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

2025

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: Ninevah University

Faculty/Institute: Information Technology

Scientific Department: Computer Network and Internet

Academic or Professional Program Name: Bachelor's

Final Certificate Name: Bachelor of Computer Network and Internet

Academic System: Bolonga Process and Course System

Description Preparation Date: 20/5/2025

File Completion Date: 20/5/2025

Signature:

Head of Department Name:
Dr. Azhar S. Abdulaziz

Date: 18/5/2025

Signature:

Scientific Associate Name:
Asst. prof. Dr. Ali. Othman

Date: 18/05/2025

The file is checked by: Dr. Hutheifa L. Mohamed

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 20/5/2025

Signature:

Approval of the Dean

Prof. Dr. Manar Younis

20-5-2025

LEVEL-1
SEMESTER-1
COMPUTER SKILLS

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.

1. **Expected learning outcomes of the Module (Course)**	
Knowledge	
Learning Outcomes 1	knows the basic algorithms and data structures for searching Recognize the basic components of the computer (Hardware and Software). Understand common operating systems and how they work. Know the fundamentals of using office applications (word processing, spreadsheets). Identify cloud storage concepts and modern computing application
Skills	
Learning Outcomes 2	• Operate operating systems and manage files and folders efficiently. • Use word processing software (e.g., Word) to prepare and format documents. • Create, manage, and analyze data using spreadsheets (e.g., Excel).
Learning Outcomes 3	• Design effective presentations using presentation software (e.g., PowerPoint). • Employ internet search tools effectively to access reliable information
Values	
Learning Outcomes 4	• Commit to ethical use of computers and the internet. • Respect intellectual property rights and protect personal data. • Foster teamwork spirit through the use of electronic collaboration tools.
Learning Outcomes 5	• Develop self-learning skills to keep pace with technological developments.

	Enhance self-confidence in dealing with digital applications and solving technical problems

2. Teaching and Learning Strategies

1. **Interactive Lectures**
   - Provide simplified explanations of fundamental theoretical concepts.
   - Use real-life examples related to students' daily lives.
2. **Practical (Hands-on) Learning**
   - Perform direct exercises on the computer in the lab.
   - Apply practical steps in programs such as Word, Excel, PowerPoint.
3. **Project-Based Learning**
   - Assign students small projects such as preparing a formatted report, analyzing data in Excel, or designing a presentation.
4. **Self-Learning**
   - Encourage students to search online for solutions to technical problems.
   - Use e-learning resources (video tutorials, learning platforms, manuals).
5. **Discussions and Problem-Solving**
   - Raise open questions to discuss issues such as information security and intellectual property.
   - Train students in critical thinking and making sound technical decisions.

3. Evaluation methods

		Time/Number	Weight (Marks)
Formative assessment	**Quizzes**	2	10% (10)
	Assignments	2	10% (10)
	Projects / Lab.	1	10% (10)
	Report	1	10% (10)
Summative assessment	**Midterm Exam**	2hr	10% (10)
	Final Exam	3hr	50% (50)
Total assessment			100% (100 Marks)

4. The most important sources of information about the program

- *Yusr Al-Mustafa Series for Sciences: Fundamentals of Computer and Internet, Office 2010* – Dr. Ziad Mohammed Aboud, 2013

Course Description Form

1. Module Name:
Computer skills
2. Module Code:
NVU10
3. Semester / Year:
1st /2024-2025
4. Description Preparation Date:
1/9/2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Module's administrator's (mention all, if more than one name)
Name: Haneen Talal Alwazzan Email: haneen.talal@uoninevah.edu.iq
8. Module's Objectives

Module's Objectives	• Identify the basic components of the computer. • Recognize the types of computers and their parts. • Understand the concept of electronic hacking, major harmful files, programs, and viruses. • Learn how to operate and use a computer. • Acquire skills in essential office applications needed by students.
9. Teaching and Learning Strategies	
Strategy	• Prepare students to explore the computer world and keep pace with scientific advancements. • Instill good ethics in dealing with the digital world while maintaining privacy. • Introduce students to the essential components of the computer. • Familiarize students with major programs in the Windows system and how to use them. • Encourage self-learning.

10. Module Structure

Week	Hours	Required Learning	Unit or subject	Learning method	Evaluation method

		Outcomes	name		
1	4	Understand stag of computer evolution & applications	Computer Basics	Lecture + Discussion	Daily & monthly tests, discussions
2	4	Recognize computer components & classifications	Computer Components & Types	Video demonstrations + Lecture	Daily & monthly tests, discussions
3	4	Learn about software entities number systems	Software entity, computer platform, hardware	Reading + Discussions, Lecture	Tests & discussions
4	4	Learn CPU & its parts, input/outp units	CPU, I/O devices	Reading + Discussions	Tests & discussions
5	4	Learn memory types & mouse functions	Memory, Mouse	Reading + Discussions	Tests & discussions
6	4	Learn programm languages & OS types	Programming Languages	Lecture + Practical Discussion	Tests & discussions
7	1	Monthly Exam	—	Exam	10%
8	4	Explore compute platform & syste unit	Platform, System Unit	Lecture + Discussion	Tests & discussions
9	4	Introduction to M Word	Word	Lecture + Practical Work	Tests & discussions
10	4	Using MS Word (files, storage, shortcuts)	Word	Lecture + Practical Work	Tests & discussions
11	4	Introduction to PowerPoint	PowerPoint	Lecture + Practical Work	Tests & discussions
12	4	Using PowerPoir (presentations, slides)	PowerPoint	Lecture + Practical Work	Tests & discussions
13	4	Introduction to Excel	Excel	Lecture + Practical Work	Tests & discussions
14	4	Using Excel (basi functions & formulas)	Excel	Lecture + Practical Work	Tests & discussions
15	3	Final Exam			

11. Module Evaluation

		Time/Number	Weight (Marks)
Formative assessment	**Quizzes**	2	10% (10)
	Assignments	2	10% (10)
	Projects / Lab.	1	10% (10)
	Report	1	10% (10)
Summative assessment	**Midterm Exam**	2hr	10% (10)
	Final Exam	3hr	50% (50)
Total assessment			100% (100 Marks)

12. Learning and Teaching Resources

Required textbo (curricular books, if ar	Ministry of Higher Education official textbook, Parts 1 & 2, First Year
Main referen (sources)	Ministry of Higher Education official textbook, Parts 1 & 2, First Year
Recommended books and references (scientific journals, reports…)	• *Yusr Al-Mustafa Series for Sciences: Fundamentals of Computer and Internet, Office 2010* – Dr. Ziad Mohammed Aboud, 2013
Electronic Referenc Websites	

PROGRAMMING PRINCIPLES I

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.

5. **Expected learning outcomes of the Module (Course)**	
Knowledge	
Learning Outcomes	• Understand the classification and applications of various programming languages. • Recognize the basics of algorithms, flowchart symbols, and visual algorithm representation. • Explain problem-solving methodologies, pseudocode, and program lifecycle stages. • Identify C++ syntax elements such as keywords, identifiers, variables, and data types. • Describe arithmetic, relational, logical, and increment/decrement operations in C++. • Understand loop structures (for, while, do-while), selection statements (if-else, switch-case), and jump statements (break, continue, goto). • Recognize different types of errors (syntax, logical, runtime) and debugging techniques.
Skills	
Learning Outcomes	• Write basic C++ programs using correct syntax and structure. • Develop algorithms and represent them using flowcharts and pseudocode. • Apply arithmetic, relational, and logical operations to solve computational problems. • Implement loops (for, while, do-while) and control structures (if-else, switch-case) in C++. • Use jump statements (break, continue, goto) to control program flow. • Debug and correct errors in C++ programs. • Analyze and optimize simple C++ code for efficiency.
Values	
Learning Outcomes	• Recognize the importance of structured problem-solving in programming. • Develop logical thinking and attention to detail while writing code. • Focus on effective debugging and error resolution. • Acknowledge the importance of writing efficient and maintainable code in programming.. • Collaborate effectively by writing readable and well-documented code. • Value continuous learning and staying updated with programming best practices.

Course Description Form

13. Module Name:
Programming Principles I
14. Module Code:
NVIT1120
15. Semester / Year:
1st Semester / 2024-2025
16. Description Preparation Date:
2/08/2025
17.Available Attendance Forms:
Bologna Information System (BIS)
18.Number of Credit Hours (Total) / Number of Units (Total)
7
19. Module's administrator's (mention all, if more than one name)
Name: Dr. Ahmed Qasim Ahmed Email: ahmed.ahmed@uoninevah.edu.iq
20. Module's Objectives

Module's Objectives	• To understand the importance and role of programming languages in software development. • To understand the purpose and importance of flowcharts in visualizing processes and algorithms. • To understand programming concepts, such as variables, data types, and operators. • To understand the basics of input and output operations, arithmetic operations, and logical operators in programming. • To use control statements, such as selection, iteration, and jump statements to control program flow. • To identify and handle errors that occur during program execution.
21. Teaching and Learning Strategies	
Strategy	• Lectures introduce concepts through interactive explanations and visual aids like flowcharts. • Hands-on practice follows theory, with coding exercises and projects to apply concepts. • Real-world examples demonstrate practical applications of programming principles. • Debugging practice helps students identify and fix errors in code. • Gradual skill-building progresses from pseudocode to partial to complete programs. • Interactive tools like IDEs and coding platforms enhance engagement.

	• Regular assessments including quizzes and challenges track progress.

22. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3	Understand programming languages, their classifications, and applications.	Introduction to Programming Languages and Their Classifications	Lecture, code demonstrations	In-class Q&A participation
Week 2	3	Learn algorithm basics, flowchart symbols, and how to represent algorithms visually.	Introduction to Algorithms and Flowcharts	Lecture, code demonstrations	In-class Q&A participation
Week 3	3	Apply problem-solving methodologies, write pseudocode, and analyze examples.	Problem-Solving Methodology, Pseudocode, and Examples	Lecture, code demonstrations	Quizz1 and Assignment1
Week 4	3	Understand the program lifecycle and write basic C++ code.	Program Lifecycle and Writing C++ Code	Lecture, code demonstrations	In-class Q&A participation
Week 5	3	Identify keywords, identifiers, variables, and different variable types in C++.	Keywords, Identifiers, Variables, and Variable Types	Lecture, code demonstrations	In-class Q&A participation
Week 6	3	Perform arithmetic operations and understand increment/decrement operations in C++.	Arithmetic Operations and Increment/Decrement in C++	Lecture, code demonstrations	Quizz2 and Assignment2
Week 7	3	Use relational and logical operators to evaluate conditions in C++.	Relational and Logical Operators in C++	Lecture, code demonstrations	In-class Q&A participation
Week 8	3	Implement for loops, understand their syntax, and create flowcharts for loop structures.	Loops in C++: for Loop (Syntax, Flowchart)	Lecture, code demonstrations	In-class Q&A participation
Week 9	3	Implement while and do-while loops, analyze their flowcharts, and understand nesting.	while and do-while Loops, Nested Loops	Lecture, code demonstrations	Quizz3
Week 10	3	Mid-term Exam	Mid-term Exam	Mid-term Exam	Mid-term Exam
Week 11	3	Use selection statements (if-else, switch-case) to	Selection Statements (if-else, Nested if, switch-	Lecture, code demonstrations	In-class Q&A participation, Assignment3, Report

		control program flow.	case)		
Week 12	3	Apply jump statements (break, goto, continue) to alter loop and switch behavior.	Jump Statements (break, goto, continue)	Lecture, code demonstrations	In-class Q&A participation
Week 13	3	Identify and debug different types of errors in C++ programs.	Types of Errors in C++ (Syntax, Runtime, Logical, Linker, Semantic)	Lecture, code demonstrations	In-class Q&A participation
Week 14	3	Review key concepts for final exam preparation.	Final Exam Preparation	Q&A sessions	Self-assessment, instructor feedback
Week 15	3	Final Exam	Final Exam	Final Exam	Final Exam

23. Module Evaluation

Quizzes, Assignments, Report, Midterm Exam, Final Exam.

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Richard Halterman, "Fundamentals of Programming: An Introduction to Computer Programming Using C++".
Recommended books and references (scientific journals,	Tony Gaddis ,"Starting Out with Programming Logic and Design".
Electronic References, Websites	https://cplusplus.com/

CALCULUS

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.

6. **Expected learning outcomes of the Module (Course)**	
Knowledge	
Learning Outcomes 1	Demonstrate understanding of fundamental concepts of limits, continuity, differentiation, and integration.
Skills	
Learning Outcomes 2	Apply differentiation techniques to solve problems related to rates of change, optimization, and curve sketching.
Learning Outcomes 3	Use integration methods to compute areas, volumes, and solve applied problems in engineering and sciences.
Values	
Learning Outcomes 4	Develop logical reasoning and critical thinking skills in approaching mathematical problems.
Learning Outcomes 5	Foster an appreciation of calculus as a foundational tool for advanced studies and real-life applications in science and engineering.

7. **Teaching and Learning Strategies**
Teaching and learning strategies and methods adopted in the implementation of the program in general: • Interactive lectures supported by examples and problem-solving sessions. • Tutorials and group discussions to reinforce understanding. • Use of visual aids, graphs, and software tools to illustrate calculus

concepts.

- Assignments and homework exercises to enhance independent learning.
- Encouraging self-study and the use of online learning platforms.

8. Evaluation methods

Implemented at all stages of the program in general:

- **Formative Assessment:** quizzes, homework assignments, and class participation.
- **Summative Assessment:** midterm examinations and final examination.
- **Practical Evaluation:** problem-solving tasks, case studies, and projects (if applicable).

9. The most important sources of information about the program

State briefly the sources of information about the program:

- Stewart, J., *Calculus: Early Transcendentals*.
- Thomas, G., *Thomas' Calculus*.
- Larson, R., *Calculus*.
- Online learning platforms (Khan Academy, Coursera, MIT Open Courseware).
- Instructor's lecture notes and recommended readings.

Course Description Form

25. Module Name: **Calculus**	
26. Module Code: NVIT1116	
27. Semester / Year: 1st Semester / 2024-2025	
28. Description Preparation Date: 15-08-2025	
29.Available Attendance Forms: Bologna Information System	
30.Number of Credit Hours (Total) / Number of Units (Total): 4	
31. Module's administrator's (mention all, if more than one name)	
Name: Huda Khaleel Mohammed Email: huda.mohammed@uoninevah.edu.iq	
32. Module's Objectives	
Module's Objectives	□ To provide students with a solid foundation in the concepts of limits, continuity, differentiation, and integration. □ To develop students' ability to solve mathematical problems systematically using calculus techniques. □ To enhance logical reasoning, analytical thinking, and problem-solving skills. □ To prepare students for advanced studies in mathematics, engineering, and applied science
33. Teaching and Learning Strategies	
Strategy	**Description**

Lectures	Presentation of core concepts with illustrative examples.
Tutorials	Small-group discussions and problem-solving sessions.
Assignments/Homework	Reinforcement of concepts through practice problems.
E-learning Tool	Use of graphs, visual aids, and online platforms (e.g., Khan Academy, MATLAB, GeoGebra).
Student Participation	Encouraging active involvement through Q&A and classroom activities.

34. Module Structure

We	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

ek					
1-2	4 hrs/week	Understand the concepts of functions, limits, and continuity.	Introduction to Functions and Limits		Midterm Exam + Assign-ments
3-4	4 hrs/week	Apply differentiation rules to algebraic and transcendental functions.	Differentia-tion		Quizzes + Home-work
5-6	4 hrs/week	Solve problems involving rates of change and optimization.	Applications of Derivatives		Quizzes + Class Particip-atio
	4 hrs/week	Sketch curves using first and second derivatives.	Curve Sketching	Lectures + Tutorials	Home-work + Midterm Exam
7-8	4 hrs/week	Apply integration techniques to compute areas and definite integrals.	Applications of Integration		Quizzes + Assignments
9-10	4 hrs/week	Use integration in applications such as volume and arc length	Advanced Topics in Integration		Final Exam + Projects
	4 hrs/week	Explore improper integrals and convergence	Advanced Topics in Integration Review and		Final Exam

11-12 13 14 15	4 hrs/week 4 hrs/week	Review and problem-solving practice. Final project/discussion and exam preparation.	Problem-Solving Final Project and Exam Preparations		Quizzes + Participation Final Project + Final exam

35. Module Evaluation

Grading System (Total = 100 Marks):

- **40 Marks** (Coursework):
  - 30 Marks: Midterm Exam
  - 5 Marks: Quiz (Daily Exam)
  - 5 Marks: Class Participation & Homework
- **60 Marks:** Final Exam

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	Calculus Thomas edition 12
Recommended books and references (scientific journals, reports…)	Calculus
Electronic References, Websites	ChatGPT

PRINCIPLES OF LOGIC

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.

10. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Values	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

11. Teaching and Learning Strategies
Teaching and learning strategies and methods adopted in the implementation of the program in general.
12. Evaluation methods
Implemented at all stages of the program in general.

13. The most important sources of information about the program
State briefly the sources of information about the program.

Course Description Form

37.	Module Name: principles of logic
38.	Module Code: CIT1115
39.	Semester / Year:2024-2025
40.	Description Preparation Date:July2025
41.	Available Attendance Forms:
42.	Number of Credit Hours (Total) / Number of Units (Total)112
43.	Module's administrator's (mention all, if more than one name)
	Name: Ahmed Mahfoodh Taha Hayali Email: ahmed.hayali@uoninevah.edu.iq
44.	Module's Objectives
M u s O c e	Understanding the logic design, which contains: • It covers a range of topics related to digital circuits. It It begins with an introduction to number systems, including binary, octal, and hexadecimal, along with conversions between them.. • Complement representations, such as sign 1's complement and sign 2's complement, are explored. The module also covers codes like BCD, binary, gray code, and ASCII character code. Logic gates, . Boolean algebra laws, De Morgan's theorem, and canonical/standard forms (SOP and POS). . The principle of duality, Karnaugh maps, don't care conditions, and code conversion techniques are also taught. Additionally, the module includes the study of comparator circuits and various adder and subtractor circuits like half adders, full adders, half subtractors, and full subtractors

45. Teaching and Learning Strategies

Strategies

1- At each topic, try to connect the next and the previous topics. For instance, when explaining a SOP, all Boolean algebra are mentioned.

2- Use and explain the main difference between SOP and POS .

3- Show the students the multi-applications of logic circuits.

46. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method	
11	1	1- Understand the Principles of logic. 2- Understand Karnaugh map and how change between SOP and POS 3- Understand the design of the Full and	Principles logic	1-At each topic, try connect the next and Previous topics. For instance,when explaining a combina logic circuit, the SOP the POS is mentioned 2-Use and explain main difference between SOP and	Formative assessment	Quizzes10 Assignments10 Projects / Lab.10+10 Report10
					Summative assessment	Midterm Exam10 Final Exam50

		Half adder and subtractor. 4-Understand Logic gates,Boolean algebra laws, De Morgan's theorem, and canonical/standard forms (SOP and POS)5-Understands the principle of duality, Karnaugh maps, don't care conditions, and code conversion techniques are also taught. Additionally, the module includes the study of comparator circuits and various adder and subtractor circuits like half adders, full adders, half subtractors, and full subtractors		POS. 3-Show the Students the multi-applications of logic circuits.	**Total assessment**100

47. Module 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

48. Learning and Teaching Resources

Required textbooks (curricular books any)	Principles of Logic by Longman
Main references (sources)	
Recommended books and references (scientific journals, reports…)	"Digital Logic & Computer Design by M. Morris Mano
Electronic References, Websites	

STATISTICS AND PROBABILITIES

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.

14. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	• LO1: Understand the basic concepts of probability, random variables, and distributions. • LO2: Recognize fundamental statistical measures (mean, variance, standard deviation, correlation.
Skills	
Learning Outcomes 3	• LO3: Apply probability rules and statistical techniques to solve real-world problems.
Learning Outcomes 4	• LO4: Use statistical software and tools to analyze datasets
Values	
Learning Outcomes 5	• LO5: Demonstrate accuracy, responsibility, and ethical behavior when handling data.
Learning Outcomes 6	• LO6: Appreciate the role of probability and statistics in scientific research and decision-making.

15. Teaching and Learning Strategies

- Interactive lectures to explain theoretical concepts.
- Tutorial sessions for problem-solving and discussions.
- Practical exercises using statistical software.
- Group projects and case studies to apply statistical analysis.
- Independent learning through reading assignments and research.

16. Evaluation methods

- Quizzes and short tests
- Midterm exam
- Assignments and projects
- Participation and class activities
- Final exam

17. The most important sources of information about the program

The most important sources of information about the program are the official course syllabus, lecture notes prepared by the instructors, recommended textbooks in probability and statistics, online educational platforms (such as Khan Academy and Coursera), academic journals, and electronic libraries that provide access to statistical datasets and research papers.

Course Description Form

49. Module Name: Probability & Statistics	
50. Module Code: NVIT1118	
51. Semester / Year: 1st Semester / 2024-2025	
52. Description Preparation Date: 15-08-2025	
53.Available Attendance Forms: Bologna Information System	
54.Number of Credit Hours (Total) / Number of Units (Total): 3 Units	
55. Module's administrator's (mention all, if more than one name)	
Name: Huda Khaleel Mohammed Email: huda.mohammed@uoninevah.edu.iq	
56. Module's Objectives	
Module's Objectives	• To introduce students to the fundamental concepts of probability and statistics. • To develop the ability to analyze and interpret data using statistical methods. • To train students to apply probability models to solve real-world problems in science, engineering, and management. • To enhance students' skills in using statistical software and digital tools for data analysis. • To encourage critical thinking and decision-making based on quantitative reasoning.
57. Teaching and Learning Strategies	

Strategy	• **Strategy 1:** Interactive lectures to explain theoretical concepts. • **Strategy 2:** Tutorials and problem-solving sessions to strengthen understanding. • **Strategy 3:** Practical sessions and projects using statistical software. • **Strategy 4:** Group discussions and collaborative learning activities. • **Strategy 5:** Independent study through textbooks, articles, and online resources.

