description Preparation Date:	
26/02/2026	
17. Available Attendance Forms:	
Attendance Only	
18. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours during the semester (theoretical only), 2 hours weekly	
19. Course administrator's name (mention all, if more than one name)	
Name: Zainab Mohammed Jiwar	
Email: <a href="mailto:zainab.m.jiwar@stu.edu.iq">zainab.m.jiwar@stu.edu.iq</a>	
20. Course Objectives	
<p><b>Cognitive objectives</b></p> <ol style="list-style-type: none"> <li>1. The student will understand the concept of cloud computing and its importance in the field of information technology.</li> <li>2. The student will understand the fundamental characteristics of cloud computing, such as scalability, flexibility, and network access.</li> <li>3. The student will learn about cloud computing service models (IaaS, PaaS, SaaS).</li> <li>4. The student will differentiate between cloud deployment models (public, private, hybrid, and community).</li> <li>5. The student will understand the structure and architecture of cloud computing and its basic components.</li> </ol>	<p><b>Program Skill Objectives</b></p> <ol style="list-style-type: none"> <li>1. The student will be able to use cloud computing platforms and create cloud accounts and services.</li> <li>2. The student will be able to deploy and run applications or services in a cloud environment.</li> <li>3. The student will be able to manage cloud resources such as virtual servers and storage.</li> <li>4. The student will be able to apply virtualization technologies to create virtual work environments.</li> <li>5. The student will be able to perform backup and recovery operations in the cloud.</li> <li>6. The student will be able to implement security and protection procedures for cloud data.</li> <li>7. The student will be able to analyze system requirements and select the appropriate cloud model.</li> </ol>

<p>6. The student will learn about virtualization technology and its role in cloud computing.</p> <p>7. The student will understand data storage and management services in the cloud environment.</p> <p>8. The student will learn about security risks and threats in cloud computing and methods of protection.</p> <p>9. The student will distinguish between cloud service pricing models and resource management.</p> <p>10. The student should become familiar with the most important cloud computing service providers such as:</p> <ul style="list-style-type: none"> <li>• Amazon Web Services</li> <li>• Google Cloud</li> <li>• Microsoft Azure</li> </ul>	<p>8. The student will be able to monitor the performance of cloud services and improve their efficiency.</p> <p>9. The student will be able to manage users and permissions in cloud systems.</p> <p>10. The student will be able to design simple cloud solutions for organizations or applications.</p>
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21. Teaching and Learning Strategies

<b>Strategy</b>	<p>4) Teaching Strategy Collaborative Concept Planning.</p> <p>5) Teaching Strategy Brainstorming.</p> <p>6) Teaching Strategy Notes Series</p>
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22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Definition and characteristics of cloud computing</li> <li>– History and evolution of cloud computing</li> <li>– Benefits and challenges of cloud computing</li> </ul>	Introduction to Cloud Computing	Lecture	Daily Exams and Assignments
2	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Infrastructure as a Service (IaaS): Virtualized computing resources over the internet.</li> </ul>	Cloud Service Models	Lecture	Daily Exams and Assignments

		<ul style="list-style-type: none"> <li>– Platform as a Service (PaaS): Platforms for application development and deployment</li> <li>– Software as a Service (SaaS): Software applications delivered over the internet</li> </ul>			
3-4	4	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Public Cloud: Cloud services offered to the general public.</li> <li>– Private Cloud: Cloud infrastructure used exclusively by one organization.</li> <li>– Hybrid Cloud: Combining public and private cloud environments.</li> </ul>	Cloud Deployment Models	Lecture	Daily Exams and Assignments
5	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Key components of cloud architecture</li> <li>– Virtualization: Creating virtual versions of physical resources.</li> </ul>	Cloud Architecture	Lecture	Daily Exams and Assignments
6	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Overview of major cloud providers (AWS, Google Cloud, Microsoft Azure)</li> <li>– Comparison of services offered by different providers</li> <li>– Understanding cloud service pricing models</li> </ul>	Cloud Providers and Services	Lecture	Daily Exams and Assignments
7	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Security challenges in cloud computing</li> <li>– Data protection and privacy in the cloud</li> <li>– Best practices for cloud security</li> </ul>	Cloud Security	Lecture	Daily Exams and Assignments
8	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Types of cloud storage: block, file, and object storage</li> <li>– Cloud storage providers and services</li> </ul>	Cloud Storage	Lecture	Daily Exams and Assignments