58. Module Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	3 l	Understand basic probability concepts	Introduction Probability	Lecture Tutorial	Quiz
2	3 l	Apply probability rules and la	Probability R and Axioms	Lecture Tutorial	Homework
3	3 l	Explain random variables	Random Variables Probability Distributions	Lecture Problem Solv	Exercises
4	3 l	Compute expectation and varianc	Mathematical Expectation	Lecture Tutorial	Assignment
5	3 l	Identify discrete distribution	Binomial Poisson Distributions	Lecture Tutorial	Quiz
6	3 l	Analyze continuous distribution	Normal Distribution	Lecture Tutorial	Homework
7	3 l	Review assessment	Midterm Rev and Exam	Tutorial Discussion	Midterm Exan
8	3 l	Organize present data	Data Collec and Presentati	Lecture Practical	Report
9	3 l	Apply measures central tendency	Mean, Med Mode	Lecture Tutorial	Exercises
10	3 l	Apply measures dispersion	Variance Standard Deviation	Lecture Tutorial	Quiz
11	3 l	Use correla and regress	Correlation Regression	Lecture Practical	Project

			Analysis		
12	3	Apply hypothesis testing	Hypothesis Testing	Lecture Tutorial	Assignment
13	3	Construct confidence intervals	Estimation Confidence Intervals	Lecture Tutorial	Quiz
14	3	Apply advanced statistical te	Chi-square and ANOVA	Lecture Practical	Report
15	3	Final rev and applications	Applications Probability Statistics	Tutorial Discussion	Final Exam

59. Module Evaluation

Grading System (Total = 100 Marks):

- **40 Marks** (Coursework):
  - 30 Marks: Midterm Exam
  - 5 Marks: Quiz (Daily Exam)
  - 5 Marks: Class Participation & Homework
- **60 Marks:** Final Exam

60. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Walpole, R. E., Myers, R. H., Myers, S. L., & Ye, K. (2017). *Probability and Statistics for Engineers and Scientists*. Pearson.
Main references (sources)	• Montgomery, D. C., & Runger, G. C. (2018). *Applied Statistics and Probability for Engineers*. Wiley.
Recommended books and references (scientific journals, reports…)	• Ross, S. M. (2014). *Introduction to Probability and Statistics for Engineers and Scientists*. Academic Press. • Relevant articles from *Journal of the American Statistical Association* and *The Annals of Probability*.
Electronic References, Websites	• www.khanacademy.org/math/statistics-probability • www.statlect.com • www.probabilitycourse.com • IEEE and Springer online libraries for statistical applications.

HUMAN RIGHTS AND DEMOCRACY

Learning outcomes:A consistent set of knowledge, skills, and values acquired by the student after successfully completing the academic program. The learning outcomes for each course must be defined in a manner that achieves the program's objectives.

Teaching and learning strategies: They are the strategies used by faculty members to develop student teaching and learning. They are plans followed to achieve learning objectives. They describe all classroom and extracurricular activities to achieve the program's learning outcomes.

1. **Expected learning outcomes For the rapporteur**	
knowledge	
1Understanding basic concepts: defining and explaining concepts such as: human rights, democracy, citizenship, rule of law, good governance, civil society, and accountability. 2. Trace the historical development: Narrate the historical development of the idea of human rights, from ancient laws to the Universal Declaration of Human Rights (1948) and subsequent international covenants. 3. Generational distinction and divisions: distinguishing between categories of human rights (civil, political, economic, social, cultural) and generational rights (first, second, third generation). 4. Knowledge of legal frameworks: Identify international, regional and national mechanisms for the protection of human rights (e.g., the United Nations, the International Criminal Court, the Office of the High Commissioner for Human Rights, and regional organizations such as the Council of Europe and the African Union). 5. Analysis of governance systems: Comparing models of democratic systems (presidential, parliamentary, semi-presidential) and their basic principles (separation of powers, peaceful transfer of power, free and fair elections). 6. Linking concepts: Understanding the complementary relationship between democracy, human rights, and the rule of law, and how one reinforces the other.	First: Cognitive outcomes (knowledge and understanding)
Skills	
1. Analyzing Contemporary Issues: Applying theoretical frameworks of human rights and democracy to analyze and critique contemporary local, regional, and global issues (e.g., freedom of expression, discrimination, poverty, armed conflicts, elections). 2. Policy Evaluation: Evaluating national policies and laws in light of international human rights standards and democratic principles. 3. Defending Cases: Formulating coherent and evidence-based arguments to defend human rights and democracy issues in various debate contexts.	Skill outputs (application and analysis)

4. Reading legal documents: Interpreting the provisions of the main international human rights documents (such as the Universal Declaration, the two international covenants) and applying them to hypothetical or real-life situations. 5. Research skills: Conduct primary research on human rights violations or democratic election procedures using reliable sources.	
values	
1Promoting the values of tolerance and pluralism: respecting cultural, religious, and ethnic diversity, and rejecting hate speech and discrimination in all its forms. 2. Adopting a culture of active citizenship: developing a strong sense of civic responsibility and a willingness to participate positively in public life and defend rights peacefully. 3Strengthening the ethical stance: Forming an ethical stance that rejects injustice and tyranny, and advocates for transparency, integrity, and participation in decision-making. 4Valuing Peace: Understanding the essential relationship between human rights, democracy, and achieving sustainable peace and development.	Affective outputs (values and attitudes)

2. Teaching and learning strategies

- Explaining the scientific material to students in detail.

2- Student participation inintellectual discussions and concepts

3-Encourage dialogue

3. Evaluation methods

Daily, semester, and end-of-semester exams, homework, classwork, and report preparation.

4. Learning resources

1- Human Rights Professor Dr. Hamid Hanoun Khaled

2- International Humanitarian Law, Professor Dr. Ali Zalan Nehme and others.

3- Principles of Constitutional Law and the Development of the Political System in Iraq, Professor Dr. Hamid Hanoun Khalid

Course Description Form

1. Name of the material	
Human rights and democracy	
2. Material symbol	
3. Academic year/semester	
2024/2025	
4. Description preparation date	
5. Attendance forms used	
6. Total units of matter	
7. Subject Matter Responsible (More than one person may be mentioned)	
Name: M.M. Omar Wameed Ramzi Email:omar.wameedh@uoninevah.edu.iraq	
8. Course objectives	
• Learn the basic principles of human rights and democracy. • Enabling the student to formulate his arguments and form his opinion • Promoting values	**Goals**
9. Learning and teaching strategies	
• Tests and duties • Discussions and dialogues	Strategies

10. Structure of the material

Evaluation method	Teaching method	Topic name	Learning outcomes	Number of hours	week
a test	theoretical	The concept of hum rights	The concept of right	2	1

a test	theoretical	The concept of hum rights	The concept of man	2	2
a test	theoretical	Generations of Human Rights	First generation human rights	2	3
a test	theoretical	Generations of Human Rights	Second generati human rights	2	4
a test	theoretical	Generations of Human Rights	Solidarity huma rights	2	5
a test	theoretical	Human rights sourc	Conventional leg rules and international custom	2	6
a test	theoretical	Human rights guarantees and protection	National, international an regional human rights guarantee	2	7
Homew ork	theoretical	Human rights and international humanitarian law	Human rights ar international humanitarian la	2	8
Classw ork	theoretical	Human Rights in th Constitution of the Republic of Iraq of 2005	Models of civil a political rights, models of economic, social and cultural righ	2	9
a test	theoretical	The concept of democracy	Definition of democracy and i types	2	10
a test	theoretical	Types of democracy	Direct and semi-direct democrac	2	11
a test	theoretical	Types of democracy	indirect democracy	2	12
a test	theoretical	The concept of political democracy	Foundations of political democracy	2	13

a test	theoretical	Presidential and parliamentary syste	Characteristics c the presidential system	2	14
a test	theoretical	Presidential and parliamentary syste	Characteristics c the parliamenta system	2	15

11. General evaluation method

Fifty marks for the final exam, ten marks for the semester exam, twenty marks for daily exams, ten marks for preparing a report on one of the course topics, and ten marks for homework and classwork.

12. Teaching and learning resources

Textbooks mentioned above on the subject of human rights and democracy	Textbooks (if any)
The Iraqi Constitution, the United Nations Charter, and other sources of human rights and democracy	Primary sources
	Recommended books and scientific articles
	Electronic resources such as websites

LEVEL-1
SEMESTER-2
ARABIC LANGUAGE-1

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.

18. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	The course aims to provide a comprehensive and comprehensive introduction to the most important Arabic vocabulary (in grammatical and morphological matters), which impacts the student's life and will remain relevant in the future. • Introduce the student to the basics of correct writing (such as distinguishing between Arabic sentences and knowing their types, knowing the original and secondary diacritical marks, and distinguishing between sentences in terms of masculine and feminine morphology, etc.). • The course aims to provide the most important vocabulary (in spelling and expressive matters) in general. Teach students to differentiate between the closed taa' and the open taa', as well as the letters dad and tha', and to recognize punctuation marks and the most common errors in the Arabic language
Skills	
Learning Outcomes 2	1- Correct writing skills. 2- Correct reading skills. 3- Text formation skills.
Outcomes 3	
Values	
Learning Outcomes 4	1- The extent to which students accept the curriculum. 2- Responding to and interacting with the texts in the curriculum. 3- Organizing and linking the curriculum's content
Learning Outcomes 5	

19. **Teaching and Learning Strategies**
Question and Discussion Strategy - A strategy for encouraging students to learn the most important rules of the Arabic language (grammar and morphology). - A strategy for teaching students how to employ general Arabic rules (in spelling and expression matters) in their writing

20. Evaluation methods
Weekly and daily exams and midterm exams.

21. **The most important sources of information about the program**
General Arabic Curriculum 1/ The Sunnah Masterpiece with an Explanation of the Ajurrumiyyah Introduction by Muhammad Muhyi al-Din Abd al-Hamid (may God have mercy on him). 2/ The Compendium of Arabic Lessons by Sheikh Mustafa al-Ghalayini. 3/ How to Master Grammar by Ahmad Iskandar. Specialized Websites + Electronic Reports and Research

Course Description Form

61. Module Name:
Arabic Language
62. Module Code:
NVU16
63. Semester / Year:
Academic year 2024-2025, second semester
64. Description Preparation Date:
15\1\2025
65.Available Attendance Forms:
Weekly attendance Bologna system
66.Number of Credit Hours (Total) / Number of Units (Total)
30 hours (total number of study hours) / number of hours (2) per week (15) weeks in the semester
67. Module's administrator's (mention all, if more than one name)
Name: Abeer Ahmed Ibrahim Email: abeer.alhamdani@uoninevah.edu.iq
68. Module's Objectives

Module's Objectives	The course aims to provide a comprehensive and comprehensive introduction to the most important Arabic vocabulary (in grammatical and morphological matters), which impacts the student's life and will remain relevant in the future. • Introduce the student to the basics of correct writing (such as distinguishing between Arabic sentences and knowing their types, knowing the original and secondary diacritical marks, and distinguishing between sentences in terms of masculine and feminine morphology, etc.). • The course aims to provide the most important vocabulary (in spelling and expressive matters) in general. • Teach students to differentiate between the closed taa' and the open taa', as well as the letters dad and tha', and to recognize punctuation marks and the most common errors in the Arabic language

69. Teaching and Learning Strategies	
Strategy	Question and Discussion Strategy - A strategy for encouraging students to learn the m important rules of the Arabic language (grammar a morphology). - A strategy for teaching students how to empl general Arabic rules (in spelling and expressi matters) in their writing

70. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	2	Knowledge and Understanding	An introductory lecture and overview of the sciences of the Arabic language and the distinction between them.	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
2.	2	Knowledge and Understanding	Parts of speech, noun markers, and how to differentiate between them	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
3.	2	Knowledge and Understanding	Verb markers	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
4.	2	Knowledge and Understanding	Letter markers Original diacritical marks	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
5.	2	Daily Exam (1)	Secondary Diacritical Marks + Daily Exam (1)	Lecture delivery using explanation, discussion and daily tests	Daily Exam (1)
6.	2	Knowledge and Understanding	The Arabic Sentence and Its Types (Nominal Sentence)	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
7.	2	Knowledge and Understanding	(Verbal Sentence)	Lecture delivery using explanation,	Discussions + Asking

				discussion and daily tests	Questions
8.	2	Knowledge and Understanding	Quasi-Sentence	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
9.	2	Knowledge and Understanding	Parameters and Non-Parameters	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
10.	2	Midterm exam	Midterm exam	Lecture delivery using explanation, discussion and daily tests	Midterm exam
11.	2	Knowledge and Understanding	Morphological Balance	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
12.	2	Knowledge and Understanding	Derivatives	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
13.	2	Daily Exam (2)	Solar and Lunar Alif + Daily Exam 2	Lecture delivery using explanation, discussion and daily tests	Daily Exam (2)
14.	2	Knowledge and Understanding	Hamzat al-Qat` and al-Wasl	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
15.	2	Knowledge and Understanding	Ḍād and Ḍāa + Open and Connected Ta`	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions

71. Module Evaluation

(10%) semester exam, (40%) (distributed between daily and classroom exams, assignments, and attendance at lectures) + (50%) final exam.

72. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	General Arabic Curriculum

Recommended books and references (scientific journals, reports…)	1/ The Sunnah Masterpiece with an Explanation of the Ajurrumiyyah Introduction by Muhammad Muhyi al-Din Abd al-Hamid (may God have mercy on him). 2/ The Compendium of Arabic Lessons by Sheikh Mustafa al-Ghalayini. 3/ How to Master Grammar by Ahmad Iskandar
Electronic References, Websites	Specialized Websites + Electronic Reports and Research

PROGRAMMING PRINCIPLES II

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.

22. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes	• Explain the concepts of functions, parameter passing, and return values in C++. • Describe the use of arrays for data storage and manipulation. • Understand pointers, memory addresses, and dynamic memory management in C++. • Explain pass-by-reference and the role of references in C++. • Recognize exception handling mechanisms to prevent program crashes. • Define structures, their initialization, and usage in functions. • Explain file operations (reading/writing) and dynamic memory allocation/deallocation.
Skills	
Learning Outcomes	• Write and call functions, pass arguments, and return values effectively. • Manipulate arrays to solve programming problems. • Apply pointers in parameter passing and problem-solving. • Use references for efficient parameter passing and function returns. • Implement exception handling to manage runtime errors gracefully. • Declare and use structures, pass them to functions, and return them. • Perform file operations (read/write) and manage dynamic memory allocation.
Values	
Learning Outcomes	• Write efficient and maintainable code using functions, arrays, and structures. • Use memory carefully to prevent bugs and crashes. • Handle errors using exception handling. • Develop structured and modular code for readability and reusability. • Handle files and data responsibly.

Course Description Form

73. Module Name:	
Programming Principles II	
74. Module Code:	
NVIT1220	
75. Semester / Year:	
2nd Semester / 2024-2025	
76. Description Preparation Date:	
2/08/2025	
77.Available Attendance Forms:	
Bologna Information System (BIS)	
78.Number of Credit Hours (Total) / Number of Units (Total)	
6	
79. Module's administrator's (mention all, if more than one name)	
Name: Dr. Ahmed Qasim Ahmed Email: ahmed.ahmed@uoninevah.edu.iq	
80. Module's Objectives	
Module's Objectives	• To understand the concept of functions and their importance in modular programming. • To understand the concept of arrays, perform common operations on arrays, work with multidimensional arrays, apply arrays in problem-solving, and effectively code and debug array-related programs. • To understand the concept of pointers and memory management, comprehend the relationship between pointers and arrays. • To understand the concept of references in C++ and their purpose. Differentiate references from pointers and understand their advantages and limitations. • To understand the concept of exception handling, recognize and handle exceptions, utilize exception propagation and rethrowing. • To understand the concept of structures, declare and define structures, access, and manipulate structure members, use structures in functions and parameter passing, and apply structures in problem-solving. • To understand the concept of file handling, perform basic file operations, manage memory dynamically, handle memory-related

	issues, and effectively code and debug programs that involve file handling and memory management.

81. Teaching and Learning Strategies

Strategy	• Lectures: In-depth explanations of each topic's concepts, principles, and best practices presented by the lecturer. • Practical Exercises: Hands-on coding exercises and programming tasks that allow students to apply the concepts learned. These exercises can involve implementing algorithms, solving problems, and working with code examples related to the specific topic. • Case Studies: Analyzing and discussing real-world case studies that showcase the application of the topic in practical scenarios. • Assignments and Projects: Assigning individual or group assignments and projects that involve implementing concepts learned in the specific topic.

82. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	valuation method
Week 1	3	Define functions, differentiate between void and return-type functions, use function prototypes, and apply built-in	Functions in C++	Lecture, code demonstrations	In-class Q&A participation

		functions.			
Week 2	3	Utilize the C++ math library, declare and manipulate arrays (including character arrays and matrices).	Arrays & C-Strings	Lecture, code demonstrations	In-class Q&A participation
Week 3	3	Pass arrays to functions and manipulate array data within functions.	Functions with Arrays	Lecture, code demonstrations	Quizz1 and Assignment1
Week 4	3	Understand pointer declaration, initialization, dereferencing, and pointer arithmetic in arrays.	Pointers in C++	Lecture, code demonstrations	In-class Q&A participation
Week 5	3	Work with pointer-to-pointer, pass pointers to functions, and use references in function calls.	Advanced Pointers & References	Lecture, code demonstrations	In-class Q&A participation
Week 6	3	Apply pointers with functions and references for efficient memory access.	Pointers & References in Functions	Lecture, code demonstrations	Quizz2 and Assignment2
Week 7	3	Manage dynamic memory allocation using new and del ete.	Memory Management	Lecture, code demonstrations	In-class Q&A participation
Week 8	3	Define and initialize structures, access structure members.	Structures in C++	Lecture, code demonstrations	In-class Q&A participation
Week 9	3	Use arrays within structures and implement the getline functio n for input.	Arrays in Structures	Lecture, code demonstrations	In-class Q&A participation
Week 10	3	Pass structures to functions, use pointers with structures.	Structures with Functions & Pointers	Lecture, code demonstrations	Quizz3, Assignment3, and Report
Week 11	3	Mid-term Exam	Mid-term Exam	Mid-term Exam	Mid-term Exam
Week 12	3	Implement error handling in	Exception Handling	Lecture, code demonstrations	In-class Q&A participation

		programs.			
Week 13	3	Read from and write to files using C++ file streams.	File I/O Operations	Lecture, code demonstrations	In-class Q&A participation
Week 14	3	Review key concepts for final exam preparation.	Exam Preparation	Q&A sessions	Self-assessment, instructor feedback
Week 15	3	Final Exam	Final Exam	Final Exam	Final Exam

83. Module Evaluation

Quizzes, Assignments, Report, Midterm Exam, Final Exam.

84. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Richard Halterman, "Fundamentals of Programming: An Introduction to Computer Programming Using C++".
Recommended books and references (scientific journals, reports…)	Tony Gaddis ,"Starting Out with Programming Logic and Design".
Electronic References, Websites	https://cplusplus.com/

RESEARCH METHODOLOGY

5.	**Expected learning outcomes For the rapporteur**
Knowledge	
	• Understanding the nature of scientific knowledge: The student gains a deep understanding of how scientific knowledge is constructed, and the difference between it and other types of knowledge. • The ability to formulate research problems: The student learns how to identify and formulate the problem or phenomenon worthy of study in a clear and specific manner. This enables him to set precise and measurable research objectives. • Familiarity with different types of research: The student learns about different types of research (such as quantitative and qualitative research), the theoretical foundations of each type, and how to choose the appropriate methodology for his research problem. • Familiarization with data collection tools: The student gains knowledge of common data collection tools such as questionnaires, interviews, and observation, and learns how to design and use them effectively. • Data analysis skills: The student learns how to organize and analyze collected data, whether numerical (statistical) data or descriptive texts, in order to be able to draw conclusions. • Understanding research ethics: The student realizes the importance of adhering to professional ethics at all stages of research, such as respecting the rights of participants and being honest in presenting results.
Skills	
	• Critical and analytical thinking skills: The student learns how to analyze information, evaluate evidence, and distinguish between facts and opinions. • Research problem formulation skills: The student acquires the ability to transform a general idea into a clear, specific, and studyable research question. • Planning and organization skills: The student is able to develop a comprehensive research plan that includes defining objectives, choosing a methodology, designing tools, and

developing a timetable for the various stages.

• Data collection skills: The student is trained on how to use various research tools, such as designing questionnaires, conducting interviews, and collecting information in an organized and accurate manner.

• Analysis and statistical skills: The student learns how to use statistical or descriptive analysis tools to interpret data and draw conclusions from it.

• Research report writing skills: The student acquires the ability to write an organized research report that adheres to scientific and professional principles in presenting results and discussion.

• Problem-solving skills: By applying the steps of scientific research, the student is able to use an organized and objective approach to solve complex problems.

values

Social responsibility: The student realizes that scientific research is not merely an academic endeavor, but rather a means of contributing to solving societal problems and developing society.

• Objectivity: The student learns the importance of abandoning biases and prejudices, and focusing on evidence and facts when collecting and analyzing data, which leads to reliable results.

• Academic integrity: The student is trained to adhere to honesty and integrity in research, such as documenting sources correctly and avoiding plagiarism.

• Commitment to ethics: The student understands the importance of respecting the rights of research participants and the confidentiality of their information, and how to deal with them in an ethical and responsible manner.

• Patience and perseverance: The student discovers that scientific research is a process that requires effort and time, which reinforces the value of patience and perseverance in facing challenges.

• Scientific humility: The student learns that knowledge is constantly evolving, and that the results of his research are part of a larger contribution, which makes him more receptive to criticism and open to the opinions of others.

6. Teaching and learning strategies

Project-based learning (Project-Based Learning: Instead of just theoretical explanations, students are required to choose a research problem, design a plan to study it, and write a complete research proposal.

Cooperative learningCooperative Learning: Students are divided into small working groups, with each team working on a specific research task (such as reviewing the literature or designing a questionnaire), which enhances teamwork skills and the exchange of experiences.

Interactive Lectures: The basic concepts of research methodology are presented in an interactive manner, with questions, discussions, and real-life examples from published research.

Training workshops: Specialized workshops are held to apply the acquired skills, such as training workshops on how to use statistical analysis programs (such asSPSS) or how to write references in a scientific way.

Case studies (Case Studies: Previous research studies are analyzed to understand how different methodologies are applied in practice, and how to overcome the difficulties researchers faced.

Continuous feedback: Students are provided with regular feedback and guidance throughout each stage of the research proposal process, helping them improve their work and correct errors.