		<ul style="list-style-type: none"> <li>– Data backup and disaster recovery in the cloud</li> </ul>			
9	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Networking fundamentals for cloud computing</li> <li>– Virtual Private Networks (VPN) in the cloud</li> <li>– Load balancing and auto-scaling</li> </ul>	Cloud Networking	Lecture	Daily Exams and Assignments
10	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Developing applications for the cloud</li> <li>– Microservices architecture</li> <li>– Serverless computing</li> </ul>	Cloud Application Development	Lecture	Daily Exams and Assignments
11	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Tools for managing and monitoring cloud resources</li> <li>– Performance optimization in the cloud</li> <li>– Cost management and optimization</li> </ul>	Cloud Management and Monitoring	Lecture	Daily Exams and Assignments
12	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Strategies for migrating to the cloud</li> <li>– Challenges and best practices for cloud migration</li> <li>– Case studies of successful cloud migrations</li> </ul>	Cloud Migration	Lecture	Daily Exams and Assignments
13	2	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Edge computing</li> <li>– Internet of Things (IoT) and cloud integration</li> <li>– Future directions and advancements in cloud computing</li> </ul>	Emerging Trends in Cloud Computing	Lecture	Daily Exams and Assignments

14-15	4	<p>Understanding</p> <ul style="list-style-type: none"> <li>– Practical exercises and labs using cloud platforms</li> <li>– Developing and deploying cloud-based applications</li> <li>– Real-world case studies and projects</li> </ul>	Hands-on Projects and Applications	Lecture	Daily Exams and Assignments
23. Course Evaluation					
50 marks for mid-term exams (40 practical + 10 activity). 50 marks for final exams					
24. Learning and Teaching Resources					
Required textbooks (curricular books, if any)		Lectures of the course material prepared by the lecturer			
Main references (sources)		<ul style="list-style-type: none"> <li>– Handbook of Cloud Computing</li> <li>– Fundamentals of cloud computing</li> </ul>			
Recommended books and references (scientific journals, reports...)		Some of the references available in the library, and all scientific books and official websites specializing in cloud computing.			
Electronic References, Websites		<ul style="list-style-type: none"> <li>– <a href="https://cloud.google.com/learn/what-is-cloud-computing">https://cloud.google.com/learn/what-is-cloud-computing</a></li> <li>– <a href="https://aws.amazon.com/what-is-cloud-computing/">https://aws.amazon.com/what-is-cloud-computing/</a></li> <li>– <a href="https://www.ibm.com/think/topics/cloud-computing">https://www.ibm.com/think/topics/cloud-computing</a></li> <li>– <a href="https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-cloud-computing">https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-cloud-computing</a></li> <li>– <a href="https://www.oracle.com/apac/cloud/what-is-cloud-computing/">https://www.oracle.com/apac/cloud/what-is-cloud-computing/</a></li> </ul>			

## Course Description Form

<b>1. Course Name:</b>	
English for Information Technology	
<b>2. Course Code:</b>	
<b>3. Semester / Year:</b>	
Semester	
<b>4. Description Preparation Date:</b>	
28-4-2026	
<b>5. Available Attendance Forms:</b>	
Presence	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
30 hours per semester / 2 hours weekly / 2 Unite	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: Mazin Salih Kadhim Email: <a href="mailto:mazin.s.kadhim@stu.edu.iq">mazin.s.kadhim@stu.edu.iq</a>	
<b>8. Course Objectives</b>	
<ul style="list-style-type: none"> <li>• To enable students to use English effectively in the context of Information Technology (IT) English Grammar.</li> <li>• To combine essential grammar rules (Syllabus Grammar) with the specialized vocabulary learners need to succeed in their professional field.</li> <li>• To prepare students and IT professionals to communicate in English in international work environments.</li> <li>• To learn specialized vocabulary in the areas of: (databases, network systems, e-commerce, and information security).</li> <li>• To transition students from general English to vocational English in the IT sector.</li> </ul>	
<b>9. Teaching and Learning Strategies</b>	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Learning strategy: Collaborative concept planning.</li> <li>2. Learning strategy: Brainstorming.</li> <li>3. Learning strategy: Observation chain.</li> </ol>
<b>10. Course Structure</b>	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	2 hours	1-Introduce yourself and others. 2-talk about scheduled tasks 3- Describing your daily routine and times.	Working in the IT indust	Practical application	Daily exams , duties, And Conversations
3-4	2 hours	1- Describing computer hardware. 2- Describing computer software. 3- Understanding computer usage. 4-talk about ability and necessity.	Computer systems	Practical application	Daily exams , duties, And Conversations
5-6	2 hours	1- Getting information about websites 2-Functions of a website 3-Features of a website	Websites	Practical application	Daily exams , duties, And Conversations
7-8	2 hours	1-Understanding database products. 2-Describing data processing steps. 3-Talking about data storage and Devices.	Databases	Practical application	Daily exams , duties, And Conversations
7-8	2 hours	1-Explainig E-commerce types 2-Explaining E-commerce types. 3-Describing the feature of an e-commerce website.	E-commerce	Practical application	Daily exams , duties, And Conversations
9-10	2 hours	1-Types of network. 2-Describing and fixing network hardware 3-Network range and speed	Network systems	practical application	Daily exams , duties, And Conversations