7. Evaluation methods

- **Writing a mini-research**
- **Weekly exams**
- **And monthly**
- **and daily**
- **And the end of year exam.**

Course Description Form

13. Name of the material
Scientific research methodology
14. Material symbol
NVU14-F25-1
15. Academic year/semester
Chapter Two
16. Description preparation date
9/9/2025
17. Attendance forms used
Bologna Process
18. Total units of matter
15lonliness
19. Subject Matter Responsible (More than one person may be mentioned)
Name: M.M. Wissam Hassan Fathy Email:wisam.hasan@uoninevah.edu.iq
20. Course objectives
A- Cognitive objectives 1- Enabling students to obtain the intellectual framework for scientific research methodology. 2- Preparing students cognitively, professionally and educationally to conduct scientific research in a ntal and media institutions. 3- Enriching students' knowledge and preparing them scientifically to prepare research in accordance ns, and scientific foundations of scientific research. 4- Providing advice in the field of scientific research to relevant governmental and media institutions. 5- Preparing students' skills regarding mechanisms for conducting scientific research. 6- Activating scientific research, audience studies, and content analysis of the media. B - Course specific skill objectives B1 - Learning basic skills related to curriculum, science, knowledge and thinking methods B2 - Contributing to addressing research problems in the field of media B3 - Preparing a researcher capable of conducting research in the field of journalism and me B4 - Participation in research teams specialized in journalism research
21. Learning and teaching strategies

Strategies	
Project-based learning (Project-Based Learning: Instead of just theoretical explanations, o choose a research problem, design a plan to study it, and write a complete research posal. Cooperative learningCooperative Learning: Students are divided into small working groups, vorking on a specific research task (such as reviewing the literature or designing a questionnaire), which enhances teamwork skills and the exchange of experiences. Interactive Lectures: The basic concepts of research methodology are presented in an interactive manner, with questions, discussions, and real-life examples from published research. Training workshops: Specialized workshops are held to apply the acquired skills, such as n how to use statistical analysis programs (such asSPSS) or how to write references in a scientific way. Case studies (Case Studies: Previous research studies are analyzed to understand how different methodologies are applied in practice, and how to overcome the difficulties researchers faced. Continuous feedback: Students are provided with regular feedback and guidance throughout each stage of the research proposal process, helping them improve their work and correct errors.	

22. Structure of the material					
valuation method	eaching	opic name	earning	umber of	eek
• **Contributions** • **Weekly exams** • **And monthly** • **and daily** **And the end of year**	acquisit knowle	1. Thought, its metho 2. concept Science 3. Scientific resear 4. Scientific research es and humanities 5. Public sear 6. Who is t his characteristics? 7. Types of research 8. Information 9. exam 10. Initial readi otes 11. Historical approa 12. Descriptive approa 13. Experimental 14. Survey method 15. Audience studies 16. monthly exam 17. Preparing resear 18. Research discussio	to explai and	Two hou	15 week
23. General evaluation method					
• **Writing a mini-research 10 minutes**					

- **Weekly exams10d**
- **Examsmonthly10d**
- **ExamsDaily10d**
- **End of year exam60d**

24. Teaching and learning resources	
1. Saad Salman Al-Mashhadani, ch Methodology, (Amman: Osama 2. Muhammad Uthman Al-Khasht, g Scientific Research and Preparing s (Cairo: Ibn Sina Library, 1990).	extbooks (if any)
	imary sources
	ecommended books and scientific articles
	ectronic resources such as websites

LOGIC DESIGN

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.

23. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Values	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

24. Teaching and Learning Strategies
Teaching and learning strategies and methods adopted in the implementation of the program in general.
25. Evaluation methods
Implemented at all stages of the program in general.

26. The most important sources of information about the program
State briefly the sources of information about the program.

Course Description Form

85.	Module Name:Logic design
86.	Module Code: CIT1215
87.	Semester / Year:2024-2025
88.	Description Preparation Date:July2025
89.	Available Attendance Forms:
90.	Number of Credit Hours (Total) / Number of Units (Total)112
91.	Module's administrator's (mention all, if more than one name)
	Name: Ahmed Mahfoodh Taha Hayali Email: ahmed.hayali@uoninevah.edu.iq
92.	Module's Objectives
Module's Objectives	Understanding the logic design, which contains: • It covers a range of topics related to digital circuits. • It begins with circuits like the 7-segment display, parity generator, and checker circuits. • Design a 4-bit binary full adder and binary subtractor • Design combinational logic circuits such as decoders, encoders, multiplexers, and demultiplexers. • Sequential logic circuits, including SR-latch, D-latch, J-K flip-flop, and T-flip-flop. • The module concludes with topics like counters, shift registers, and analog-to-digital/digital-to-analog conversion
93.	Teaching and Learning Strategies
Strateg	**Strategies** 2- At each topic, try to connect the next and the previous topics. For instance, when explaining a combination logic circuit, the SR- latch and D flip-flop are mentioned. 2- Use and explain the main difference between synchronous and asynchronous counters. 3- Show the students the multi-applications of a logic design.

94. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method	
1-15	1	1- Understand the l design. 2- Understand Karnaugh map and how change between SOP and POS 6- Understand the design of the Full a Half adder a subtractor. 4- Understand how logic circuits include decod encoders, multiplexers, demultiplexers. 5- Understands Sequential logic circu including SR-latch, D-latch, flip-flop, and T-flip flop 6- Understand	Logic design	1- At each to try to connect the r and the previous topics. instance, w explaining combination l circuit, the SR- la and D flip-flop mentioned. 2- Use explain the m difference betw synchronous asynchronous counters. 3- Show students the mu applications of a l design.	Formative assessment	Quizzes
						Assignments
						Projects / Lab.
						Report
					Summative assessment	Midterm Exam
						Final Exam
					Total assessment	

		counters, shift registers, analog-to-digital/digital-to-analog conversion			

95. Module 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

96. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Digital Logic Circuit analysis and Design by Victor P. Nelson, H.Troy Nagle, J. David Irwin and Bill D. Carroll.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	"Digital Logic & Computer Design by M. Morris Mano
Electronic References, Websites	

27. Expected learning outcomes of the Module (Course)

Knowledge

1. Network Fundamentals: Understand the basic components of a computer network, including hosts, routers, and communication channels.
2. data communication: Understand Effectiveness of data communication , with Data Representation.
3. Network physical Topology: Grasp the concept of how a network is laid out , either physically or logically.
4. Categories of the networks: Compare and contrast network topologies (LAN/WAN/MAN) and their use cases.
5. Transmission Media: Understand why are important ,and how signals can move across different environment .
6. OSI Model: Familiarize with The layers of the (OSI) model, understanding their functions and how they enable communication across both software and hardware components.

Skills

1. Understanding Fundamental Principles: Students will be able to identify and describe the key components of data communications, including the roles and interactions of senders, receivers, and transmission media..
2. Students will demonstrate the ability to compare and contrast different network architectures, models, and topologies, and apply this knowledge to design effective network solutions.
3. Students will be able to explain how data is represented in various formats and describe the processes involved in data transmission, including different data flow modes (simplex, half-duplex, full-duplex).
4. Students will be able to categorize and evaluate different types of transmission media (guided and unguided), articulate their applications, and assess their limitations in network communications.
5. Students will understand the concept of logical addressing in networks, specifically IPv4, and will be able to explain how addressing schemes facilitate communication between devices
6. Students will be able to identify various network devices (routers, switches, hubs) and explain their functions and roles in enabling efficient network communication.
7. Students will define subnetting and articulate its importance in network organization and management, demonstrating the ability to perform basic subnetting calculations.
8. Students will become familiar with essential networking protocols, explaining their functions and demonstrating understanding of how these protocols enable communication across different systems and devices.

Values

The main values of the course are:

1. Understanding Data Communication Systems: Learn the fundamental components (message, sender, receiver, medium, protocol) and how reliable, accurate, and timely data transfer is achieved.
2. Knowledge of Protocols, Standards, and Models: Understand international standards (ISO, IEEE, ITU-T, etc.) and the OSI model layers that ensure interoperability across devices and networks.
3. Mastery of Transmission Methods and Media: Gain insights into different transmission modes (siplex, half-duplex, full-duplex), guided media (UTP, coaxial, fiber optic), and unguided media (radio, microwave, satellite).
4. Design and Evaluation of Networks: Learn about network topologies (mesh, star, bus, ring, tree, hybrid) and evaluation criteria (performance, reliability, scalability, stability, and security).
5. Familiarity with Networking Devices and Architectures: Develop practical knowledge of devices (hubs, switches, routers, gateways, NICs) and architectures (client-server vs. peer-to-peer) that form the backbone of modern networks.

7. **Teaching and Learning Strategies**

1- At each topic, try to connect the next and the previous topics. For instance, when explaining the subnetting concept, the basic principles of IP addressing is mentioned as the basic unit.

2- Assign students to work in teams to design and implement a small-scale network. This fosters collaboration and practical application of theoretical concepts.

3- Show the students how can create an engaging and comprehensive learning environment that effectively covers the essential aspects of network protocols, preparing students for practical applications in real-world networking scenarios.

8. valuation methods

Weekly, monthly, and daily examinations, in addition to the final year exam

9. **The most important sources of information about the program**

1. " TCP/IP Protocol Suite " Fourth Edition, by Behrouz A. forouzan
   This book will teach you how to design a network and is a great resource for both beginners and experienced developers.
2. "Data Communications AND Networking", Fifth Edition By Behrouz A. Forouzan

Course Description Form

97. Module Name:

Fundamentals of networking	
98. Module Code:	
NVITNW1212	
99. Semester / Year:	
Semester 2 /2024-2025	
100. Description Preparation Date:	
1-9-2025	
101. Available Attendance Forms:	
102. Number of Credit Hours (Total) / Number of Units (Total)	
4	
103. Module's administrator's (mention all, if more than one name)	
Name: MS.c. Ali Khairi Altoohafi Email: ali.altoohafi@uoninevah.edu.iq	
104. Module's Objectives	
Module's Objectives	• Understanding Fundamental Concepts of network protocols which contains: • Understand the fundamental principles of the basic components of data communications, including the roles of senders, receivers, and transmission media. • Learn about various network architectures, models, and topologies to facilitate effective design and implementation of networks. • Learn about how data is represented and transmitted over networks, including different data flow modes and encoding schemes • Understand different types of transmission media, both guided and unguided, and understand their applications and limitations in network communications. • Understand the significance of logical addressing in networks, including IPv4. • Identify and understand the purpose of various network devices, including routers, switches, and hubs, and their roles in facilitating network communication. • Familiarize with essential networking protocols, understanding their functions and how they enable communication across diverse systems and devices.
105. Teaching and Learning Strategies	
Strategy	1- At each topic, try to connect the next and the previous topics. For instance, when explaining the subnetting concept, the basic principles of IP addressing is mentioned as the basic unit. 2- Assign students to work in teams to design and implement a small-scale network. This fosters collaboration and practical application of theoretical concepts. 3- Show the students how can create an engaging and comprehensive learning environment that effectively covers the essential aspects of network protocols, preparing students for practical applications in real-world networking scenarios.
106. Module Structure	

Week	Material Covered
Week 1	Introduction to data communications (components, data representation, data flow).
Week 2	Networks : Network criteria, ,Network Topology
Week 3	Network models: Physical structure
Week 4	An Overview of Layard tasks
Week 5	OSI MODEL, TCP Model
Week 6	Transmission Media (guided media (twisted pair, coaxial cable, fiber optical cab (Unguided Media (Radio Waves, Microwaves, Infrared)).
Week 7	Network devices.
Week 8	**Mid-term Exam**
Week 9	An Overview of Network Layer
Week 10	Logical addressing (Address space, IPV4 Addressing).
Week 11	An Overview of subnetting
Week 12	Protocols (ARP,ICMP)
Week 13	FTP, UDP,TCP
Week 14	HTTP, DNS,DHCP
Week 15	**Final Exam**

107. Module Evaluation

1. Coursework (50 points):

Midterm Exam (20 points): Covers topics taught in the first half of the course, usually conducted in Week 9.

Assignments and Quizzes (20 points): Distributed throughout the semester to assess students' application of theoretical concepts.

Projects (10 points): Evaluates students' Projects and their ability to apply what they have learned practically.

2. Final Exam (50 points):

Covers all course topics from Week 1 to the last week.

Aims to assess students' comprehensive understanding of both theoretical and practical aspects of the course.

108. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. " TCP/IP Protocol Suite " Fourth Edition, by Behrouz

	A. Forouzan - This book will teach you how to design a network and is a great resource for both beginners and experienced developers
Main references (sources)	
Recommended books and references (scientific journals, reports...)	"Data Communications AND Networking", FIFTH EDITION By Behrouz A. Forouzan
Electronic References, Websites	

ADVANCED STATISTICAL SOFTWARE

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.

28. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	• Understand the concepts of spreadsheets and data organization. • Recognize the different functions, formulas, and tools available in Excel.
Skills	
Learning Outcomes 2	• Apply Excel functions to solve computational and statistical problems.
Learning Outcomes 3	• Create professional tables, charts, and pivot tables for data presentation.
Values	
Learning Outcomes 4	• Demonstrate accuracy, responsibility, and integrity in handling data and reports.
Learning Outcomes 5	• Apply Excel skills in teamwork and project-based activities with professional ethics.

29. Teaching and Learning Strategies
• Interactive lectures supported by live demonstrations. • Hands-on lab exercises and tutorials. • Problem-solving and case studies based on real-life scenarios. • Group projects and collaborative learning. • Online resources and self-learning assignments.

30. Evaluation methods
Evaluation methods are implemented at all stages of the course and include quizzes, assignments, class participation, projects, and final examinations.

31. The most important sources of information about the program
The most important sources include textbooks, lecture notes, online tutorials, Microsoft Excel official documentation, and recommended academic references.

Course Description Form

109. Module Name: Dr. Huda Khaleel Mohammed
110. Module Code: NVIT1219
111. Semester / Year: 2nd Semester / 2024-2025

112. Description Preparation Date: 15-08-2025

113. Available Attendance Forms: Bologna Information System

114. Number of Credit Hours (Total) / Number of Units (Total)

115. Module's administrator's (mention all, if more than one name)

Name: Huda Khaleel Mohammed
Email: huda.mohammed@uoninevah.edu.iq

116. Module's Objectives

Module's Objectives	• **To introduce students to the fundamental concepts of spreadsheets and data management.** • **To develop practical skills in using Excel formulas, functions, and tools for problem solving.** • **To enhance students' ability to analyze, visualize, and present data effectively.** • **To prepare students to apply Excel in academic, business, and professional contexts**

117. Teaching and Learning Strategies

Strategy	• Interactive lectures supported by demonstratio • Hands-on lab sessions with practical exercis • Problem-solving activities and case studi • Group projects and collaborative learni • Use of online resources and self-directed practice.

118. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understand Excel interface and basics	Introduction to Excel & Ribbon	Lecture + Lab	Participation
2	3	Enter and format data correctly	Data Entry, Editing & Formatting	Lab	Assignment

3	3	Apply simple formulas	Basic Formulas & Functions	Lab	Quiz
4	3	Use advanced functions	Logical& Statistical Functions	Lab	Assignment
5	3	Create charts	Data Visualization with Charts	Lecture + Lab	Quiz
6	3	Manage large data sets	Sorting & Filtering	Lab	Assignment
7	3	Apply validation rules	Data Validation & Conditional Formatting	Lab	Quiz
8	3	Summarize data	Pivot Tables	Lab	Assignment
9	3	Visualize summaries	Pivot Charts & Dashboards	Lab	Quiz
10	3	Analyze scenarios	What-If Analysis Tools	Lecture + Lab	Assignment
11	3	Automate tasks	Introduction to Macros	Lab	Quiz
12	3	Apply Excel in real cases	Case Studies & Applications	Group Work	Project Task
13	3	Develop reporting skills	Creating Professional Reports	Lab	Assignment
14	3	Review and practice	Comprehensive Problem Solving	Discussion + Lab	Quiz + Participation
15	3	Demonstrate learning	Final Project Presentation & Exam Preparation	Presentation + Discussion	Final Project + Exam

119. Module Evaluation

- 40 Marks: Semester work (Quizzes, Assignments, Participation, Projects).
- 60 Marks: Final Exam.

120. Learning and Teaching Resources	
Required textbooks (curricu books, if any)	Microsoft Excel Step by Step, Microsoft Press
Main references (sources)	Excel 2021 Bible, Wiley
Recommended books and references (scientific journals, reports…)	• Data Analysis with Microsoft Excel, Cengage Learning. Journal articles and online tutorials for Excel applications. **Electr**
Electronic References, Websites	• https://support.microsoft.com/excel • https://exceljet.net

ENGLISH LANGUAGE-1

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

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

1. Teaching Institution	Ministry of Higher Education and Scientific Research / Nineveh University
2. University Department/Centre	
3. Course title/code	English Language / First Stage
4. Name(s) of lecturer(s)	
5. Modes of Attendance offered	(2) hours weekly
6. Semester/Year	2024 - 2025
7. Number of hours tuition (total)	60 hours
8. Date of production/revision of this specification	01 / 08 / 2025

9. Aims of the Course

1. Providing knowledge of English grammar for students
2. Increase students' English vocabulary
3. Develop students' abilities in listening, speaking, reading and writing skills in English language.
4. Make students of scientific specializations value the importance of the English language and its role in science and technology

10· Learning Outcomes, Teaching ,Learning and Assessment Method

Knowledge and Understanding–A A1. Introducing English language and some vocabularies, sentences and expressions. A2. Understanding the basic rules of the English language. A3. Understanding the meanings of vocabularies and their meaning in English language correctly. A4. Increasing students' ability in forming and answering questions. A5. The ability to practice the English language in their daily and scientific lives. A6.
B. Subject-specific skills B1. Make students acquire the basic skills of English grammar B2. Develop listening and speaking skills. B3. Develop reading and writing skills. B4. Develop the skill of answering questions.
Teaching and Learning Methods
Lecture, discussion, giving examples, gather information from online websites, illustrations and direct presentations from the lecturer.
Assessment methods
Monthly exams, extra-curricular assignments and daily student activities (daily assignments and participation)
C. Thinking Skills C1. Collaboration among students C2. Sharing information C3. Increase self-confidence C4.
Teaching and Learning Methods
Using multimedia technology (aural and visual), curricula and extra-curricular assignments Practical application of basic skills in English grammar Do group assignments
Assessment methods

- Daily and monthly exams
- Extra-curricular activities
- Assignments for students set by the instructor.

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

D1. Benefit from the scientific department program.

D2. Introducing the means of presentation (audio-visual) in English language

D3. Make the students acquire the basic skills of English language.

D4.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1 - 4	8	Giving the student an introduction to auxiliary verbs, behavior and social relations, such as greetings, Introduction, and the names of countries, capitals, and cities.	Unit One: Hello + Unit Two: Your world	Theoretical lecturing, cooperative learning, discussion	Theoretical exams and assignments
5 – 8	8	students learn some basic concepts such as individual personal information, job titles - indefinites, definitions, possessive adjectives, and how to formulate questions and	Unit Three: All about you + Unit Four: Family and friends	=	=

		negations			
9 – 12	8	The student learns to use vocabularies of games, food and drink / the simple present tense / articles - Vocabularies of time / negation and interrogation with the simple present tense	Unit Five: The way I live + Unit Six: Every day	=	=
13 - 14	4	The student learns to use the pronouns "possession" and to formulate questions – Reviewing previous units	Unit Seven: My favourites + Review of previous units	=	=
15					Exam
16 – 17	4	vocabularies of rooms and furniture / prepositions	Unit Eight: Where I live	Theoretical lecturing, cooperative learning, discussion	Theoretical exams and assignments
18 – 21	8	To learn how to start conversations / time expressions / simple past tense - adverbs	Unit Nine: Times past + Unit Ten: We had a great time!	=	=
22 - 25	8	The student learns to show ability, inability, adverbs/request and offer/ preferences	Unit Eleven: I can do that! + Unit Twelve: Please and thank you	=	=
26 - 29	8	The use of the simple present tense with the present continuous tense in affirmative, negation and interrogation / using the present continuous tense to denote the future tense / reviewing the present, past and future tenses	Unit Thirteen: Here and now + Unit Fourteen: It's Time to go!	=	=

30					Exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	New Headway Plus (Beginner), John and Liz Soars, Oxford (Student's Book).
Special requirements (include for example workshops, periodicals, IT software, websites)	New Headway Plus (Beginner), John and Liz Soars, Oxford (Student's Book). New Headway Plus (Beginner), John and Liz Soars, Oxford (Workbook). https://elt.oup.com/student/headway/?cc=global&selLanguage=en
Community-based facilities (include for example, guest Lectures , internship , field studies)	Textbooks approved by the scientific committee and reports that match the curriculum terms.

13. Admissions	
Pre-requisites	Based on the central registration mechanism
Minimum number of students	According to suggested central acceptance plan
Maximum number of students	According to suggested central acceptance plan

LEVEL-2
SEMESTER-1
DATA STRUCTURE AND ALGORITHMS

Course Description Form

121. Course Name:
Data Structures and Algorithms |
122. Course Code:
CIT2302
123. Semester / Year:

First Semester / 2025-2026

124. Description Preparation Date:

8/6/2025

125. Available Attendance Forms:

In-person

126. Number of Credit Hours (Total) / Number of Units (Total)

175/7

127. Course administrator's name (mention all, if more than one name)

Name: Zaid Jasim Mohammed
Email: zaid.jasim@uoninevah.edu.iq

128. Course Objectives

Course Objectives	• To introduce data abstraction and data representation in memory. • To describe, design and use of elementary data structures such as stack, queue, linked list, tree and graph. • To understand fundamental algorithms like sorting searching, and hashing. • To develop problem-solving skills by applying data structures and algorithms to solve real-world problems. • To Foster an understanding of algorithmic thinking and its importance in developing efficient and scalable solutions. • To introduce algorithms and their complexity.

129. Teaching and Learning Strategies

Strategy	1. Lectures: In-depth presentations by the instructor to introduce new concepts, explain algorithms, and discuss their applications. 2. Practical Sessions: Hands-on programming exercises and coding assignments to reinforce theoretical knowledge and develop practical programming skills. 3. Group Projects: Collaborative projects where students work in teams to design and implement data structures and algorithms to solve real-world problems. 4. Code Reviews and Feedback: Regular code reviews and feedback sessions to improve students' coding style, efficiency, and algorithmic design. 5. Self-Study: Encouraging students to engage in independent learning by exploring additional resources, textbooks, and research papers to further enhance their understanding of data structures and algorithms.

130. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2 theoretic + 2 practical	Understand the role of data structures and algorithms	Introduction to Data Structures & Algorithms	Learning Method	Lab Exercise
2	2 theoretic + 2 practical	Implement and apply stack operations and expression conversion using stacks	- Basic Concept of Stack - Conversion from infix to postfix/prefix expression	Lecture + Lab + Self-study	Quiz + Lab Assignment
3	2 theoretic + 2 practical	Demonstrate understanding and application of queue types and operations	- Basic Concept of Queue - Linear Queue, Circular Queue, Priority Queue, Queue Applications	Lecture + Lab + Practice Exercises	Lab Assignment
4	2 theoretic + 2 practical	Explain recursion and implement recursive solutions	- Principle of Recursion - Factorial, Fibonacci Sequence - Applications and Efficiency of Recursion	Lecture + Lab + Practice Exercises	Lab Assignment
5	2 theoretic + 2 practical	Differentiate between types of linked lists and their applications	- Basic Concepts of List - Types of Linked List	Lecture + Lab + Practice Exercises	Quiz + Homework + Lab Task
6	2 theoretic + 2 practical	Implement insertion and deletion in linked lists, including stack/queue representation	- Basic operations in Linked List - Stack and Queue as Linked List	Lecture + Lab + Guided Implementation	Homework + Lab Task
7	2 theoretic + 2 practical	Assess knowledge and problem-solving skills acquired in weeks 1-6	Mid-term Exam	Lecture + Lab + Guided Implementation	Mid-term Exam
8	2 theoretic + 2 practical	Apply and compare basic sorting algorithms	- Introduction and Types of sorting - Comparison Sorting Algorithms: Bubble, Selection and Insertion Sort, Shell Sort	Exam	Lab Task + Homework
9	2 theoretic + 2 practical	Implement divide-and-conquer sorting methods and analyze performance	- Divide and Conquer Sorting: Merge, Quick and Heap Sort - Efficiency of Sorting Algorithms	Lecture + Lab + Code Reviews	Lab Task + Homework
10	2 theoretic + 2 practical	Apply linear search and analyze time complexity	Searching - Linear search algorithm - Time complexity analysis of linear search	Lecture + Lab + Code Reviews	Lab Task + Quiz
11	2 theoretic + 2 practical	Implement binary search and compare it to linear search	Searching Continued.. - binary search algorithm - Time complexity analysis of binary search	Lecture + Lab + Practice Analysis	Lab Task + Quiz
12	2 theoretic + 2 practical	Understand and implement hashing methods and collision resolution techniques	Hashing - Hash Function and Hash Tables, Collision Resolution Techniques	Lecture + Lab + Practice Analysis	Lab Exercise + Homework

13	2 theoretic + 2 practical	Construct and manipulate binary search trees	Trees - Concept and Definitions, Basic Operations in Binary Tree, Tree Height, Level, and Depth - Binary Search Tree, Insertion, Deletion, Traversals, Search in BST	Lecture + Lab + Coding Exercise	Lab Task + Seminar Discussion
14	2 theoretic + 2 practical	Apply graph traversal and MST algorithms	Graphs - Definition and Representation of Graphs, Graph Traversal, Minimum Spanning Trees: Kruskal and Prims Algorithm.	Lecture + Lab + Project Work	Lab Task + Seminar Discussion
15	2 theoretic + 2 practical	Implement Dijkstra's algorithm for shortest path	Graphs Continued.. - Shortest Path Algorithms: Dijksrtra Algorithm	Lecture + Lab + Project Work	Lab Task + Seminar Discussion

131. Course Evaluation

10 % Quizzes (3-4 quizzes)
10% Homework
10% Lab
10% Seminar
10% Mid Term
50% Final Exam

132. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Cormen et al. Introduction to Algorithms, 3rd edition, MIT Press, 2009.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Michael T. Goodrich et.al. Data Structures and Algorithms in Python 1st Edition
Electronic References, Websites	

DATA COMMUNICATIONS AND NETWORK

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.

32. Expected learning outcomes of the Module (Course)
Knowledge
Students in the Data Communications and Networking course are expected to gain a comprehensive understanding of basic networking concepts, including network models and basic communication protocols. They will also learn how to design and manage networks using Packet Tracer, and will learn about networking applications in various environments and their impact on business.
Skills
Students will develop practical skills in network design and network performance analysis using advanced tools and techniques using Packet Tracer. They will learn how to conduct network tests and manage IP addresses, and they will enhance their teamwork skills through collaborative projects, which will help improve their problem-solving abilities.
Values
Students will learn the importance of security and privacy in data communications, fostering a commitment to ethical work practices. They will deepen their understanding of the importance of collaboration and effective communication as core values in teamwork environments. They will also gain an appreciation for the continuous advancement of technology and the importance of adapting to rapid changes in the networking landscape.

33. Teaching and Learning Strategies
Teaching and learning strategies and methods adopted in the implementation of the program in general.
34. Evaluation methods
Implemented at all stages of the program in general.

35. The most important sources of information about the program
State briefly the sources of information about the program.

Course Description Form

133. Module Name:
Data communication & networking
134. Module Code:
NETW2301
135. Semester / Year:
First/ 2024

136. Description Preparation Date:
30-7-2025
137. Available Attendance Forms:
In-person - theoretical classroom lectures and practical lectures in the laboratory
138. Number of Credit Hours (Total) / Number of Units (Total)
5/7
139. Module's administrator's (mention all, if more than one name)
Name: Zainab Salim Abed Email: Zainab.abd@uoninevah.edu.iq
140. Module's Objectives
Module's Objectives: Upon successful completion of this course, students are expected to understand networking concepts and grasp the fundamental concepts of communications networks, including the different types of networks and their components. They are also expected understand network models and analyze basic network models such as the OSI model and the TCP/IP model, and understand how each layer operates and its impact on communication. Students are also expected to be able to evaluate network performance using measurement and analysis tools, such as ping and traceroute using Cisco Packet Tracer. Finally, students are expected to have a grasp of the fundamental aspects of network design and management, which will prepare them for advanced study or practical work in this field.
141. Teaching and Learning Strategies
Strategy: The main strategy is to promote active learning through interactive activities and practical projects that encourage critical thinking. Technology and educational tools will be integrated to enhance practical understanding, while collaborative learning sessions will be organized to facilitate knowledge exchange among students. Continuous assessment will be implemented, providing personalized feedback to improve performance. Finally, specialists will be invited to conduct lectures, enriching the learning experience and offering practical insights.

142. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Be able to understand the network Basics	Introduction to Networks and a Lab on Cabling and	Theoretical+Tutorial +Practical	H.W

			Inspection Methods		
2	5	Be able to understand th Transmission media	Transmission media and its characteristics	Theoretical+Tutorial +Practical	Practical lab
3	5	Be able to understand Type transmission medium	Types of transmission medium (copper, optical, wireless), connectors, cabling.	Theoretical+Tutorial +Practical	Quiz
4	5	Be able to understand netw types	Network types network (L MAN, WAN)	Theoretical+Tutorial +Practical	Seminar
5	5	Be able to understand netw architecture	Network architectures (Server-Based Peer-to-Peer).	Theoretical+Tutorial +Practical	Report
6	5	Be able to understand netw topology	Network Topologies concept Collision Broadcast Dom	Theoretical+Tutorial +Practical	H.W
7	5	Be able to understand netw devices	Connecting Devices (H Repeater, Swi Bridge, Rou Gateway)	Theoretical+Tutorial +Practical	Quiz
8	5	Assessment	**Mid-term Exa**	Class+ LAB	Test
9	5	Be able to understand netw models	An Overview the OSI TCP/IP Models	Theoretical+Tutorial +Practical	Seminar
10	5	Be able to understand address	IP address types of address	Theoretical+Tutorial +Practical	Practical lab
11	5	Be able to understand netw subnetting	Subnetting	Theoretical+Tutorial +Practical	H.W
12	5	Be able to understand addresses types	Calculating Network, H broadcast addre :Tutorial	Theoretical+Tutorial +Practical	Quiz
13	5	Be able to understand Ethernet	Ethernet	Theoretical+Tutorial +Practical	H.W
14	5	Be able to understand	Switching	Theoretical+Tutorial +Practical	Practical lab

		switching			
15	5	Assessment	Final Exam	Class+ LAB	Test

143. Module Evaluation	
Assessment Method:	Grade
Assignments:	10
Two monthly exams:	20
Seminars:	5
Reports:	5
Midterm exam:	10
Final exam:	50
Total	100

144. Learning and Teaching Resources	
Required textbooks (curricular books, if any):	TCP/IP Protocol Suite " Fourth Edition, Behrouz A. forouzan

OBJECT ORIENTED PROGRAMMING

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.

36. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Demonstrate a solid understanding of object-oriented programming principles (encapsulation, inheritance, polymorphism, abstraction) and their implementation in Java.
Skills	
Learning Outcomes 2	Design and develop Java programs using classes, objects, interfaces, and packages to solve real-world problems.
Learning Outcomes 3	Apply problem-solving strategies, debugging techniques, and unit testing to ensure software reliability and maintainability.
Values	
Learning Outcomes 4	Show commitment to continuous learning by exploring advanced Java features and emerging software development practices.
Learning Outcomes 5	Exhibit ethical and professional responsibility in software development, including proper code documentation and adherence to coding standards.

37. Teaching and Learning Strategies
• **Lectures and Presentations** – Deliver theoretical concepts of object-oriented programming and Java syntax using visual aids, examples, and live coding demonstrations. • **Hands-On Programming Exercises** – Engage students in coding labs where they apply concepts by writing, compiling, and debugging Java programs. • **Peer Review and Code Critique** – Encourage students to review each other's code to improve quality, readability, and adherence to best practices.

38. Evaluation methods

• **Diagnostic Assessment (Beginning of the Course):** Short quizzes or baseline coding exercises to evaluate students' prior programming knowledge and identify learning gaps.
• **Formative Assessment (Throughout the Course)**
  o Weekly lab exercises and assignments to monitor progress and provide continuous feedback.
  o In-class problem-solving and coding challenges to assess understanding of new topics.
• **Summative Assessment (End of the Course)**
  o Midterm and final written exams cover theoretical OOP concepts and Java syntax.
  o Final programming project requires design, implementation, documentation, and presentation of a complete Java application.

39. The most important sources of information about the program
• **Primary Textbook** • **Online Learning Platforms** • **Instructor–Prepared Materials**

Course Description Form

145. Module Name:
Object oriented programming
146. Module Code:
NVIT2304

147. Semester / Year:
2025-2026
148. Description Preparation Date:
11/08/2025
149. Available Attendance Forms:
Polonia build-in Attendance Forms
150. Number of Credit Hours (Total) / Number of Units (Total)
151. Module's administrator's (mention all, if more than one name)
Name: Dr Ali H. Al-shakrchi Email: ali.al-shakarchi@uoninevah.edu.iq
152. Module's Objectives

Module's Objectives	• Understand the Basics of Java • Object-Oriented Programming Concepts • Develop Problem-Solving Skills with Java • Work with Java Classes and Objects • Explore Advanced OOP Features • Understand Java's Core Libraries and APIs

153. Teaching and Learning Strategies	
Strategy	1-Start with Object - Encapsulation by creating classes with private fields and public getters/setters. 2-Move to Inheritance by extending classes and reusing code. 3-Practice Polymorphism with method overloading and overriding. 4-Understand Abstraction by working with abstract classes and interfaces.

154. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understand the concept of OOP and advantages Over procedural programming	Introduction to OOP	Lecture, discussion	Class participation
2	4	Identify and explain the basic concepts of OOP (class, object, encapsulation, inheritance, polymorphis	Basic Concepts of OOP Programming	Lecture, examples	Short quiz

3	4	Recognize Java's structure, syntax, and environment setup	Java Programm Language	Lecture, live coding	Practical exercise
4	4	Apply arithmetic, relatio and logical operators in Java programs	Operators in Java	Lecture, coding prac	Lab assignment
5	4	Use Java's basic data types and manage variable scope	Basic Data Types in Java + Variable Scope	Lecture, hands-on lab	Lab exercise
6	4	Implement decision-mal with if and if-else statem	Select Statement (IF, IF-else)	Lecture, coding practice	Quiz
7	4	Implement decision-mal with switch-case iteration using while, while, and for loops	Switch-Case + Looping Statements	Lecture, coding practice	Lab assignment
8	4	Assess knowledge of weeks 1–7 content	Mid-Term Exam	Written and practical exam	Mid-term exam
9	4	Define and call methods, pass parameters, and re values	Methods in Java	Lecture, coding practice	Lab exercise
10	4	Create and use classes objects, apply data hiding	Class & Object Overv + Data Hiding	Lecture, examples, lab	Lab project
11	4	Apply construct constructor overloading, static meth and static fields	Constructors + St Members	Lecture, coding practice	Assignment
12	4	Implement inheritance Java	Inheritance in OOP	Lecture, examples, lab	Lab exercise
13	4	Apply method overloa and overriding polymorphism	Polymorphism in OOP	Lecture, coding prac	Lab assignment
14	4	Use final methods, prote members, abstract classes, and abst methods	Advanced OOP Concep	Lecture, examples, l	Quiz
15	4	Implement and use interfaces in Java	Interface	Lecture, coding prac	Final project submission

155. Module Evaluation

Formative assessment	Quizzes	2	10% (10)
	Assignments	2	10% (10)
	Projects / Lab. Report	2	20%(20)
Summative assessment	Midterm Exam	2hr	10% (10)
	Final Exam	3hr	50% (50)

156. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Wu, C. T. (2006). An introduction to object-oriented programming with Java. Tata McGraw-Hill Publishing Company Limited.

Main references (sources)	**Instructor-Prepared Materials**: Lecture slides, coding examples, lab guides, and practice problems provided through the course
Recommended books and references (scientific journals, reports…)	Effective Java by Joshua Bloch.
Electronic References, Websites	Oracle Java Tutorials. w3schools Java Tutorial. GeeksforGeeks Java Programming section.

HUMAN RIGHTS AND DEMOCRACY

Note

Learning outcomes:A consistent set of knowledge, skills, and values acquired by the student after successfully completing the academic program. The learning outcomes for each course must be defined in a manner that achieves the program's objectives.

Teaching and learning strategies: They are the strategies used by faculty members to develop student teaching and learning. They are plans followed to achieve learning objectives. They describe all classroom and extracurricular activities to achieve the program's learning outcomes.

8. **Expected learning outcomes For the rapporteur**	
knowledge	
1.Understanding basic concepts: defining and explaining concepts such as: human rights, democracy, citizenship, rule of law, good governance, civil society, and accountability. 2. Trace the historical development: Narrate the historical development of the idea of human rights, from ancient laws to the Universal Declaration of Human Rights (1948) and subsequent international covenants. 3. Generational distinction and divisions: distinguishing between categories of human rights (civil, political, economic, social, cultural) and generational rights (first, second, third generation). 4. Knowledge of legal frameworks: Identify international, regional and national mechanisms for the protection of human rights (e.g., the United Nations, the International Criminal Court, the Office of the High Commissioner for Human Rights, and regional organizations such as the Council of Europe and the African Union). 5. Analysis of governance systems: Comparing models of democratic systems (presidential, parliamentary, semi-presidential) and their basic principles (separation of powers, peaceful transfer of power, free and fair elections). 6. Linking concepts: Understanding the complementary relationship between democracy, human rights, and the rule of law, and how one reinforces the other.	First: Cognitive outcomes (knowledge and understanding)
Skills	
1. Analyzing Contemporary Issues: Applying theoretical frameworks of human rights and democracy to analyze and critique contemporary local, regional, and global issues (e.g., freedom of expression, discrimination, poverty, armed conflicts, elections). 2. Policy Evaluation: Evaluating national policies and laws in light of international human rights standards and democratic principles. 3. Defending Cases: Formulating coherent and evidence-based arguments to defend human rights and democracy issues in various debate contexts. 4. Reading legal documents: Interpreting the provisions of the main international human rights documents (such as the Universal Declaration, the two international covenants) and applying them to hypothetical or real-life situations. 5. Research skills: Conduct primary research on human rights violations or democratic election procedures using reliable sources.	Skill outputs (application and analysis)

values	
1.Promoting the values of tolerance and pluralism: respecting cultural, religious, and ethnic diversity, and rejecting hate speech and discrimination in all its forms. 2. Adopting a culture of active citizenship: developing a strong sense of civic responsibility and a willingness to participate positively in public life and defend rights peacefully. 3.Strengthening the ethical stance: Forming an ethical stance that rejects injustice and tyranny, and advocates for transparency, integrity, and participation in decision-making. 4Valuing Peace: Understanding the essential relationship between human rights, democracy, and achieving sustainable peace and development.	Affective outputs (values and attitudes)

9. Teaching and learning strategies

1- Explaining the scientific material to students in detail.

2- Student participation inintellectual discussions and concepts

3-Encourage dialogue

10. Evaluation methods

Daily, semester, and end-of-semester exams, homework, classwork, and report preparation.

11. Learning resources

1- Human Rights Professor Dr. Hamid Hanoun Khaled

2- International Humanitarian Law, Professor Dr. Ali Zalan Nehme and others.

3- Principles of Constitutional Law and the Development of the Political System in Iraq, Professor Dr. Hamid Hanoun Khalid

Course Description Form

25. Name of the material
Human rights and democracy

26. Material symbol
27. Academic year/semester
2025/2026
28. Description preparation date
29. Attendance forms used
30. Total units of matter
31. Subject Matter Responsible (More than one person may be mentioned)
Name: M.M. Omar Wameed Ramzi Email:omar.wameedh@uoninevah.edu.iraq
32. Course objectives

• Learn the basic principles of human rights and democracy. • Enabling the student to formulate arguments and form his opinion • Promoting values	**Goals**

33. Learning and teaching strategies	
• Tests and duties • Discussions and dialogues	Strategies

34. Structure of the material

Evaluation method	Teaching method	Topic name	Learning outcomes	Number of hours	week
a test	theoretical	The concept of human rights	The concept of right	2	1
a test	theoretical	The concept of human rights	The concept of man	2	2
a test	theoretical	Generations of Human Rights	First generation human rights	2	3

a test	theoretical	Generations of Human Rights	Second Generation human rights	2	4
a test	theoretical	Generations of Human Rights	Solidarity human rights	2	5
a test	theoretical	Human rights sources	Conventional legal rules international custo	2	6
a test	theoretical	Human rights guarantees and protection	National, international regional human ri guarantees	2	7
Homework	theoretical	Human rights and international humanita law	Human rights and international humanitarian law	2	8
Classwork	theoretical	Human Rights in the Constitution of the Republic of Iraq of 2005	Models of civil and political rights, models economic, social and cult rights	2	9
a test	theoretical	The concept of democracy	Definition democracy and types	2	10
a test	theoretical	Types of democracy	Direct and semi-direct democracy	2	11
a test	theoretical	Types of democracy	indirect democracy	2	12
a test	theoretical	The concept of political democracy	Foundations political democracy	2	13
a test	theoretical	Presidential and parliamentary system	Characteristics of presidential system	2	14
a test	theoretical	Presidential and parliamentary system	Characteristics of parliamentary system	2	15

35. General evaluation method

Fifty marks for the final exam, ten marks for the semester exam, twenty marks for daily exams, ten marks for preparing a report on one of the course topics, and ten marks for homework and classwork.

36. Teaching and learning resources

Textbooks mentioned above on the subject of human rights	Textbooks (if any)

and democracy	
The Iraqi Constitution, the United Nations Charter, and other sources of human rights and democracy	Primary sources
	Recommended books and scientific articles
	Electronic resources such as websites

DATA BASE SYSTEMS

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.

1. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Understand core concepts of modern database systems. -**Statement**: Students will be able to explain the fundamental principles of database management.
Skills	
Learning Outcomes 2	Apply database normalization and design principles.-**Statement**: Students will demonstrate the ability to design efficient databases using normalization techniques.
Learning Outcomes 3	Use SQL for data definition (DDL) and data manipulation (DML). **Statement**: Students will be proficient in writing SQL queries for various data operations.
Values	
Learning Outcomes 4	Implement database security, access control, and authorization.-**Statement**: Students will understand the importance of data privacy and security measures in database management.
Learning Outcomes 5	Differentiate between NoSQL databases and relational systems.-**Statement**: Students will be able to evaluate the advantages and disadvantages of different database types.

2. Teaching and Learning Strategies
Interactive lectures, hands-on labs, group discussions, case studies, assignments, and projects will be utilized to achieve the learning outcomes.

3. Evaluation methods
Various evaluation methods, including quizzes, lab assignments, and exams, will assess the students' understanding and skills throughout the course.

4. The most important sources of information about the program
• **Required Textbook:** *Database System Concepts*, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, 7th Edition, McGraw-Hill, ISBN 978-0078022159. • **Main References:** Standard and widely recognized textbooks in the field of database systems. • **Recommended References:** *Database Illuminated*, Catherine M. Ricardo & Susan D. Urban, 3rd Edition, Jones & Bartlett Learning, along with selected

scientific journals and technical reports.

- **Electronic Resources:** Reliable academic websites, online libraries, and specialized database resources.

Course Description Form

1. Module Name:

Data Base Systems

2. Module Code:

CIT2306

3. Semester / Year:

First Semester / Second 2025−2026

4. Description Preparation Date:

9/6/2025

5. Available Attendance Forms:

In-person

6. Number of Credit Hours (Total) / Number of Units (Total)

175/7

7. Module's administrator's (mention all, if more than one name)

Name: Fahad Ahmed Shaban
Email: fahad.ahmed@uoninevah.edu.iq

8. Module's Objectives

1. To understand the importance of database systems and their role in managing data effectively.
2. To explore the evolution of data management systems and their impact on modern organizations.
3. To gain knowledge of different data models, including relational, hierarchical, network, and object-oriented.
4. To learn the basics of the Entity-Relationship (ER) model and how to create ER diagrams for database design.
5. To develop practical skills in SQL, including Data Definition Language (DDL) and Data Manipulation Language (DML).
6. To explore database security and authorization mechanisms to protect data from unauthorized access and ensure data privacy.

To gain an introduction to NoSQL databases and understand their characteristics, use cases, and advantages over traditional relational databases.

9. Teaching and Learning Strategies

- Strategies

1. Interactive lectures to explain key concepts.
2. Hands-on labs to develop practical skills.
3. Group discussions to encourage collaboration.
4. Case studies for real-world problem analysis.
5. Assignments to evaluate individual understanding.
6. Projects to integrate and apply knowledge.
7. Focus on critical thinking and technical enhancement.
8. Blend of theory, practice, and teamwork.

- **Module Learning Outcomes**

1- Understand core concepts of modern database systems.
2- Trace the evolution from file systems to database management systems (DBMS).
3- Identify various data models: relational, hierarchical, network, and object-oriented.
4- Understand relational model basics and map ER diagrams to relational schemas.
5- Apply database normalization and design principles.
6- Use SQL for data definition (DDL) and data manipulation (DML).
7- Implement advanced SQL features such as views and materialized views.
8- Apply indexing and query optimization techniques.
9- Manage transactions and control concurrency in multi-user environments.
10- Implement database security, access control, and authorization.
11- Understand and differentiate NoSQL databases from relational systems.

- **Indicative Contents**

1. **Overview of Database Systems**

Introduction to databases, their importance, benefits, and industry applications.

2- **Evolution of Data Management**

From file systems to DBMS, highlighting limitations and modern advancements.

3- **Data Models**

Overview of relational, hierarchical, network, and object-oriented models.

4- **Relational Model Basics**

Tables, keys, relationships, and basic relational algebra operations.

5- **Entity-Relationship (ER) Model**

ER diagrams, entities, attributes, and relationships.

6- **Database Design & Normalization**

Functional dependencies, 1NF to 4NF, and reducing redundancy.

7- **Structured Query Language (SQL)**

Introduction to SQL for defining and manipulating data.

8- **Indexing & Query Optimization**

Use of indexes (e.g., B-tree, hash) to improve performance.

9- **Transaction & Concurrency Control**

Ensuring consistency and handling simultaneous transactions.

10-**Database Security & Authorization**

Access control, authentication, encryption, and best practices.

11- **NoSQL Databases**

Types, features, and comparison with relational databases.

10. Module Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	3 theoretic	Introduction to Database Systems	• Overview of database systems and their importance • Evolution of data management systems • Data models: Relational, Hierarchical, Network, Object-Oriented Introduction to the relational model	Learning Method	Lab Exercise
2	3 theoretic	Entity-Relationship (ER) Model	• Basics of the ER model • ER diagrams and notations • Entity types, attributes, and relationships Mapping ER diagrams to relational schemas	Lecture + Lab + Self-study	Quiz + Assignment
3	3 theoretic	Relational Database Design and Normalization	• Functional dependencies and normalization concepts • Normalization process (1NF, 2NF, 3NF) • Boyce-Codd Normal Form (BCNF) Multi-valued dependencies and Fourth Normal Form (4NF)	Lecture + Lab + Practice Exercises	Lab Assignment
4	3 theoretic	Structured Query Language (SQL)	• Introduction to SQL and its role in relational databases • SQL Data Definition Language (DDL) • SQL Data Manipulation	Lecture + Lab + Practice Exercises	Lab Assignment

			Language (DML) SQL queries: SELECT, INSE UPDATE, DELETE		
5	3 theoretic	Structured Query Language (SQL) – Continued…	Querying and Filtering Data with SQL: • SELECT statement and its various clauses (e.g., FROM, WHERE, ORDER BY) • Filtering data using conditions and logical operators Sorting query results limiting the number of retur rows	Lecture + Lab + Practice Exercises	Lab Assignment
6	3 theoretic	Structured Qu Language (SQL) – Continued…	Aggregating and Grouping Data with SQL • GROUP BY clause for grouping data • Aggregate functions (e.g., COUNT, SUM, AVG, MAX, MIN) for calculating summary statistics HAVING clause for filter grouped data	Lecture + Lab + Guided Implementation	Homework + Task
7	3 theoretic	Mid-term Exam	Mid-term Exam	Lecture + Lab + Guided Implementation	Mid-term Exam
8	3 theoretic	Advanced SQL Concepts	• Creating and managing views • Updating data through views Materialized views precomputing and storing qu results	Lecture + Lab Practice Exercises	Lab Task Homework
9	3 theoretic	Indexing and Qu Optimization	• Indexes improve the speed of data retrieval. • Common index types include B-tree and hash. • Indexing reduces the	Lecture + Lab + Code Reviews	Lab Task Homework

			need for full table scans. • Query optimization selects the most efficient execution plan.		
10	3 theoretic	Transaction Management Concurrency Control	Transaction Management: • ACID (Atomicity, Consistency, Isolation, Durability) • Commit / Rollback Concurrency Control: • Prevent conflicts (dirty read, lost update) • Locking (2PL) • Timestamp ordering • MVCC	Lecture + Lab + Code Reviews	Lab Task + Quiz
11	3 theoretic	Database Secu and Authorizatio	• Importance of database security • Authentication: verifying user identity • Authorization: user roles and permissions (DAC, MAC, RBAC)	Lecture + Lab + Practice Analysis	Lab Task + Quiz
12	3 theoretic	Database Security Authorization Continued…	• Encryption: data protection • Auditing: monitoring access and activities • Best practices: least privilege, updates, backups	Lecture + Lab + Practice Analysis	Lab Exercise Homework
13	3 theoretic	Introduction NoSQL	• Definition of NoSQL: Non-relational databases • Why NoSQL? Limitations of relational databases (scalability, flexibility) • Types of NoSQL databases: Key-Value, Document, Column-Family, Graph • SQL vs NoSQL comparison	Lecture + Lab + Coding Exercise	Lab Task Seminar Discussion

14	3 theoretic	NoSQL Database Types in Detail	• Key-Value Stores (e.g., Redis, DynamoDB) • Document Stores (e.g., MongoDB, CouchDB) • Column-Family Stores (e.g., Cassandra, HBase) • Graph Databases (e.g., Neo4j) • Use cases for each type	Lecture + Lab + Project Work	Lab Task Seminar Discussion
15	3 theoretic	NoSQL Advantages, Disadvantages, Use Cases	• Advantages: • Disadvantages: • Applications: systems • Future trends in NoSQL	Lecture + Lab Project Work	Lab Task Seminar Discussion

11. Module Evaluation

10 % Quizzes (3-4 quizzes)
10% Homework
10% Lab
10% Seminar
10% Mid Term
50% Final Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any):	**Database System Concepts**, Abrah Silberschatz, Henry F. Korth, S. Sudarsh 7th Edition, McGraw-Hill / ISBN 9 0078022159
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Database Illuminated, Catherine M. Rica and Susan D. Urban, 3rd Edition, Jones Bartlett Learning
Electronic References, Websites	

HUMAN COMPUTER INTERACTION

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.

1. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Understanding the concept of interaction. Identifying the role of designers in product development. Recognizing user goals and usage goals.
Skills	
Learning Outcomes 2	Distinguishing between levels of understanding and assessing the degree of comprehension. Identifying the causes of misunderstanding and seeking to adjust the method of delivery. Active participation in discussion.
Learning Outcomes 3	
Values	
Learning Outcomes 4	**Usability Value:**
Learning Outcomes 5	**Accessibility Value:**

2. Teaching and Learning Strategies
1-Explaining the scientific material to students in detail. 2- Engaging students in solving mathematical problems. 3- Discussion and dialogue about vocabulary related to the topic.

3. Evaluation methods
Weekly, monthly, and daily exams, as well as the final year exam.

40. The most important sources of information about the program
1. Yvonne Rogers, Helen Sharp, and Jenny Preece, Interaction Design: Beyond Human-Computer Interaction, 3rd Edition,. Wiley, 2011. 2 .Alan Dix and Janet E. Finlay. Human-Computer Interaction (3rd Edition), 2002.

Course Description Form

1. Module Name:
HUMAN COMPUTER INTERACTION
2. Module Code:
3. Semester / Year:
2025-2026
4. Description Preparation Date:
10/9/2025
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
2
7. Module's administrator's (mention all, if more than one name)
Name: OMAR TAWFEEQ ABDULRAHMAN Email: omar.abdulrahman@uoninevah.edu.iq
8. Module's Objectives

Module's Objectives	**Study the concept of human-computer interaction.** **Understand what designs (products) are and recognize their importance.** **Learn how humans develop their product designs using computerized mechanisms.**

9. Teaching and Learning Strategies	
Strategy	• Delivering the lecture through in-person teaching... Using the discussion method

10. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method
	6	Comprehensic Perception Understandin	• What is Interaction Design?	Written examinatio and discussion

		Knowledge	Understanding and Conceptualizing Interaction • Cognitive Aspects • Social Interaction • Interfaces • Emotional Interaction • Data Gathering • Data Analysis, Interpretation and Presentation • The Process of Interaction Design • Establishing Requirements Design, Prototyping and Construction • Introducing Evaluation • An Evaluation Framework • Evaluation Studies: From Controlled to Natural Settings • Evaluation: Inspections, Analyti and Models	

11. Module 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)	1. Yvonne Rogers, Helen Sharp, and Jenny Preece, Interaction Design: Beyond Human-Computer Interaction, 3rd Edition,. Wiley, 2011. 2. Alan Dix and Janet E. Finlay. Human-Computer
Main references (sources)	Software Engineering Book
Recommended books and references (scientific journals, reports…)	Software Engineering: Human-Computer Interaction
Electronic References, Websites	download-pdf-ebooks.org-ku-9237.ppsx

LEVEL-2
SEMESTER-2
DATA STRUCTURE AND ALGORITHMS

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.

41. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	**Understanding Fundamental Concepts** Students will be able to define and explain the core principles of data structures and algorithms, including asymptotic notation, time, and space complexity.
Learning Outcomes 2	**Algorithm Analysis** Students will demonstrate knowledge of various sorting, searching, and advanced tree-based structures (e.g., B-Tree, B+ Tree, Trie) and compare their performance in terms of efficiency and applicability.
Skills	
Learning Outcomes 1	**Implementation Proficiency** Students will be able to implement fundamental data structures (arrays, linked lists, stacks, queues, trees, graphs) and algorithms (sorting, searching) using a programming language.
Learning Outcomes 2	**Problem-Solving and Critical Thinking** Students will analyze problems, select appropriate data structures and algorithms, and justify their choices based on efficiency, scalability, and performance.
Learning Outcomes 3	**Practical Application** Students will apply data structures and algorithmic

	principles to real-world problems, design solutions, and evaluate them through experimental results.
Values	
Learning Outcomes 1	**Ethical and Responsible Use of Technology** Students will appreciate the importance of selecting efficient algorithms for resource optimization, considering sustainability and fairness in computational tasks.
Learning Outcomes 2	**Collaboration and Lifelong Learning** Students will develop teamwork, communication, and self-learning skills by engaging in projects, assignments, and case studies, preparing them for professional and academic growth.

42. Teaching and Learning Strategies

The learning and teaching strategies for the data structures and algorithms module involve a combination of theoretical explanations, practical implementations, and active engagement. Students are introduced to the fundamental concepts, principles, and analysis techniques through clear explanations, visual aids, and examples. They are encouraged to actively participate in hands-on activities, such as coding exercises and problem-solving tasks, to reinforce their understanding and develop practical skills. Comparisons and evaluations of different algorithms and data structures are conducted to foster critical thinking and analytical abilities. Real-world applications and case studies are employed to demonstrate the relevance and practicality of the learned concepts. Overall, the module aims to provide a balanced approach that combines theoretical knowledge, practical implementation, and active engagement to facilitate effective learning and mastery of data structures and algorithms.

43. Evaluation methods

Quizzes	10% (10)
Assignments	10% (10)
Projects / Lab.	10% (10)
Report	10% (10)
Midterm Exam	10% (10)
Final Exam	50% (50)

44. The most important sources of information about the program

- Cormen et al. Introduction to Algorithms, 3rd edition, MIT Press, 2009.
- Michael T. Goodrich et.al. Data Structures and Algorithms in Python 1st Edition

Course Description Form

157. Module Name:
Data Structures and Algorithms||
158. Module Code:
CIT2402
159. Semester / Year:
Second /2024-2025
160. Description Preparation Date:
161. Available Attendance Forms:
In Person
162. Number of Credit Hours (Total) / Number of Units (Total)
175/7
163. Module's administrator's (mention all, if more than one name)
Name: Zaid Jasim Mohammed Al-Araji Email: zaid.jasim@uoninevah.edu.iq

164. Module's Objectives	
Module's Objectives	• To define and apply asymptotic notation, time, and space complexity to analyze the efficiency of algorithms. • To analyze and compare the performance of different sorting algorithms. • To compare and evaluate the time complexity and efficiency of different search techniques. • To explore the principles and implementation of B-Tree, B+ Tree, and Trie structures.

165. Teaching and Learning Strategies	
Strategy	The learning and teaching strategies for the data structures and algorithms module involve a combination of theoretical explanations, practical implementations, and active engagement. Students are introduced to the fundamental concepts, principles, and analysis techniques through clear explanations, visual aids, and examples. They are encouraged to actively participate in hands-on activities, such as coding exercises and problem-solving tasks, to reinforce their understanding and develop practical skills. Comparisons and evaluations of different algorithms and data structures are conducted to foster critical thinking and analytical abilities. Real-world applications and case studies are employed to demonstrate the relevance and practicality of the learned concepts. Overall, the module aims to provide a balanced approach that combines theoretical knowledge, practical implementation, and active engagement to facilitate effective learning and mastery of data structures and algorithms.

166. Module Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1.	2+3	Implement basic data structures such as arrays.	Arrays	Lecture + Lab exercises	Quizzes / Assignments
2.	2+3	Perform operations on basic data structures	Stacks, Queues, Linked Lists	Lecture + Coding practice	Quizzes / Lab work
3.	2+3	Implement Bubble Sort and analyze its performance on different input sizes.	Bubble Sort	Lecture + Lab implementation	Assignments
4.	2+3	Implement Bubble Sort and analyze its performance on different input sizes.	Bubble Sort (continued)	Lab + Problem-solving	Lab evaluation
5.	2+3	Implement Merge Sort and analyze its performance on different input sizes.	Merge Sort	Lecture + Lab implementation	Quizzes
6.	2+3	Implement Quick Sort and analyze its performance on different input sizes.	Quick Sort	Lecture + Lab coding	Assignments
7.	2+3	Implement Quick Sort and analyze its performance on different input sizes.	Quick Sort (continued)	Lab + Case study	Lab evaluation
8.	2+3	Implement Radix Sort and analyze its performance on different input sizes.	Radix Sort	Lecture + Lab	Midterm Exam
9.	2+3	Midterm Exam	—	Written Exam	Midterm Exam
10.	2+3	Implement External Sort and analyze its performance on different input sizes.	External Sort	Lecture + Lab	Assignments
11.	2+3	Implement External Sort and analyze its performance on different input sizes.	External Sort (continued)	Lab + Case study	Lab evaluation
12.	2+3	Write programs to demonstrate the concept of asymptotic notation	Algorithm Analysis	Lecture + Coding tasks	Quizzes

		(Big O, Big Omega, and Big Theta) for various algorithms.			
13.	2+3	Analyze the time and space complexity of different algorithms and compare their efficiency.	Complexity Analysis	Lecture + Problem-solving	Assignments
14.	2+3	Implement B-Trees and B+ Trees and perform operations like insertion, deletion, and searching.	Advanced Tree Structures	Lecture + Lab practice	Project / Report
15.	2+3	Assign a practical project	Integrated Project	Lab + Teamwork	Project Presentation + Final Exam

16. Module Evaluation

Quizzes	10% (10)
Assignments	10% (10)
Projects / Lab.	10% (10)
Report	10% (10)
Midterm Exam	10% (10)
Final Exam	50% (50)

17. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Cormen et al. Introduction to Algorithms, 3rd edition, MIT Press, 2009.
Main references (sources)	Michael T. Goodrich et.al. Data Structures and Algorithms in Python 1st Edition
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

ENGLISH LANGUAGE-2

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

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

1. Teaching Institution	Ministry of Higher Education and Scientific Research – Nineveh University
2. University Department/Centre	
3. Course title/code	English Language / Second Stage
4. Name(s) of lecturer(s)	
5. Modes of Attendance offered	(2) hours weekly
6. Semester/Year	2024 - 2025
7. Number of hours tuition (total)	60 hours
8. Date of production/revision of this specification	01 / 08 / 2025
9. Aims of the Course	
1. Providing knowledge of English grammar for students	
2. Increase students' ability to understand literary texts	

3. Develop students' abilities in listening, speaking, reading and writing skills in English language.
4. Contributing to develop students' intellectual, personal and professional awareness.
5. Develop students' positive attitudes towards learning English language.

10· Learning Outcomes, Teaching ,Learning and Assessment Method
A- Knowledge and Understanding A1. Getting the students to understand what they are reading and listening to A2. Knowing vocabulary spelling A3. Developing student's knowledge of the vocabulary and conventions of the English language A4. The ability to use English language tenses in the past, present and future A5. A6.
B. Subject-specific skills B1. Listening and taking notes of what the student understood from lectures B2. Interpretation and translation of articles attached to the curriculum B3. Qualifying and training students to use the basics of the English language B4.
Teaching and Learning Methods
Lecture, discussion, giving examples, gather information from online websites, illustrations and direct presentations from the lecturer.
Assessment methods
Monthly exams, extra-curricular assignments and daily student activities (daily assignments and participation)
C. Thinking Skills C1. Collaboration among students C2. Sharing information C3. Increase self-confidence

C4. Giving opinion and criticism
Teaching and Learning Methods
using multimedia technology (aural and visual), curricula and extra-curricular assignments Practical application of basic skills in English grammar Do group assignments
Assessment methods
• Daily and monthly exams • Extra-curricular activities • Assignments for students set by the instructor.

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Benefit from the scientific department program.
D2. introducing the means of electronic presentation (audio-visual) in English language
D3. Make the students acquire the basic skills of English language.
D4.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-4	8	Introduction to the present, past and future tenses - an explanation of the present simple and continuous tenses / review of adjectives and prepositions / describing countries	Unit One: Getting to know you + Unit Two: The way we live	Theoretical lecturing, cooperative learning, discussion	Theoretical exams and assignments
5 – 8	8	understanding the Past Simple and Past Continuous Tenses/ Nouns, Verbs and Adverbs / Negation of Words, Quantity and articles	Unit Three: It all went wrong + Unit Four: Let's go shopping !	-	-
9 – 12	8	Understanding verb forms / expressing future intentions / comparatives and superlatives / synonyms, antonyms and directions	Unit Five: What do you want to do? + Unit Six: Tell me! what's it like?	-	-
13 - 14	4	using the present perfect tense with the past simple tense / past participle of verbs	Unit Seven: Fame + preview of previous	-	-

			units		
15					Exam
16 – 17	4	obligation / job names / compound nouns	Unit Eight: Do's and don'ts	Theoretical lecturing, cooperative learning, discussion	Theoretical exams and assignments
18 – 21	8	Using conditional sentences / verb patterns / describe feelings and situations	Unit Nine: Going places + Unit Ten: Scared to death	-	-
22 - 25	8	Understanding the passive voice / second case of conditionals / phrasal verbs and congratulations	Unit Eleven: Things that changed the world + Unit Twelve: Dreams and reality	-	-
26 - 29	8	The use of the present perfect continuous / the present perfect tense with the present continuous tense / word formation / the use of the past perfect tense / reported statements / goodbyes	Unit Thirteen: Earning a living + Unit Fourteen: Family ties	-	-
Exam					30

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	New Headway Plus (Pre-intermediate), John and Liz Soars, Oxford (Student's Book).
Special requirements (include for example workshops, periodicals, IT software, websites)	New Headway Plus (Pre-intermediate), John and Liz Soars, Oxford (Student's Book). New Headway Plus (Pre-intermediate), John and Liz Soars, Oxford (Workbook). https://elt.oup.com/student/headway/?cc=global&selLanguage=en
Community-based facilities (include for example, guest Lectures , internship , field studies)	Textbooks approved by the scientific committee and reports that match the curriculum terms.

13. Admissions	
Pre-requisites	Based on the central registration mechanism
Minimum number of students	According to suggested central acceptance plan
Maximum number of students	According to suggested central acceptance plan

ELECTRONIC COMMERCE

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.

45. **Expected learning outcomes of the Module (Course)**
Knowledge
• Understand the basic concepts of e-commerce and its various models (B2B, B2C, C2C, etc.). • Understand the technical infrastructure required for e-commerce, including networks, electronic payment systems, and information security. • Familiarize yourself with the legal and regulatory aspects related to e-commerce, both locally and globally.
Skills
• The ability to analyze e-business models and evaluate e-commerce strategies used in digital markets. • Use e-commerce tools and techniques to set up a simple online store. • The ability to apply digital marketing concepts and social media marketing to practical projects.
Values
• Promote the values of honesty and trust in digital transactions. • Respect and protect customer data privacy when using electronic systems. • Promote a spirit of innovation and initiative in exploiting digital business opportunities in ethical ways.

46. **Teaching and Learning Strategies**
• Explain the scientific material to students in detail. • Participate in lectures. • Discuss and discuss vocabulary related to the topic.

47. Evaluation methods
Weekly and monthly tests, participation, attendance, and end-of-course exam

48. The most important sources of information about the program
• Important books and references for e-commerce • Websites and technical references • Studies and research from peer-reviewed Arab journals

Course Description Form

167. Module Name:
Electronic Commerce
168. Module Code:
NVITNW2401
169. Semester / Year:
2024-2025 / Second Semester
170. Description Preparation Date:
31/7/2025
171. Available Attendance Forms:
Electronic attendance record
172. Number of Credit Hours (Total) / Number of Units (Total)
3 units
173. Module's administrator's (mention all, if more than one name)
Name: Mohammed Mishaal Sultan Email: mohammed.mishaal@uoninevah.edu.iq

174. Module's Objectives	
Module's Objectives	• **Introduce students to the concepts and types of e-commerce** • **Analyze the impact of the digital environment on business operations** • **Develop skills to create and manage online stores** • **Understand and apply digital marketing strategies** • **Identify and evaluate various e-commerce business models** • **Utilize data analysis tools to support decision-making**

175. Teaching and Learning Strategies	
Strategy	• Self-directed learning through research: I relied on self-directed learning by exploring academic and digital sources, which helped deepen my understanding a expand my theoretical knowledge. • Cooperative Learning: I participated with students in group activities and shared tas which enhanced their communication and group thinking skills. • Case-based learning: I analyzed real-life case studies of e-commerce companies, which helped students develop their critical thinking and ability to connect theory to practical experience.

176. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	2	Understanding e-commerce concepts	Introduction to E-Commerce	Lecture – Discussion	Pre-test – Open discussion
The second	2	Understanding e-business models	B2B, B2C, C2C Business Models	Lecture – Case Studies	Quiz
the third	2	Analyzing technical infrastructure	Internet, Networks, Protocols	Theoretical explanation + examples	Homework
Fourth	2	Understanding payment gateways	Electronic Payment Systems	Lecture – Case Study	Written Exam
Fifth	2	Designing simple user interfaces	Store Design Tools	Practical Session	Mini Project
Sixth	2	Implementing e-commerce application	Building a simple store using Wordpress or Shopify	Lab Session	Presentation
Seventh	2	Understanding legal aspects	Privacy, Security, Digital Signature	Legal Discussion	Research Report
The eighth	2	Mid-course exam	exam	exam	exam
Ninth	2	Applying digital marketing strategies	SEO, SEM, Email Marketing	Case Study + Application	Participation Evaluation
Tenth + Eleventh + Twelfth + Thirteenth	2	Implementing a comprehensive project	Group Project (Full E-Commerce Store)	Supervision & Review	Milestone Evaluation
Fourteenth	2	General Review	Comprehensive Discussion & Revision	Open Discussion	Preparation Exam
Fifteenth	2	Final Exam	Comprehensive Evaluation	Final Exam	Final Exam

177. Module Evaluation

How 100 points are distributed across student activities and exams
- Attendance and participation: 10 points
- Assignments and reports: 10 points
- Quizzes: 20 points
- Midterm exam: 10 points
- Final exam: 50 points

178. Learning and Teaching Resources

Required textbooks (curricular books, if any)	•Laudon, K. C., & Traver, C. G. (2022).

	Commerce: Business, Technology, Society. Pearso
Main references (sources)	•Schneider, G. (2021). Electronic Commer Cengage Learning.
Recommended books and references (scientific journals, reports...)	•Chaffey, D. (2019). Digital Business and Commerce Management. Pearson Education.
Electronic References, Websites	•https://www.shopify.com/ •https://ecommerceguide.com/ •https://moz.com/learn/seo

DISTRIBUTED SYSTEMS

49. Expected learning outcomes of the Module (Course)

Knowledge

10. Fundamental Concepts: Understand the definition of a distributed system as a collection of autonomous computing elements that appears as a single, coherent system to users.