11-12	2 hours	1-Understanding faults 2-Software repair 3-Hardware repair	IT support	Practical application	Daily exams , duties, And Conversations
13-15	2 hours	1-Identifying a safe working Environment 2-Reporting incidents	IT Security And Safety	Practical application	Daily exams , duties, And Conversations

### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	English for Information Technology
Main references (sources)	Olejniczak, M. (2011). English for Information Technology 1. Series Edited by David Bonamy. Pearson Longman. ISBN: 978-1-4082-6996-1.
Recommended books and references (scientific journals, reports...)	Bonamy, D. (1984). English for Technical Students: Teacher's Book 1. Longman. ISBN: 978-0-582-85215-0.
Electronic References, Websites	<a href="http://www.pearsonlongman.com/vocationalenglish">www.pearsonlongman.com/vocationalenglish</a>

## Course Description Form

<b>1.Course Name:</b>	
Artificial Intelligence	
<b>2.Course Code:</b>	
<b>3.Semester / Year:</b>	
2025–2026	
<b>4.Description Preparation Date:</b>	
26 03 / 2026	
<b>5.Available Attendance Forms:</b>	
Face-to-face only	
<b>6.Number of Credit Hours (Total) / Number of Units (Total)</b>	
60 hours per semester / 4 hours per week (2 hours theoretical + 2 hours practical) / Total units: 4	
<b>7.Course administrator's name (mention all, if more than one name)</b>	
Name: Sabreen Fawzi Raheem Email: sabreen.fawzi@stu.edu.iq	
<b>8.Course Objectives</b>	
<b>Course Objectives</b>	<p><b>At the end of this course, the student is expected to be able to:</b></p> <ul style="list-style-type: none"> <li>• Understand the concept and evolution of Artificial Intelligence</li> <li>• Identify AI applications in daily life</li> <li>• Understand Machine Learning algorithms and their types</li> <li>• Analyze data using Machine Learning techniques</li> <li>• Apply Neural Network models</li> <li>• Understand Natural Language Processing and Computer Vision</li> <li>• Recognize Reinforcement Learning</li> <li>• Understand ethical aspects of Artificial Intelligence</li> </ul>
<b>9Teaching and Learning Strategies</b>	
<b>Strategy</b>	Interactive theoretical lectures Practical implementation using Python Project-based learning Classroom discussions Case studies

Self-learning

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
2	4	Understanding AI concept	Introduction to AI	Presentation	Question + Assignments Quiz + Review
2	4	Understanding applications	AI Applications	Discussion + Examples	
3	4	Understanding data	Data in AI	Explanation + Practice	
4	4	Understanding ML	Machine Learning	Explanation + Practice	
5	4	ML Algorithms	ML Algorithms	Practical Examples	
6	4	Model Evaluation	Model Evaluation	Analysis	
7	4	Neural Networks	Neural Networks	Explanation	
8	4	Training Networks	Training NN	Practice	
9	4	NLP	Natural Language Processing	Explanation	
10	4	Computer Vision	Computer Vision	Examples	
11	4	CV Applications	CV Applications	Analysis	
12	4	Reinforcement Learning	Reinforcement Learning	Explanation	
13	4	RL Strategies	RL Strategies	Analysis	
14	4	Ethics	Ethics in AI	Discussion	
15	4	Revision	Revision	General Review	