11. System Classification: Distinguish between and understand the characteristics of different types of distributed systems, including high-performance distributed computing systems, distributed systems for pervasive computing, and distributed information systems.

12. Processes and Threads: Differentiate between a computer program, a process (an instance of program execution), and a thread. Understand the benefits of using threads, such as improved performance and parallelism.

13. Virtualization: Comprehend what virtualization is, how it works, and its role as a foundational element of cloud computing. You will also learn the differences between Type 1 and Type 2 hypervisors.

14. Code Migration: Learn the reasons for migrating code in a distributed system, including improving performance, enhancing privacy, increasing security, and adding flexibility.

15. Communication: Understand various communication mechanisms in distributed systems, such as remote procedure calls (RPC) and different models of communication (e.g., persistent vs. transient, synchronous vs. asynchronous).

Skills

9. System Analysis: The ability to analyze and differentiate between various types of distributed systems, such as high-performance computing, distributed information systems, and pervasive computing systems.

10. Fundamental Concepts: A deep understanding of core concepts like processes, threads, and their states, including the benefits of using threads for parallelism and performance.

11. Communication Protocols: The ability to distinguish between different communication models, including transient vs. persistent and synchronous vs. asynchronous communication. You will also understand the principles of

Remote Procedure Calls (RPC).

12. Virtualization: Knowledge of virtualization concepts, including the roles of Type 1 (bare-metal) and Type 2 (hosted) hypervisors, and how virtualization is a foundational element of cloud computing.

13. System Design: The theoretical knowledge to understand the reasons for and methods of code and process migration, and how they can be used to improve system performance, security, and flexibility.

14. Challenges in Design: The ability to recognize and understand the key challenges in designing distributed systems, such as synchronization, fault tolerance, and security.

Values

The module's value lies in teaching a practical skill set for building modern, scalable, and resilient software. It emphasizes designing systems that can improve performance, privacy, and security by leveraging distributed computing concepts. The course provides a foundation for careers in cloud computing, data science, and other fields that rely on large-scale distributed applications

16. **Teaching and Learning Strategies**

1. Deliver the course material to students in a detailed manner.
2. Encourage discussion and dialogue on topics related to the subject.

17. Evaluation methods

Weekly, monthly, and daily examinations, in addition to the final year exam

18. **The most important sources of information about the program**

3. Distributed Systems, 4th Edition (2023), by Maarten van Steen and Andrew S. Tanenbaum.

4. Distributed Systems: An Algorithmic Approach, Second Edition (2015), by Sukumar Ghosh.

Course Description Form

179. Module Name:	
Distributed Systems	
180. Module Code:	
NVITNW2402	
181. Semester / Year:	
Semester 4 /2024-2025	
182. Description Preparation Date:	
2025-9-2	
183. Available Attendance Forms:	
184. Number of Credit Hours (Total) / Number of Units (Total)	
185. Module's administrator's (mention all, if more than one name)	
Name: Dr. Balqees Talal Hasan Email: balqees.hasan@uoninevah.edu.iq	
186. Module's Objectives	
Module's Objectives	• The main objectives of this module are to: • Understand System Fundamentals: Comprehend the core definition characteristics of distributed systems. • Master Key Concepts: Gain a deep understanding of concepts such processes, threads, code migration, virtualization, and inter-proc communication mechanisms. • Analyze System Challenges: Be able to address the challenges involved designing and building a distributed system, including synchronizati fault tolerance, and security
187. Teaching and Learning Strategies	
Strategy	Interactive lectures: Instead of relying solely on theoretical explanations, lectures will integrate discussions and group problem-solving, encouraging students to think critically and participate actively. Hands-on laboratory practice: Emphasis will be placed on practical work through dedicated labs, allowing students to directly apply theoretical concepts on Linux systems and strengthen their skills in file, process, and network management. Project-based learning: Students will be assigned small practical projects requiring them to apply multiple course concepts to solve specific problems, helping them connect different topics together. Discussions and Q\&A: Time will be allocated during lectures for open discussions, where students can ask questions and exchange ideas about course concepts, deepening their understanding. Self-directed learning: Students will be encouraged to use available resources, such as recommended textbooks, to explore additional Linux commands and concepts independently.
188. Module Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
2-1 4-3 6-5 8-7 9 11-10 13-12 -14	8 8 8 8 8 8 8 8	Define distribu systems differentiate betw various types like hi performance computing, pervas computing, and informat systems. Explain what a proc is, describe proc states, and underst the use of threads performance parallelism. Understand the conc of virtualization the differences betw Type 1 and Type hypervisors. Explain the reasons code migrat (performance, priva security) understand the conc of process migration Differentiate betw transient and persistent communication understand synchronous asynchronous model Implement rem functions, chain tasks, and parall computations using a distribu systems library like Synthesize all conce and apply them to a comprehensive project to demonst practical skills.	• Introduction Classification • Processes & Threa • Virtualization • Code Migration • Communication • Module Review Final Project	Lectures/Self-study from slid Lectures/Self-study from slid Lectures/Self-study from slid Lectures/Self-study from slid Lectures/Self-study from slid Hands-on pro work and revie Review session	Short quiz, Homework, Short quiz, Homework, Midterm exam Short quiz, appl task Homework, presentation Final exam

189. Module Evaluation
1. Coursework (50 points): Midterm Exam (25 points): Covers topics taught in the first half of the course, usually conducted in Week 9. Practical Projects and Homework (25 points): Distributed throughout the semester to assess students' application of theoretical concepts. 2. Final Exam (50 points): Covers all course topics from Week 1 to the last week. Aims to assess students' comprehensive understanding of the theoretical aspects of the course.

190. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	2. Distributed Systems, 4th Edition (2023), by Maarten van Steen and Andrew S. Tanenbaum. 3. Distributed Systems: An Algorithmic Approach, Second Edition (2015), by Sukumar Ghosh.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

ARABIC LANGUAGE-2

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.

50. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	The course aims to provide a comprehensive and comprehensive introduction to the most important Arabic vocabulary (in grammatical and morphological matters), which impacts the student's life and will remain relevant in the future. • Introduce the student to the basics of correct writing (such as distinguishing between Arabic sentences and knowing their types, knowing the original and secondary diacritical marks, and distinguishing between sentences in terms of masculine and feminine morphology, etc.). • The course aims to provide the most important vocabulary (in spelling and expressive matters) in general. Teach students to differentiate between the closed taa' and the open taa', as well as the letters dad and tha', and to recognize punctuation marks and the most common errors in the Arabic language
Skills	
Learning Outcomes 2	1- Correct writing skills. 2- Correct reading skills. 3- Text formation skills.
Learning Outcomes 3	
Values	
Learning Outcomes 4	1- The extent to which students accept the curriculum. 2- Responding to and interacting with the texts in the curriculum. 3- Organizing and linking the curriculum's content
Learning Outcomes 5	

51. Teaching and Learning Strategies
Question and Discussion Strategy - A strategy for encouraging students to learn the most important rules of the Arabic language (grammar and morphology). - A strategy for teaching students how to employ general Arabic rules (in spelling

and expression matters) in their writing
52. Evaluation methods
Weekly and daily exams and midterm exams.

53. **The most important sources of information about the program**
General Arabic Curriculum 1/ The Sunnah Masterpiece with an Explanation of the Ajurrumiyyah Introduction by Muhammad Muhyi al-Din Abd al-Hamid (may God have mercy on him). 2/ The Compendium of Arabic Lessons by Sheikh Mustafa al-Ghalayini. 3/ How to Master Grammar by Ahmad Iskandar. Specialized Websites + Electronic Reports and Research

Course Description Form

191. Module Name:
(**Arabic Language**): The General Arabic course is considered an annual course, which is given to second-year students for (30) hours per semester, includ semester exams and daily exams.
192. Module Code:
NVU16
193. Semester / Year:
Academic year 2024-2025, second semester
194. Description Preparation Date:
15\1\2025
195. Available Attendance Forms:
Weekly attendance Bologna system
196. Number of Credit Hours (Total) / Number of Units (Total)
30 hours (total number of study hours) / number of hours (2) per week (15) weeks in the semester
197. Module's administrator's (mention all, if more than one name)
Name: Abeer Ahmed Ibrahim Email: abeer.alhamdani@uoninevah.edu.iq
198. Module's Objectives

Module's Objectives	The course aims to provide a comprehensive and comprehensive introduction to the most important Arabic vocabulary (in grammatical and morphological matters), which impacts the student's life and will remain relevant in the future. • Introduce the student to the basics of correct writing (such as distinguishing between Arabic sentences and knowing their types, knowing the original and secondary diacritical marks, and distinguishing between sentences in terms of masculine and feminine morphology, etc.). • The course aims to provide the most important

	vocabulary (in spelling and expressive matters) in general. • Teach students to differentiate between the closed taa' and the open taa', as well as the letters dad and tha', and to recognize punctuation marks and the most common errors in the Arabic language

199. Teaching and Learning Strategies

Strategy	Question and Discussion Strategy - A strategy for encouraging students to learn t most important rules of the Arabic langua (grammar and morphology). - A strategy for teaching students how to employ general Arabic rules (in spelling and expression matters) in their writing

200. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
16.	2	Knowledge and Understanding	Sentence abrogators in the Arabic language	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
17.	2	Knowledge and Understanding	Kana and its sisters	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
18.	2	Knowledge and Understanding	Inna and its sisters	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
19.	2	Knowledge and Understanding	The subject and its deputy	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
20.	2	Daily Exam (1)	The objects +	Lecture delivery using	Daily Exam (1)

			a daily exam (1)	explanation, discussion and daily tests	
21.	2	Knowledge and Understanding	Adverbial case	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
22.	2	Knowledge and Understanding	Distinction	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
23.	2	Knowledge and Understanding	Number	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
24.	2	Knowledge and Understanding	Masculine and feminine	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
25.	2	Midterm exam	Midterm exam	Lecture delivery using explanation, discussion and daily tests	Midterm exam
26.	2	Knowledge and Understanding	Dual Nouns	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
27.	2	Knowledge and Understanding	Sound Masculine Plural	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
28.	2	Daily Exam (2)	Sound Feminine Plural + Daily Exam 2	Lecture delivery using explanation, discussion and daily tests	Daily Exam (2)
29.	2	Knowledge and Understanding	Broken Plural	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions
30.	2	Knowledge and Understanding	Punctuation	Lecture delivery using explanation, discussion and daily tests	Discussions + Asking Questions

201. Module Evaluation

(10%) semester exam, (40%) (distributed between daily and classroom exams, assignments, and attendance at lectures) + (50%) final exam.

202. Learning and Teaching Resources

Required textbooks (curricular books, if an	
Main references (sources)	General Arabic Curriculum

Recommended books and references (scientific journals, reports…)	1/ The Sunnah Masterpiece with an Explanation of the Ajurrumiyyah Introduction by Muhammad Muhyi al-Din Abd al-Hamid (may God have mercy on him). 2/ The Compendium of Arabic Lessons by Sheikh Mustafa al-Ghalayini. 3/ How to Master Grammar by Ahmad Iskandar
Electronic References, Websites	Specialized Websites + Electronic Reports and Research

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.

54. Expected learning outcomes of the Module (Course)
Knowledge
Students are expected to gain in-depth knowledge of different types of protocols, such as TCP, UDP, HTTP, and DNS. They will learn how each protocol works and the functions it performs in transmitting data across networks. They will also gain an understanding of the OSI model layers and their impact on network communications.
Skills
Students will develop practical skills in network design and network performance analysis. They will develop technical skills in protocol analysis using advanced tools and techniques using Packet Tracer. They will learn how to perform network tests and manage IP addresses. They will also learn how to configure protocols in different network environments, analyze performance issues, and master basic network programming skills to develop protocol-based applications.
Values
Students will learn the importance of security in network protocols, reinforcing a commitment to data protection and user privacy. They will deepen their understanding of the importance of collaboration between technical teams in network management and performance optimization. They will also gain an appreciation for the importance of innovation and adapting to changes in network technologies and protocols.

55. **Teaching and Learning Strategies**
Teaching and learning strategies and methods adopted in the implementation of the program in general.

56. Evaluation methods
Implemented at all stages of the program in general.

57. **The most important sources of information about the program**
State briefly the sources of information about the program.

Course Description Form

203. Module Name:
] networking protocols
204. Module Code:
NVITNW2410
205. Semester / Year:
second/ 2025
206. Description Preparation Date:
30-7-2025
207. Available Attendance Forms:
In-person - theoretical classroom lectures and practical lectures in the laboratory
208. Number of Credit Hours (Total) / Number of Units (Total)
8/7
209. Module's administrator's (mention all, if more than one name)
Name: Zainab Salim Abed Email: Zainab.abd@uoninevah.edu.iq
210. Module's Objectives
Module's Objectives: Upon successful completion of this course, students are expected to understand concept of IP v4 and the importance of subnetting, along with the ability to calculate subnet masks. It a

covers the definition of data link control and its role in network communication, identifying the various protoc used in this field, such as HDLC. Students will learn to distinguish between the LLC and MAC layers of data link layer and their respective functions. The use of MAC addresses in identifying devices on a netw will be analyzed, and the principles of WLAN technologies and standards, such as IEEE 802.11, will explored. The course will also cover the advantages and disadvantages of WLAN compared to wired netwo as well as examining application layer protocols such as DNS and HTTP. Finally, students will learn functions of transport layer protocols such as TCP and UDP, the operation of ICMP, and its tools, such as p and traceroute.

211. Teaching and Learning Strategies

Strategy: The strategy includes promoting active learning through interactive activities and practical labs apply concepts such as network segmentation and control protocols. Group projects will be organized explore WLAN technologies, with various assessments to measure understanding. Continuous feedback will provided to motivate students to improve, and specialists will be invited to enrich the learning experience.

212. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	8	Review about IP address an subnetting	Introduction to subnetting	Theoretical+Tutorial +Practical	H.W
2	8	Be able to to understand t Details of second layer	Data Link Control (DLC) and its characteristics	Theoretical+Tutorial +Practical	Practical lab
3	8	Be able to to understand the Details of second layer	Media Acc Control (MAC) LLC of data layer	Theoretical+Tutorial +Practical	Quiz
4	8	Be able to to unders wireless networks	WLAN	Theoretical+Tutorial +Practical	Seminar
5	8	Be able to to unders application protocolls	Introduction application l protocols	Theoretical+Tutorial +Practical	Report
6	8	Be able to to unders DNS,HTTP,DNS	Understand DNS, HTTP, DH	Theoretical+Tutorial +Practical	H.W
7	8	Be able to to understand FT	FTP	Theoretical+Tutorial +Practical	Quiz

8	8	Assessment	**Mid-term Exam**	Class+ LAB	Test
9	8	Be able to to understand E-mails protocol	An Overview Email protocols .	Theoretical+Tutorial +Practical	H.W
10	8	Be able to to understand SMTP, POP and IMAP	SMTP, POP IMAP	Theoretical+Tutorial +Practical	Practical lab
11	8	Be able to to understand ICMP	Introduction ICMP protocol	Theoretical+Tutorial +Practical	H.W
12	8	Demonstrate ICMP to including ping and tracero	ICMP tools	Theoretical+Tutorial +Practical	Quiz
13	8	Be able to to understand Transport layer protocols: &UDP	Transport l protocols: &UDP	Theoretical+Tutorial +Practical	H.W
14	8	Be able to to understand Socket concept	Socket concept	Theoretical+Tutorial +Practical	Practical lab
15	8	Assessment	**Final Exam**	Class+ LAB	Test

213. Module Evaluation

Assessment Method:	Grade
Assignments:	10
Two monthly exams:	20
Seminars:	5
Reports:	5
Midterm exam:	10
Final exam:	50
Total	100

214. Learning and Teaching Resources

Required textbooks (curricular books, if any):	TCP/IP Protocol Suite " Fourth Edition, Behrouz A. forouzan

LEVEL-3
SEMESTER-1
AI TECHIQUES

215. Course Name:
AI Technique
216. Course Code:
CIT3556
217. Semester / Year:
First Semester / 2025-2026
218. Description Preparation Date:
8/6/2025
219. Available Attendance Forms:
In-person
220. Number of Credit Hours (Total) / Number of Units (Total)
150/6
221. Course administrator's name (mention all, if more than one name)
Name: Zaid Jasim Mohammed Email: zaid.jasim@uoninevah.edu.iq

222. Course Objectives	
Course Objectives	The main objective of studying artificial intelligence is to provide students with the concepts and tools necessary to understand how to design and implement self-computing systems, as well as to develop students' capabilities in analysing complex problems and creating solutions based on modern technologies in the field of artificial intelligence. The course also explains the concepts of intelligence, its history, development, and applications in daily life, and includes detailed lessons on machine learning, neural networks, robotics, and other related topics.
223. Teaching and Learning Strategies	
Strategy	Many different strategies can be used in the teaching and learning of artificial intelligence, and among these strategies are: 1- Simplifying concepts: focusing on explaining the central concepts in the field of artificial intelligence in a simplified and transparent manner that facilitates understanding and application. 2- The use of technology: relying on advanced technological tools such as e-learning platforms and various media to facilitate follow-up to lectures and presentations, and to provide an interactive and suitable environment for learning. 4- Practical Training: Giving students practical training on how to use the available software and tools to design artificial intelligence models and analyze data. 5- Communication and Cooperation: Encouraging students to communicate and collaborate on concepts and applications, discuss opinions and share ideas.

	6- Teamwork: Encouraging students to work collectively on artificial intelligence projects in order to enhance teamwork and learn social skills that can be used in the labor market. 7- Interactive training: the use of interactive training and simulation to apply the acquired concepts and skills in an interactive and stimulating environment for learning.

224. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretic + 2 practical	Understand what AI is, its goals, and main categories	Introduction, what is intelligence, categories of AI definition, what are goals of AI.	Learning Method	Lab Exercise
2	2 theoretic + 2 practical	Differentiate AI from natural intelligence, identify major branches	AI branches, characteristics of AI,AI Vs natural intelligence	Lecture + Lab + Self-study	Quiz + Lab Assignment
3	2 theoretic + 2 practical	Apply state-space search techniques to problem solving	Problem solving, type of problems, state space search, graph theory, traveling salesman problem.	Lecture + Lab + Practice Exercises	Lab Assignment
4	2 theoretic + 2 practical	Solve problems using heuristic and optimal search techniques	Branch and Bound algorithm, Nearest Neighbor Heuristic, some examples for these methods	Lecture + Lab + Practice Exercises	Lab Assignment
5	2 theoretic + 2 practical	Implement BFS to solve problems	Searching algorithm, Blind search, Breadth –First-Search(BFS),examples to solving problems by BFS,BFS algorithm	Lecture + Lab + Practice Exercises	Quiz + Homework + Lab Task
6	2 theoretic + 2 practical	Apply DFS to practical problems	Depth First Search, algorithm, examples	Lecture + Lab + Guided Implementation	Homework + Lab Task
7	2 theoretic + 2 practical	Compare uninformed search strategies and apply UCS	Uniform cost search, algorithm, examples Make a quiz	Lecture + Lab + Guided Implementation	Mid-term Exam
8	2 theoretic + 2 practical	Analyze heuristic approaches and implement search algorithms	Heuristic search, Hill climbing algorithm and examples, Best First Search, pecodo code of Best First Search and examples.	Exam	Lab Task + Homework

9	2 theoretic + 2 practical	Demonstrate mastery of first-half topics	Med exam	Lecture + Lab + Code Reviews	Lab Task + Homework
10	2 theoretic + 2 practical	Implement A* for shortest-path problems	A* algorithm, pecodo code, and examples	Lecture + Lab + Code Reviews	Lab Task + Quiz
11	2 theoretic + 2 practical	Model knowledge using symbolic structures	Knowledge representation, semantic network, conceptual graphs.	Lecture + Lab + Practice Analysis	Lab Task + Quiz
12	2 theoretic + 2 practical	Apply frame-based knowledge representation	Frame representation	Lecture + Lab + Practice Analysis	Lab Exercise + Homework
13	2 theoretic + 2 practical	Understand ANN structure, activation functions, and learning methods	Artificial neural network, activation function, the architecture of ANN, ANN algorithm learning methods, properties of ANN, area of ANN,	Lecture + Lab + Coding Exercise	Lab Task + Seminar Discussion
14	2 theoretic + 2 practical	Implement single-layer perceptrons	Perceptron network	Lecture + Lab + Project Work	Lab Task + Seminar Discussion
15	2 theoretic + 2 practical	Implement MLP and backpropagation algorithm	**Multilayer neural networks, Backpropagation learning algorithm**	Lecture + Lab + Project Work	Lab Task + Seminar Discussion

225. Course Evaluation

10 % Quizzes (3-4 quizzes)
10% Homework
10% Lab
10% Seminar
10% Mid Term 50% Final Exam

226. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Artificial Intelligence: A Modern Approach" to -Stuart Russell and Peter Norvig.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	"Edureka" website: It offers interactive lessons in artificial intelligence and machine learning.

CLOUD COMPUTING

Learning Outcomes:

–Explain the core principles and architecture of cloud computing.

– Differentiate between cloud service and deployment models.

– Apply virtualization and container technologies in a cloud environment.

– Evaluate cloud computing benefits, challenges, and security issues.

– Demonstrate practical skills in deploying and managing applications on a cloud platform.

– Analyze case studies to understand cloud adoption in different industries.

Teaching and learning strategies: This course introduces the fundamental concepts, architecture, and services of Cloud Computing with a focus on its role in modern computer networks and distributed systems. Students will explore cloud service models (IaaS, PaaS, SaaS), deployment models (public, private, hybrid, and community clouds), and enabling technologies such as virtualization, containerization, and distributed storage. The course emphasizes both the theoretical foundations and practical applications of cloud systems, including scalability, elasticity, fault tolerance, and security considerations.

58. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes	Explain the fundamental concepts, architecture, and evolution of cloud computing. Identify and differentiate between cloud service models (IaaS, PaaS, SaaS) and deployment models (public, private, hybrid, community). Understand virtualization, containerization, and distributed storage as enabling technologies of cloud computing. Recognize challenges in cloud environments including scalability, performance, security, and compliance.

	Describe applications of cloud computing in various sectors (business, healthcare, education, IoT, etc.).
Skills	
	Apply virtualization and container tools (e.g., VirtualBox, Docker) to deploy and manage virtualized/cloud environments. Configure and manage basic cloud services such as compute, storage, and networking. Evaluate and compare cloud providers (AWS, Azure, GCP, OpenStack) based on cost, features, and use case. Design simple cloud-based solutions that ensure scalability, availability, and fault tolerance. Analyze case studies to propose suitable cloud adoption strategies for different organizations. Communicate technical concepts clearly in reports, presentations, and group discussions.
Values	
	Awareness of ethical and professional responsibilities in handling cloud data (privacy, compliance, and security). Appreciation for teamwork and collaboration through group projects and tutorials. A mindset of adaptability and lifelong learning in response to emerging cloud technologies and industry trends. Commitment to using cloud computing responsibly to support sustainable and innovative IT solutions.

59. Teaching and Learning Strategies

Through lectures and guided tutorials, students will gain hands-on experience with cloud platforms, service configuration, and resource management, preparing them to design and evaluate cloud-based solutions for real-world computing and networking challenges.

60. Evaluation methods

Student performance in this course will be evaluated through a combination of continuous assessments and final examination. Continuous assessments include

quizzes, tutorial/lab reports, assignments, and a midterm exam, which test both theoretical understanding and practical application of cloud technologies. A group project/case study encourages teamwork, problem-solving, and application of knowledge to real-world scenarios. The final written examination evaluates the student's overall comprehension of the course concepts, ensuring a balanced assessment of knowledge, skills, and critical thinking.

61. **The most important sources of information about the program**
State briefly the sources of information about the program.

Course Description Form

227. Module Name:
Cloud computing
228. Module Code:
229. Semester / Year:
1st semester 2025–2026
230. Description Preparation Date:
231. Available Attendance Forms:
232. Number of Credit Hours (Total) / Number of Units (Total)
233. Module's administrator's (mention all, if more than one name)
Name: Email:
234. Module's Objectives

Module's Objectives	• ..... • ..... • .....

235. Teaching and Learning Strategies	
Strategy	

236. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
					Quizzes & Short Assignments – 10% - Tutorial / Lab Reports – 10% - Midterm Examination – 20% - Final Project / Case Study – 20%

					- Class Participation & Discussions – 5% - Final Written Examination – 35%

237. Module 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

238. Learning and Teaching Resources

Required textbooks (curric books, if any)	• Rajkumar Buyya, Christian Vecchiola, and S. Thamarai Selvi, Mastering Cloud Computing: Foundations and Applications Programming, McGraw Hill, 2013. • Thomas Erl, Zaigham Mahmood, and Ricardo Puttini, Cloud Computing: Concepts, Technology & Architectur Prentice Hall, 2013.
Main references (sources)	• Toby Velte, Anthony Velte, and Robert Elsenpeter, Cloud Computing: A Practical Approach, McGraw Hill, 2010. • George Reese, Cloud Application Architectures Building Applications and Infrastructure in the Cloud, O'Reilly Media, 2009. • Gautam Shroff, Enterprise Cloud Computing: Technology, Architecture, Applications, Cambridge University Press, 2010.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Official Documentation: o Amazon Web Services (AWS) o Microsoft Azure o Google Cloud Platform

CODIG AND INFORMATION THEORY

Learning Outcomes: This course provides a detailed study of coding theory and its role in ensuring reliable digital communication. Students will explore the fundamentals of communication systems, modulation, filters, channels, Shannon's theory, entropy, bit error rate (BER), compression, and error control coding. The course emphasizes understanding mathematical models of communication channels, methods of minimizing transmission errors, and modern applications in data storage, networking, and digital transmission.

Teaching and learning strategies: The course is delivered through theoretical lectures supported by interactive discussions. To encourage independent learning and critical thinking, students are assigned seminars on trending technology topics related to Internet infrastructure, which they present and discuss in class..

62. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Explain the principles of communication and coding theory. Statement: Students will describe communication types, channel characteristics, modulation methods, filters, and coding concepts.
Skills	
Learning Outcomes 2	Apply coding theory techniques to evaluate communication performance. Students will compute channel capacity, BER, entropy, and mutual information for given scenarios.
Learning Outcomes 3	Analyze and compare coding and compression techniques. Statement: Students will evaluate lossy and lossless compression, error control methods, and coding schemes for efficiency and reliability.
Values	
Learning Outcomes 4	Adopt a methodical approach to error reduction in digital communication. Students will apply structured problem-solving to improve transmission reliability while considering efficiency constraints.
Learning Outcomes 5	Stay informed on emerging coding technologies. Students will research, present, and discuss recent advancements in coding and information theory.

63. **Teaching and Learning Strategies**
The course is delivered mainly through theoretical lectures supported by discussions. Students are assigned seminar presentations on modern coding theory applications such as advanced compression methods, error correction in 5G, or quantum coding. Problem-solving sessions and worked examples are used to reinforce theoretical concepts.

64. Evaluation methods
Midterm Exam – 30% Assignments, Reports, Quizzes, Seminar Presentations – 10% Final Examination – 60%

65. **The most important sources of information about the program**
State briefly the sources of information about the program.

Course Description Form

239. Module Name:
Ciphering and coding theory
240. Module Code:
NVITNW3501
241. Semester / Year:
2024–2025 (second Semester)
242. Description Preparation Date:
3/8/2025
243. Available Attendance Forms:
244. Number of Credit Hours (Total) / Number of Units (Total)
2/30
245. Module's administrator's (mention all, if more than one name)
Name: Abdulmajeed Ahmed Email: almajeed.ahmed@uoninevah.edu.iq
246. Module's Objectives

Module's Objectives	This course provides a detailed study of coding theory and its role in ensuring reliable digital communication. Students will explore the fundamentals of communication systems, modulation, filters, channels, Shannon's theory, entropy, bit error rate (BER), compression, and error control coding. The course emphasizes understanding mathematical models of communication channels, methods of minimizing transmission errors, and modern applications in data storage, networking, and digital transmission.

247. Teaching and Learning Strategies

Strategy	The course is delivered mainly through theoretical lectures supported by discussions. Students are assigned seminar presentations on modern coding theory applications such as advanced compression methods, error correction in 5G, or quantum coding. Problem-solving sessions and worked examples are used to reinforce theoretical concepts.

248. Module Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**

1	2		Introduction to Coding Theory & Communication Basics		
2	2		Data Communication Types & Characteristics		
3	2		Modulation Concepts & Types		
4	2		Filters & Channels		
5	2		Shannon's Theory & Channel Capacity		
6	Mid exam				
7	2		Entropy & Information Measures		
8	2		Entropy Examples & Problem Solving		
9	2		Bit Error Rate (BER) Concepts		
10	2		Compression Techniques (Lossy & Lossless)		
11	2		Error Control Coding		
12	2		Joint & Conditional Entropy Applications		

13	2		Case Studies in Modern Coding Theory		
14	2		Course Wrap-Up & Review		
15					

249. Module Evaluation
Midterm Exam – 30% Assignments, Reports, Quizzes, Seminar Presentations – 10% Final Examination – 60%

250. Learning and Teaching Resources	
Simon Haykin, Michael Moher, Introduction to Analog and Digital Communications.	
Thomas M. Cover, Joy A. Thomas, Elements of Information Theory.	
IEEE Communications Society publications.	
https://www.acm.org/	

Level-3
SEMESTER-2
SECURITY ESENTAIAL

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.

1. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	1. **Understand Fundamental Security Principles**: Gain a comprehensive understanding of core internet security concepts, including the **CIA triad (Confidentiality, Integrity, Availability)**, common attack vectors (e.g., spoofing, DoS, ARP poisoning), and defense mechanisms. 2. **Analyze Network Vulnerabilities & Protocols**: Identify security weaknesses in **network protocols (TCP/IP, ARP, DHCP, HTTP)** and wireless/WLAN systems and evaluate their impact on organizational security. 3. **Apply Security Solutions & Best Practices**: Learn to implement **security measures** (e.g., IPSec, firewalls, IDS/IPS, VLAN segmentation, encryption standards like WPA3) to mitigate risks at different OSI layers.
Skills	
Learning Outcomes 2	1. **Configure and Implement Security Measures** Develop hands-on skills in setting up **firewalls, VPNs (IPSec), and intrusion detection/prevention systems (IDS/IPS)** to protect network infrastructure. 2. **Detect and Mitigate Cyber Attacks** Gain practical experience in identifying and responding to threats such as **ARP spoofing, MAC flooding, DHCP starvation, and DoS attacks** using tools like Wireshark, Nmap, and Dynamic ARP Inspection (DAI).
Learning Outcomes 3	**Secure Wireless and Wired Networks** Learn to enforce security protocols (e.g., **WPA3, 802.1X authentication**) and apply best practices for **port security, VLAN segmentation, and encryption** to safeguard both wired and wireless environments.
Values	
Learning Outcomes 4	1. **Ethical Responsibility in Cybersecurity** Cultivate a strong sense of **professional ethics**, understanding the importance of protecting user privacy, data integrity, and organizational assets while adhering to legal and regulatory frameworks. 2. **Commitment to Continuous Learning** Develop a mindset of **lifelong learning** to stay updated with evolving cyber threats, security technologies, and best practices in the fast-changing field of internet security.
Learning Outcomes 5	1. **Collaboration and Accountability** Foster **teamwork and accountability** in securing networks, emphasizing transparency, shared responsibility, and effective communication when addressing security incidents or implementing protective measures.

2. **Teaching and Learning Strategies**
1. **Interactive Lectures** – Combine theory with real-world examples, case studies, and live demonstrations to reinforce key concepts. 2. **Hands-on Labs** – Use virtual labs (e.g., Packet Tracer, Wireshark) for practical exercises in configuring firewalls, VPNs, and IDS/IPS. 3. **Group Projects** – Assign collaborative tasks (e.g., designing a secure network, simulating attacks/defenses) to enhance teamwork and problem-solving. 4. **Assessments & Feedback** – Conduct quizzes, penetration testing challenges, and structured feedback sessions to track progress and improve understanding.
3. Evaluation methods
Formative assessment Summative assessment
4. **The most important sources of information about the program**
• Primary Textbook • Online Learning Platforms • Instructor-Prepared Materials

Course Description Form

1. Module Name:
Internet Security
2. Module Code:
F0411
3. Semester / Year:
1st /2024-2025
4. Description Preparation Date:
12/08/2025
5. Available Attendance Forms:
Excel Sheet prepared by the Dep
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Module's administrator's (mention all, if more than one name)
Name: Dr Ali H. Al-Shakarchi Email: ali.al-shakarchi@uoninevah.edu.iq
8. Module's Objectives

Module's Objectives	**1. Understand Core Security Principles** **Explain the CIA triad (Confidentiality, Integrity, Availability), common cyber threats (e.g., spoofing, DoS), and defense mechanisms across network layers.** **2. Analyze Network Vulnerabilities** **Identify risks in TCP/IP, ARP, DHCP, and wireless protocols and assess their impact on organizational security.** **3. Implement Protective Measures** **Configure firewalls, VPNs (IPSec), IDS/IPS, and encryption (WPA3, MAC filtering) to mitigate attacks like ARP spoofing and MAC flooding.** **4. Developing Ethical Cybersecurity Practices** **Apply ethical hacking principles, adhere to legal standards, and promote proactive threat monitoring and response.**

9. Teaching and Learning Strategies	
Strategy	1. **Interactive Lectures** – Combine theory with real-world examples, case studies, and live demonstrations to reinforce key concepts. 2. **Hands-on Labs** – Use virtual labs (e.g., Packet Tracer, Wireshark) for practical exercises in configuring firewalls, VPNs, and IDS/IPS. 3. **Group Projects** – Assign collaborative tasks (e.g., designing a secure network, simulating attacks/defenses) to enhance teamwork and problem-solving. 4. **Assessments & Feedback** – Conduct quizzes, penetration testing challenges, and structured feedback sessions to track progress and improve understanding.

10. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Explain CIA triad and security fundamentals	Introduction to Internet Security	Lecture + Case Studies	Quiz
2	3	Analyze wired vs wireless vulnerabilities	Physical Network Security	Demo + Lab (Packet Tracer)	Lab Report
3	3	Identify TCP/IP protocol vulnerabilities	Network Protocols Security	Lecture + Wireshark	Quiz
4	3	Detect and prevent ARP spoofing attacks	Data Link Layer Attacks I	Lab (ARP spoofing	Assignment
5	3	Mitigate MAC flooding and port	Data Link Layer Attacks II	Hands-on Lab	Lab Report

6	3	Prevent DHCP attacks	DHCP Security	Lecture + Case Study	Quiz
7	3	Secure STP protocols	Spanning Tree Protocol Security	Demo + Configuration	Assignment
8	3	Implement VLAN security	Virtual LAN Security	Lab (VLAN configuration)	Lab Report
9	3	Evaluate wireless security protocols	Wireless LAN Security	Lecture + Hands-on	Quiz
10	3	Configure IPSec in different modes	Network Layer Security	Lab (IPSec tunnel setup)	Assignment
11	3	Implement VPN solutions	Virtual Private Networks	Case Study + Configuration	Lab Report
12	3	Deploy IDS/IPS systems	Intrusion Detection Systems	Demo (Snort) + Lab	Quiz
13	3	Configure firewall rules and NAT	Firewall Technologies	Hands-on Lab (pfSense)	Assignment
14	3	Integrate security measures	Comprehensive Network Defense	Group Project	Project Presentation
15	3	Review all security concepts	Course Review & Final Prep	Q&A Session	Final Exam

11. Module Evaluation

Formative Assessment	Quizzes	2 quizzes	10%
	Assignments	2 assignments	10%
	Projects / Labs	2 projects/labs	20%
Summative Assessment	Midterm Exam	2 hours	10%
	Final Exam	3 hours	50%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Stallings, W. (1995). Network and internetwork security: principles and practice. Prentice-Hall, Inc..
Main references (sources)	Instructor-Prepared Materials
Recommended books and references (scientific journals, reports...)	Cryptography and Network Security Author: Behrouz A. Forouzan
Electronic References, Websites	https://www.w3schools.com/cybersecurity/

ENGLISH LANGUAGE-3

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.

5. **Expected learning outcomes of the Module (Course)**	
Knowledge	
1. Language skills 2. Grammar and vocabulary 3. Communication skills 4. Cultural awareness 5. Critical thinking and interpretation 6. Preparation for further learning or certification	These outcomes aim at equip learners with effective language competence and confidence to use English in academic , professional, and everyday sittings.
Skills	
The skill of speaking,	The skill of writing, The skill of reading,
The skill of listening	Also, enable the students for the use of grammar correctly
Values	
1.To be able to speak English fluently and accurately.	3. To be able to talk in English. 4. To be able to compose freely and independently in speech and writing.
2. To think in English and then speak.	5. To be able to read books with understanding.

6. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general. The main strategy that will be adopted in developing the four skills: speaking, reading, writing, listening

7. Evaluation methods

Evaluation methods of English courses typically include a variety of assessments to measure learners' progress and mastery of skills. Common evaluation methods are:

1. Quizzes and Tests:
   - Regular short quizzes and comprehensive tests to assess grammar, vocabulary, reading comprehension, and listening skills.

2. Assignments and Essays:
   - Written assignments, essays, and reports to evaluate writing skills, coherence, and use of language.

3. Speaking Assessments:
   - Oral presentations, dialogues, and interviews to assess speaking fluency, pronunciation, and communication effectiveness.

4. Listening Exercises:
   - Listening comprehension activities using audio or video materials to evaluate understanding of spoken English.

5. Participation and Engagement:
   - Class participation, discussions, and group activities to gauge active

involvement and communicative competence.

6. Rubrics and Portfolios:

- Use of detailed scoring rubrics for speaking and writing tasks; compilation of students' work over time in portfolios.

7. Final Exams:

- Comprehensive exams that test all language skills—reading, writing, listening, and speaking—at the end of the course.

8. **The most important sources of information about the program**
English for Information Technology (book). Internet and electronic websites. Headway pre-intermediate plus student's book (john and Lize Soars)

Course Description Form

13.	Module Name: English language
14.	Module Code: NETW380
15.	Semester / Year: second semester, 2025
16.	Description Preparation Date: 15/8/2025
17.	Available Attendance Forms:
	courses system
18.	Number of Credit Hours (Total) / Number of Units (Total)
	2 hours a week, /two units
19.	Module's administrator's (mention all, if more than one name)
	Name: khalida suood Ahmed Email:khalida.alkhafaji@uoninevah.edu.iq
20.	Module's Objectives

Module objectives in English language learning are specific goals that outlin what learners should achieve after completing a particular module. These objectives guide both instruction and assessment by clearly defining desire language skills and knowledge. Common objectives include:

1. Developing vocabulary: Expanding learners' word bank for better expression and comprehension.
2. Improving grammar: Understanding and applying grammatical rules accurately in speaking and writing.
3. Enhancing reading skills: Improving comprehension and interpretation of written texts.
4. Strengthening listening skills: Recognizing and understanding spoken English in various contexts.
5. Advancing speaking abilities: Enabling learners to communicate effectivel and confidently.
6. Boosting writing skills: Writing coherent, well-structured texts suited to different purposes.

21. Teaching and Learning Strategies

1.Communicative LanguageTeaching (CLT)	Focuses on developing students' ability to communicate effectively in real life situations through interactive activities and role-plays.
2. Lexical Approach:	Emphasizes the importance of vocabulary and fixed phrases (lexical chun over isolated grammar rules, encouraging learners to acquire natural language patterns.
3.ContentLanguage IntegratedLearning (CLIL):	Combines teaching subject matter (e.g., science, history) through English, fostering both language skills and content knowledge.
4.Storytelling Contextual Learning:	Uses stories, videos, and real-life contexts to make learning engaging and relevant.
5.Form-Focused Instruction:	Balances meaningful communication with explicit teaching of grammar ar pronunciation to improve accuracy.
	These strategies can be combined and tailored to suit specific lear groups, settings, and learning objectives for effective English langua instruction.

22. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week1	2hr		Introduction English langua t Teaching, (objectives		
Week2	2hr	Listening skills	and principles) Language skills	An article or Essay student's specification	Homework Classwork
Week3	2hr	Reading skills	development	An article or story	Reading the article
Week4	2hr	Vocabularies learning	Language skills Development	Synonyms Antonyms	Evaluation students memorizing

					(quizzes) (random questions)
Week5	2hr	grammar	Language skills Development	Simple tenses and Their uses	Homework Exercises
Week6	2hr	grammar	Grammar	Adverbs and Adjectives	Homework
Week7	2hr	Mid-term exan			
Week8	2hr	grammar	Grammar	Word formation (derivations) (mopholoy)	Homework Classwork Quizzes
Week9	2hr	Writing skills	Grammar	Some instructions about: how to write an essay	Quiz:Write an essay or message
Week10	2hr	Speaking skills	Language skills Development	Making presentation	Evaluatestudent presentation
Week11	2hr	Communicatio Development	Language skills Development	Conversation	Evaluate student language
Week12	2hr	Review about Study material	Feedback About study mterials	Classwork	Classwork
Week13	2hr	language Development Using authentic Materials (e.g videos)	Language skills Development	Language skills Development	Evaluate interaction among students
Week14	2hr	Phonological Skills Development	Some instructions in pronunciation And	Speaking Skills (phonological Level)	Evaluation student speaking Through their conversations

Week15	2hr	Preparatory before final exam	intonations in speaking Review about the units we studied	review	Presentations review

23. Module 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

24. Learning and Teaching Resources

English for information technology(book)	
Headway pre-intermediate plus student's b (john and Lize Soars)	
Headway pre-intermediate plus work's book	
Electronic References, https://7esl.com/	

COMPUTER NETWORKS MANAGEMENT

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.

9. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	-Explain the fundamental concepts and importance of network management. - Describe the FCAPS model and its relevance in managing computer networks. - Understand network management protocols such as SNMP, RMON, and NetFlow. - Recognize challenges and solutions in network performance monitoring and security management.
Skills	
	-Configure and use SNMP-based network management systems. - Monitor, analyze, and optimize network performance using industry tools. - Apply troubleshooting methods to solve network configuration and performance issues. - Develop and implement a small-scale network management strategy.
Values	
	-Develop responsibility for maintaining secure and reliable network services. - Promote teamwork in managing and troubleshooting

	network environments. - Adopt ethical standards in handling network management data. - Encourage continuous improvement and proactive management practices.

10. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

11. Evaluation methods

-Quizzes & Assignments – 10%

- Tutorial / Lab Reports – 10%
- Midterm Examination – 20%
- Final Project – 20%
- Class Participation – 5%
- Final Written Examination – 35%

12. The most important sources of information about the program

- Subramanian, M., Network Management: Principles and Practice, Addison-Wesley, 2010.
- Mani Subramanian, Network Management: Concepts and Practice: A Hands-On Approach, Pearson, 2010.

Course Description Form

25. Module Name:
Computer Networks Management
26. Module Code:
27. Semester / Year:
2024-2025
28. Description Preparation Date:
29.Available Attendance Forms:
30.Number of Credit Hours (Total) / Number of Units (Total)
36
31. Module's administrator's (mention all, if more than one name)
Name: Mahmood Alfathe Email: mahmood.alfathe@uoninevah.edu.iq
32. Module's Objectives

Module's Objectives	• ..... • ..... • .....

33. Teaching and Learning Strategies	
Strategy	

34. Module Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**

35. Module Evaluation

Student performance will be evaluated through quizzes, assignments, lab reports, and a midterm exam to assess understanding of theoretical and practical aspects. A final project will allow students to demonstrate the application of network management strategies in real-world scenarios. The final written exam will measure comprehensive knowledge of course materials.

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	- Subramanian, M., Network Management: Principles and Practice, Addison-Wesley, 2010. - Mani Subramanian, Network Management: Concepts and Practice: A Hands-On Approach, Pearson, 2010.
Recommended books and references (scientific journals, reports...)	- Larry L. Peterson & Bruce S. Davie, Computer Networks: A Systems Approach, 5th Edition, Morgan Kaufmann, 2011. - William Stallings, Network Management: Technologies and Applications, Pearson, 2013. - Olivier Bonaventure, Computer Networking: Principles, Protocols and Practice (Open Access).
Electronic References, Websites	- Cisco Networking Academy: https://www.netacad.com/ - Wireshark Documentation: https://www.wireshark.org/docs/ - Nagios Monitoring: https://www.nagios.org/ - Zabbix Monitoring: https://www.zabbix.com/

WEBSITE PROGRAMING 1

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.

13. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Identify the fundamental concepts of web programming, including HTML, CSS, JavaScript, and Bootstrap.
Learning Outcomes 2	Explain the role of client-side and server-side technologies in building interactive web applications.
Learning Outcomes 3	Describe the process of website design, development, and deployment within the TCP/IP networking context.
Skills	
Learning Outcomes 1	Apply HTML and CSS to design and structure visually appealing and functional web pages.
Learning Outcomes 2	Develop interactive websites using JavaScript to handle events, conditions, and data processing.
Learning Outcomes 3	Utilize Bootstrap templates and components to create responsive, user-friendly web interfaces.
Values	
Learning Outcomes 1	Collaborate effectively in group work and peer-learning environments, showing respect and teamwork.
Learning Outcomes 2	Demonstrate responsibility, independence, and self-learning through research and project development.