25. Course Evaluation

20 marks → Theoretical exam

20 marks → Practical exam

10 marks → Class activities

50 marks → Final exam

26. Learning and Teaching Resources

Main references :

1–Artificial Intelligence: A Modern Approach

2–Hands–On Machine Learning with Scikit–Learn

Recommended books and references :

Hello World: How to Be Human in the Age of the Machine

Atlas of AI

Educational Tools :

Python

Jupyter Notebook

Scikit–learn

TensorFlow

### Course Description Form

1.Course Name:	
Fundamentals of Ethical Hacking	
2.Course Code:	
3.Semester / Year:	
Semester-based	
4.Description Preparation Date:	
24/3/2026	
5.Available Attendance Forms:	
In-person only	
6.Number of Credit Hours (Total) / Number of Units (Total)	
60 ours per semester / 4 hours weekly / 4 credits	
7.Course administrator's name (mention all, if more than one name)	
Name: Dr. Mahmood A. Al-Shareeda Email: mahmood.alshareedah@stu.edu.iq	
8.Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li><b>Introduce students to cybersecurity and ethical hacking concepts.</b></li> <li><b>Understand information gathering techniques and vulnerability analysis.</b></li> <li><b>Train students on penetration testing tools.</b></li> <li><b>Develop skills in analyzing cyberattacks and defense mechanisms.</b></li> <li><b>Promote security awareness and professional ethics in cybersecurity.</b></li> </ul>
9.Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li><b>Lectures:</b> Present fundamental cybersecurity and ethical hacking concepts, including techniques for vulnerability analysis and cyberattacks.</li> <li><b>Problem-Based Learning:</b> Provide real-world security scenarios for students to analyze vulnerabilities and propose solutions.</li> <li><b>Laboratory Work:</b> Train students using tools such as Kali Linux, Nmap, Wireshark, and Metasploit.</li> <li><b>Collaborative Learning:</b> Students work in groups to conduct lab experiments and network security analysis projects.</li> <li><b>Case Studies:</b> Analyze real cyberattack incidents and discuss detection and prevention methods.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Project-Based Learning:</b> Assign practical projects involving system or network security assessment.</li> <li>• <b>Self-Directed Learning:</b> Encourage students to explore recent research and developments in cybersecurity.</li> <li>• <b>Educational Technology:</b> Use virtual machines and cyber labs for practical simulations.</li> </ul>
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10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week	Hours	Learning Outcomes	Topic	Teaching Method	Assessment
1	2	Understand ethical hacking concept	Introduction to Ethical Hacking	Lecture + Discussion	Short Quiz
2	2	Understand hacker types	Types of Hackers & Cybersecurity	Interactive Lecture	Assignment
3	2	Learn information gathering	Footprinting Techniques	Lecture + Demo	Practical
4	2	OSINT analysis	Information Gathering (OSINT)	Lab	Lab Report
5	2	Network scanning basics	Network Scanning Techniques	Lecture + Lab	Practical Test
6	2	Use Nmap	Network Scanning using Nmap	Training	Lab Report
7	2	Enumeration techniques	Enumeration	Applied Lecture	Assignment
8	2	Vulnerability analysis	Vulnerability Analysis	Lab	Report
9	2	Vulnerability tools	Vulnerability Scanners	Practice	Monthly Exam
10	2	System hacking basics	System Hacking	Lecture + Demo	Practical
11	2	Malware analysis	Malware Threats	Lecture	Assignment
12	2	Network sniffing	Network Sniffing	Lab	Report
13	2	Social engineering	Social Engineering & DoS	Case Study	Quiz
14	2	Security systems	Firewalls, IDS, Honeybots	Lecture + Lab	Practical

11.Course Evaluation

20 marks: Midterm theoretical exam 20 marks: Midterm practical exam 10 marks: Continuous assessment 50 arks: Final exam
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12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Matt Walker – CEH Certified Ethical Hacker Study Guide Michael T. Simpson – Ethical Hacking and Network Defense
Main references (sources)	William Stallings – Network Security Essentials Jon Erickson – Hacking: The Art of Exploitation
Recommended books and references (scientific journals, reports...)	Kali Linux Documentation Nmap Documentation
Electronic References, Websites	<a href="https://owasp.org/">https://owasp.org/</a> <a href="https://www.kali.org/">https://www.kali.org/</a> <a href="https://nmap.org/">https://nmap.org/</a> <a href="https://docs.rapid7.com/metasploit/metasploitable-2/">https://docs.rapid7.com/metasploit/metasploitable-2/</a>

### Course Description Form

27. Course Name:	
Network Performance Analysis	
28. Course Code:	
29. Semester / Year:	
Semester-based	
30. Description Preparation Date:	
20/10/2025	
31. Available Attendance Forms:	
In-person only	
32. Number of Credit Hours (Total) / Number of Units (Total)	
<b>60 hours per semester / 4 hours weekly / 4 credits</b>	
33. Course administrator's name (mention all, if more than one name)	
Name: Dr. Mahmood A. Al-Shareeda Email: mahmood.alshareedah@stu.edu.iq	
34. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• <b>Introduce students to fundamental network performance concepts such as latency, bandwidth, throughput, and Quality of Service (QoS).</b></li> <li>• <b>Enable students to analyze network performance using professional tools such as Wireshark, Perf, NetFlow, GNS3, and Cisco Packet Tracer.</b></li> <li>• <b>Develop students' skills in measuring network speed, analyzing traffic, diagnosing congestion, and packet delay issues.</b></li> <li>• <b>Train students to design and implement plans for improving network performance using simulation tools.</b></li> <li>• <b>Enhance critical thinking skills for identifying and solving problems through log analysis.</b></li> <li>• <b>Prepare students to evaluate real-world network performance and provide technical recommendations for improvement.</b></li> <li>• <b>Instill professional ethics, accuracy in data analysis, and teamwork in technical environments.</b></li> </ul>
1. Teaching and Learning Strategies	
<b>Strategy</b>	<input type="checkbox"/> <b>Theoretical Lectures</b>

- Problem-Based Learning**
- Project-Based Learning**
- Laboratory Work**
- Collaborative Learning**
- Self-Directed Learning**
- Use of Educational Technology**
- Continuous Feedback**

## 2. Course Structure

Week	Hours	Learning Outcomes	Topic	Teaching Method	Assessment
1	2 hrs each	Understanding network performance concepts and influencing factors	Introduction to Network Performance: Latency, Bandwidth, Throughput	Lecture & Discussion	Short Questions
2		Understanding congestion and delay	Network Congestion & Packet Delay	Interactive Lecture	Assignment
3		Traffic analysis skills	Wireshark Traffic Analysis	Lab	Lab Report
4		Use of measurement tools	Perf, SNMP, NetFlow, Traceroute	Practical	Practical Test
5		Performance measurement	Network Speed Testing	Lab	Report
6		Delay analysis	Network Latency Measurement	Case Study	Exam
7		Optimization techniques	Performance Enhancement	Simulation	Evaluation
8		QoS evaluation	Congestion Management, QoS Metrics	Group Work	Report
9		SDN optimization	SDN-based Optimization	Simulation	Assignment
10		Troubleshooting	Network Troubleshooting	Lecture	Oral Test
11		Log analysis	Log Analysis	Lab	Report
12		Monitoring tools	SolarWinds, Nagios	Practical	Test
13		Reporting	Performance Reporting	Writing	Evaluation
14		Comparative analysis	Before vs After Optimization	Discussion	Exam
15		Final presentation	Case Study Presentation	Presentation	Final Exam

## 3. Course Evaluation

- 20 marks: Midterm theoretical exam
- 20 marks: Midterm practical exam
- 10 marks: Continuous assessment
- 50 marks: Final exam

## 4. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Behrouz A. Forouzan, <i>Data Communications and Networking</i> , 6th Edition, McGraw-Hill, 2021
Main references (sources)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Kurose &amp; Ross, <i>Computer Networking: A Top-Down Approach</i>, 8th Edition, 2021</li> <li><input type="checkbox"/> Nader F. Mir, <i>Computer and Communication Networks</i>, 3rd Edition, 2019</li> <li><input type="checkbox"/> William Stallings, <i>High-Speed Networks and Internets</i>, 2nd Edition, 2017</li> </ul>
Recommended books and references (scientific journals, reports...)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Performance Analysis on BGP Networks using Wireshark</li> <li><input type="checkbox"/> Instructor lecture notes and lab materials</li> </ul>

Electronic References, Websites

- <https://www.wireshark.org/docs/>
- <https://docs.gns3.com/>
- <https://www.researchgate.net/>