14. Teaching and Learning Strategies

The teaching and learning strategies for this module combine theoretical instruction with practical application to ensure that students develop both conceptual understanding and technical competence. Lectures will be used to introduce fundamental principles of web programming, supported by demonstrations and illustrative examples. Practical laboratory sessions will provide hands-on experience, enabling students to apply HTML, CSS, JavaScript, Bootstrap, and PHP/MySQL in the design and implementation of web projects. Interactive learning will be fostered through class discussions, peer collaboration, and group work, encouraging teamwork, problem-solving, and the exchange of ideas. Project-based learning will allow students to integrate multiple technologies into realistic tasks, while assignments and reports will enhance their analytical and reflective skills. In addition, students will be encouraged to engage in self-directed learning through exploration of online resources such as W3Schools and MDN, promoting independent research and lifelong learning. Continuous assessment through quizzes, coding exercises, and feedback will guide students' progress, while final projects and exams will ensure the achievement of the expected learning outcomes.

15. Evaluation methods

Quizzes	10% (10)
Assignments	10% (10)
Projects / Lab.	10% (10)
Report	10% (10)
Midterm Exam	10% (10)
Final Exam	50% (50)

16. The most important sources of information about the program

- Michael Glass et al. 2004. *Beginning PHP, Apache, MySQL Web Development.*
- Elizabeth Castro. 2006. "*HTML, XHTML, and CSS"*

Course Description Form

37.Module Name:	
Website Programming I	
38.Module Code:	
NETW306	
39.Semester / Year:	
Second /2024-2025	
40.Description Preparation Date:	
41.Available Attendance Forms:	
In Person	
42.Number of Credit Hours (Total) / Number of Units (Total)	
60/3	
43.Module's administrator's (mention all, if more than one name)	
Name: Zaid Jasim Mohammed Al-Araji Email: zaid.jasim@uoninevah.edu.iq	
44.Module's Objectives	
Module's Objectives	• The course aims at developing students' sense of the complete process of web development and website engineering through emphasizing the importance of design, programming and authoring as interrelated tasks. The course also aims at developing students' skills in the design and implementation of simple web applications using both client and server side technologies. • As overall, students of this course become able to design and program the websites. • This course is also computer network learning related to the application TCP/IP layer.
45.Teaching and Learning Strategies	
Strategy	The teaching and learning strategies for this module combine theoretical instruction with practical application to ensure that students develop both conceptual understanding and technical competence. Lectures will be used to introduce fundamental principles of web programming, supported by demonstrations and illustrative examples. Practical laboratory sessions will provide hands-on experience, enabling students to apply HTML, CSS, JavaScript, Bootstrap, and PHP/MySQL in the design and implementation of web projects. Interactive learning will be fostered through class discussions, peer collaboration, and group work, encouraging teamwork, problem-solving, and the exchange of ideas. Project-based learning will allow students to integrate multiple technologies into realistic tasks, while

	assignments and reports will enhance their analytical and reflective skills. In addition, students will be encouraged to engage in self-directed learning through exploration of online resources such as W3Schools and MDN, promoting independent research and lifelong learning. Continuous assessment through quizzes, coding exercises, and feedback will guide students' progress, while final projects and exams will ensure the achievement of the expected learning outcomes.

46. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
18.	2+2	Understand the basics of web development	Website Introduction	Lecture & Lab	Quizzes / Assignments
19.	2+2	Apply basic HTML structure and elements	HTML: Tags, Attributes, elements,-Page building, Paragraph & Heading, Lists, Hyperlinks.Image.	Lecture & Lab	Quizzes / Lab work
20.	2+2	Create structured web content	HTML: Video, Tables, Frames.	Lecture & Lab	Assignments
21.	2+2	Build interactive input forms	HTML: forms (input text, radio, checkbox, textarea, submit, reset, button, dropdown list) For example: Pizza restaurant web form.	Lecture & Lab	Lab evaluation
22.	2+2	Apply styling to web pages	Cascade Style sheet (CSS): Syntax • External style sheet, Internal style sheet, Inline style • Background & Multi B., Styles: Text (shadow) , Box (Shadow).Font, Color (transparency & opacity). Color (linear & radial gradient). Link & List	Lecture & Lab	Quizzes
23.	2+2	Design page layout and navigation	Cascade Style sheet (CSS): • Table & Border	Lecture & Lab	Assignments

			• Position & Align Navigation Bar		
24.	2+2	Implement interactive styles	Cascade Style sheet (CSS) • Image gallery & Opacity • Transform: Translate, Rotate, Scale. Skew x, Skew y. Transition	Lecture & Lab	Lab evaluation
25.	2+2	Apply knowledge in a focused topic	Assignment: Selective Topic related to the websites tool (10%)	Independent & Lab	Assignments
26.	2+2	Demonstrate knowledge mid-course	Midterm Exam	Exam	Midterm Exam
27.	2+2	Understand responsive frameworks	Bootstrap definition, Bootstrap template B3.	Lecture & Lab	Assignments
28.	2+2	Use Bootstrap components	Bootstrap template B3, tables, images, alert, button, panels, dropdown…	Lecture & Lab	Lab evaluation
29.	2+2	Develop dynamic behavior	JS Introduction, JS definition: Internal (head or body) & External, JS Output, JS Syntax, statement, comments, Variables & Arithmetic and logical operations, assignment, JS Data Types	Lecture & Lab	Quizzes
30.	2+2	Control program flow	JS events, Arrays, Conditions / switches, Controlling: For, while, do-while, break,	Lecture & Lab	Assignments
31.	2+2	Apply JS in practice	JS simple example.	Lecture & Lab	Assignments
32.	2+2	Apply JS in practice	JS simple example.	Lecture & Lab	Quizzes

33.Module Evaluation	
Quizzes	10% (10)
Assignments	10% (10)
Projects / Lab.	10% (10)
Report	10% (10)
Midterm Exam	10% (10)
Final Exam	50% (50)

34.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Michael Glass et al. 2004. *Beginning PHP, Apache, MySQL Web Development.* 2. Elizabeth Castro. 2006. "*HTML, XHTML, and CSS"*
Main references (sources)	Michael Glass et al. 2004. *Beginning PHP, Apache, MySQL Web Development.*
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.w3schools.com/

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.

17. **Expected learning outcomes of the Module (Course)**	
Knowledge	
Learning Outcomes 1	Explain the fundamental concepts of modeling and simulation, probability, and random number generation in computational systems.
Skills	
Learning Outcomes 2	Apply probability theory to develop simulation-based problem solutions.
Learning Outcomes 3	Use software tools to implement random number generators and simulation models.
Values	
Learning Outcomes 4	Demonstrate teamwork and collaboration in simulation projects.
Learning Outcomes 5	Show ethical responsibility in reporting simulation results and data integrity.

18. **Teaching and Learning Strategies**
• Combination of lectures, problem-solving sessions, lab experiments, group projects, and case studies. • Use of real-world simulation software to connect theory with practice.

19. Evaluation methods
• Continuous assessment through quizzes, assignments, and projects. • Midterm and final written examinations. • Oral presentations and project demonstrations.

20. The most important sources of information about the program
• Core textbooks, research papers, and online resources in modeling and simulation. • Course handouts, lecture slides, and supplementary references provided by the instructor. • Access to scientific journals and digital libraries.

Course Description Form

47.	Module Name: **Modeling and Simulation**
48.	Module Code: NETW304
49.	Semester / Year: 2nd Semester / 2024-2025
50.	Description Preparation Date: 15−08−2025
51.	Available Attendance Forms: Excel
52.	Number of Credit Hours (Total) / Number of Units (Total): 3 Units
53.	Module's administrator's (mention all, if more than one name)
	Name: Huda Khaleel Mohammed Email: huda.mohammed@uoninevah.edu.iq
54.	Module's Objectives
Module's Objectives The main Objectives of this module are to:	• **Introduce the fundamental concepts of modeling and simulation in computer science and engineering.** • **Provide students with knowledge of probability theory as applied in simulation models.** • **Develop skills in random number generation techniques for simulation experiments.** • **Enable students to design and analyze simple simulation models to solve real−world problems.** • **Foster students' ability to critically evaluate simulation results and validate models.**

55. Teaching and Learning Strategies

Strategy	• Interactive lectures to present key theoretical concepts. • Problem-solving sessions to strengthen mathematical and probabilistic foundations. • Laboratory work on computer-based simulation tools. • Case studies and real-world applications. • Group projects and presentations to enhance teamwork and communication skills.

56. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	6	Explain fundament concepts of modeling and simulation	Introduction	Interactive Lectures + Class Discussion	Quiz + Participation
3-4	6	Apply probability theory in the context of simulation	Probability as Using in Simulation	Lectures + Problem-Solving Sessions	Assignment + Short Exam
5-6	6	Develop models for queueing systems and analyze	Queueing Simulation	Lectures + Case Studies + Lab Work	Project Task + Quiz

		performance			
7-8	6	Implement simulation models for inventory systems	Inventory Simulation	Lectures + Lab Experiments	Report + Oral Presentation
9-10	6	Use software tools to generate random numbers and validate models	Random Number Generation	Lectures + Lab Exercises	Practical Test + Assignment
11	3	Integrate knowledge across simulation topic	Review & Applications	Group Project + Problem Solving	Group Project Evaluation
12	3	Demonstrate teamwork and ethical reporting in simulation projects	Final Project Preparation	Project Supervision	Final Project Submission + Presentation

57. Module Evaluation

Grading System (Total = 100 Marks):

- **40 Marks** (Coursework):
  - 30 Marks: Midterm Exam
  - 5 Marks: Quiz (Daily Exam)
  - 5 Marks: Class Participation & Homework
- **60 Marks:** Final Exam

58. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	• Devendra K. Chaturvedi, "Modeling and Simulation of Systems Using

	Matlab and Simulink". • Averill M. "Simulation Modeling and Analysis.", Fifth Edition.
Recommended books and references (scientific journals, reports…)	• SCHAUM'S outlines, Marray R. Spiegel, etc., "Probability and Statistics." Fourth Edition
Electronic References, Websites	ChatGPT

ARTIFICIAL INTELLIGENCE

21. **Program Vision**
Program vision is written here as stated in the university's catalogue and website.
22. **Program Mission**
Program mission is written here as stated in the university's catalogue and website.
23. **Program Objectives**
General statements describing what the program or institution intends to achieve.
24. **Program Accreditation**
Does the program have program accreditation? And from which agency?
25. **Other external influences**
Is there a sponsor for the program?

26. **Program Structure**

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

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

27. **Program Description**

Year/Level	Course Code	Course Name	Credit Hours	
2024-2025		Artificial Intelligence	2 theoretical	2 practical

28. Expected learning outcomes of the program

Knowledge	
At the end of the course, the student will be able to: 1. Define the concepts, goals, and branches of Artificial Intelligence. 2. Explain basic and informed search algorithms for problem-solving.	3. Describe methods of knowledge representation and inference. 4. Identify the components and functioning of artificial neural networks. 5. Understand the training process of neural networks and address overfitting issues.
Skills	
1. Analyze complex problems and design solutions using appropriate artificial intelligence algorithms.	2. Develop critical thinking skills by comparing various AI models and algorithms.
3. Acquire practical programming skills using Python and AI libraries.	4. Enhance presentation and communication skills by delivering practical projects and interpreting model results to peers or the instructor.
Ethics	
• Respect for intellectual property and data.	• Honesty and transparency in project preparation.
• Commitment to professional responsibility in the use of artificial intelligence technologies.	

29. Teaching and Learning Strategies

- Project-Based Learning.
- Team-Based Learning.
- Solving real-world problems using artificial intelligence algorithms (Problem Solving).
- Analysis and inference through the implementation of software applications and intelligent models.
- Classroom presentations and discussions to encourage critical thinking (Presentation & Discussion).
- Use of interactive learning tools such as Python and TensorFlow.
- Training in self-directed learning by following and applying modern techniques.

30. Evaluation methods

Weekly, monthly, and daily exams, as well as the final exam, in addition to presentation skills, writing reports in the form of research papers, extracurricular assignments, and the possibility of benefiting from the Bologna Process.

31. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

32. Acceptance Criterion

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

33. The most important sources of information about the program

Textbook:
Artificial Intelligence: Structures and Strategies for Complex Problem Solving by George F. Luger.

2. Open Digital Resources:

- Educational platforms such as Coursera, edX, and YouTube offering courses in Artificial Intelligence.
- Recent scientific articles and research papers in the fields of Artificial Intelligence and Deep Learning.

34. Program Development Plan

Course Description Form

59. Course Name: **Artificial Intelligence**	
60. Course Code:	
61. Semester / Year:2024-2025	
62. Description Preparation Date: **1/9/2025**	
63.Available Attendance Forms: presence	
64.Number of Credit Hours (Total) / Number of Units (Total) Total units: 60 hours (4 × 15)	
65. Course administrator's name (mention all, if more than one name)	
Name: Dr. Lubna Thanon Ahmedi Email: lubna.thanoon@uoninevah.edu.iq	
66. Course Objectives	
Course Objectives	• Introduce students to the fundamentals of Artificial Intelligence and search algorithms. • Enable them to represent knowledge and apply logical reasoning. • Develop their problem-solving skills and intelligent data analysis abilities.
67. Teaching and Learning Strategies	
Strategy	• **Collaborative Learning** • **Problem-Based Learning** • **Presentation**

68. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
fi	1	• Able to analyze • Able to use Python • Able to deliver a presentation		• **Laboratories** • **Training**	• **Solving Programming Problems** • **Evaluation Form**

69. 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

70. Learning and Teaching Resources

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

NETWORK SECURITY

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.

35. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Demonstrate understanding of the fundamental concepts, principles, and significance of network security in modern IT infrastructures.
Skills	
Learning Outcomes 2	Identify, analyze, and mitigate common network threats and vulnerabilities using appropriate security tools.
Learning Outcomes 3	Apply encryption techniques, security protocols, and defensive mechanisms (e.g., firewalls, IDS/IPS, VPNs) to secure network communications and resources.
Values	
Learning Outcomes 4	Develop a responsible and ethical approach to handling security issues, respecting privacy, and adhering to professional codes of conduct.
Learning Outcomes 5	Demonstrate teamwork, leadership, and self-directed learning in solving real-world cybersecurity challenges.

36. Teaching and Learning Strategies

4- Lectures: Theoretical knowledge supported by real-world examples.
5- Hands-On Labs: Practical sessions using Wireshark for network analysis.
6- Case Studies: Real-world examples to link theory with practice.
7- Seminars: Student-led presentations on network monitoring topics.
8- Interactive Discussions: Peer discussions and Q&A to deepen understanding.
9- Self-Directed Learning: Independent exploration of assigned readings and resources.
10- Assessments and Feedback: Quizzes and assignments with constructive feedback.

37. Evaluation methods

- **Formative Assessments:** Quizzes, assignments, and lab projects conducted during the semester to track progress.

- **Summative Assessments:** Midterm and final examinations to evaluate cumulative understanding.

- **Continuous Evaluation:** Class participation, presentations, and project reports.

38. The most important sources of information about the program

- **Required Textbooks:**

- William Stallings, *Network Security Essentials*
- Keith Barker, *Practical Network Security*

- **Recommended Textbooks:**

- Jon Erickson, *Hacking: The Art of Exploitation*
- Dafydd Stuttard, *The Web Application Hacker's Handbook*

- **Electronic References / Websites:**

- IEEE Xplore Digital Library
- SpringerLink (Cybersecurity & Networking collections)
- OWASP (Open Web Application Security Project)
- NIST Cybersecurity Guidelines

Course Description Form

71. Module Name:
Network Security
72. Module Code:
73. Semester / Year:
2024–2025
74. Description Preparation Date:
September 2024
75. Available Attendance Forms:
Theory + Lab (in-class & online support)
76. Number of Credit Hours (Total) / Number of Units (Total)
150 **(hr/sem)**
77. Module's administrator's (mention all, if more than one name)
Name: Dr. Karam Muhammed Mahdi Salih Email: Karam.mahdi@uoninevah.edu.iq

78. Module's Objectives	
Module's Objectives	• Provide a comprehensive understanding of network security principles, threats, defenses, and best practices. • Enable students to acquire practical skills in securing networks, analyzing vulnerabilities, and applying encryption techniques. • Develop problem-solving abilities and ethical awareness in cybersecurity practices.

79. Teaching and Learning Strategies	
Strategy	• Lectures: Theoretical knowledge supported by real-world examples. • Hands-On Labs: Practical sessions using Wireshark for network analysis. • Case Studies: Real-world examples to link theory with practice. • Seminars: Student-led presentations on network monitoring topics. • Interactive Discussions: Peer discussions and Q&A to deepen understanding. • Self-Directed Learning: Independent exploration of assigned readings and resources. • Assessments and Feedback: Quizzes and assignments with constructive feedbac

80. Module Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	4	LO1	Introduction to Network Security	Lecture + Discussion	Quiz
2–3	4	LO2	Threats and Vulnerabilities	Lecture + Case Studies	Quiz/Assignment
4–5	4	LO2	Network Attacks & DoS/DDoS	Lecture + Lab	Assignment
6	4	LO3	Transport Layer Security Issues	Lecture + Lab	Lab Project
7	4	LO3	Cryptography Basics	Lecture + Lab	Midterm Exam
8	4	LO3	Midterm Exam	Exam	Midterm
9–10	4	LO2–3	Firewalls, IDS/IPS	Lecture + Lab	Lab Project
11	4	LO3–4	Advanced Security Topics	Seminar	Presentation
12	4	LO5	Capstone Project Presentation	Lab + Seminar	Project Report
13-14	4	All	Course Review & Final Prep	Discussion	Participation
15	4	All	Final Exam	Exam	Final Exam

81. Module Evaluation

- Quizzes: 10%
- Assignments: 5%

Seminars 5%

- Lab Projects: 15%
- Midterm Exam: 15%
- Final Exam: 50%

Total: 100%

82. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• William Stallings, *Network Security Essentials*
Main references (sources)	• Keith Barker, *Practical Network Security* • Dafydd Stuttard, *The Web Application Hac*
Recommended books and references (scientific journals, reports…)	Jon Erickson, *Hacking: The Art of Exploitation*
Electronic References, Websites	• IEEE Xplore Digital Library • SpringerLink (Cybersecurity & Networking collections) • OWASP (Open Web Application Security Project) • NIST Cybersecurity Guidelines

NETWORK PROGRAMMING I

Expected learning outcomes of the Module (Course)
Knowledge
19. Network Fundamentals: Understand the basic components of a computer network, including hosts, routers, and communication channels. 20. Protocols: Understand different protocols and their roles, with a focus on the TCP/IP suite. 21. Sockets: Grasp the concept of sockets as communication endpoints and their role in Inter-Process Communication (IPC). 22. Python's Socket Module: Learn how to use Python's built-in socket module for network programming. 23. Data Handling: Comprehend the importance of encoding and decoding data when using sockets for communication. 24. Server Parallelism: Understand the difference between process-based and thread-based parallelism, including the benefits and drawbacks of each approach. 25. socketserver Module: Understand the benefits of using Python's socketserver module to simplify server development.
Skills
15. Implement a simple server-client interaction in Python. 16. Set up a server for socket communication, including creating, binding, listening, and accepting connections. 17. Set up a client for socket communication, including creating a socket and establishing a connection to a server. 18. Break down the key components of a socketserver program. 19. Use :ForkingMixIn to create multi-process servers. 20. Use :ThreadingMixIn to create multi-threaded servers.
Values
The main values of the course are: 6. Practical Application: You learn to implement actual network applications, which is a fundamental skill in software development. 7. Industry-Relevant Skills: The course focuses on using Python, a highly sought-after language, to build network servers, making your skills directly applicable to many job roles. 8. Fundamental Knowledge: It covers the core concepts of networking, such as protocols and sockets, which are essential for understanding how applications communicate over the internet. 9. Enhanced Performance: The curriculum includes advanced topics like multi-threading and multi-processing, teaching you how to build efficient, scalable servers that can handle multiple clients simultaneously.

26. **Teaching and Learning Strategies**
1. Deliver the course material to students in a detailed manner. 2. Engage students in solving practical problems through laboratory sessions. 3. Encourage discussion and dialogue on topics related to the subject.

27. Evaluation methods
Weekly, monthly, and daily examinations, in addition to the final year exam

28. **The most important sources of information about the program**
5. "Linux Socket Programming by Example", 1st Edition, by Warren Gay. 6. "Python Network Programming Cookbook", 2nd Edition, by Pradeeban Kathiravelu and Dr. M. O. Faruque Sarker.

Course Description Form

83.	Module Name:
	Networks Programming
84.	Module Code:
	NETW309
85.	Semester / Year:
	Semester 7 /2024-2025
86.	Description Preparation Date:
	2025-9-2
87.	Available Attendance Forms:
88.	Number of Credit Hours (Total) / Number of Units (Total)
89.	Module's administrator's (mention all, if more than one name)
	Name: Dr. Balqees Talal Hasan Email: balqees.hasan@uoninevah.edu.iq
90.	Module's Objectives
Module's Objectives	• Understand Sockets and IPC: Grasp the concept of sockets and their role Inter-Process Communication (IPC) • Learn Python's Socket Module: Learn how to use Python's socket modul to write network programs • Implement Client-Server Interaction: Gain practical experience in implementing a simple client-server communication system using Python • Configure Sockets: Learn how to create and configure sockets in Python • Comprehend Data Handling: Understand the importance of encoding an decoding data when using sockets for communication • Explore socketserver: Explore the benefits of using Python's socketserve module and break down its key components . • Implement Parallelism: Understand the difference between process-base and thread-based parallelism and learn how to create multi-process and multi-threaded servers using ForkingMixIn and ThreadingMixIn respectively
91.	Teaching and Learning Strategies
rategy	Interactive lectures: Instead of relying solely on theoretical explanations, lectures will integrate discussions and group problem-solving, encouraging students to think

	critically and participate actively. Hands-on laboratory practice: Emphasis will be placed on practical work through dedicated labs, allowing students to directly apply theoretical concepts on Linux systems and strengthen their skills in file, process, and network management. Project-based learning: Students will be assigned small practical projects requiring them to apply multiple course concepts to solve specific problems, helping them connect different topics together. Discussions and Q\&A: Time will be allocated during lectures for open discussions, where students can ask questions and exchange ideas about course concepts, deepening their understanding. Self-directed learning: Students will be encouraged to use available resources, such as recommended textbooks, to explore additional Linux commands and concepts independently.

92. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
12- 4-3 6-5 8-7 9 11-10 13-12 14 -	8 8 8 8 8 8 8 8	• Understand basic components of network and differen protocols. • Grasp the concept of sockets a their role in Inter-Process Communication (IPC • Learn how to create and configure sockets in Python an implement a simple client-server interaction. • Explore the benefits and key components of Pytho socketserver module. • Understand t difference between process-based and	Introduction to works Programming ocket API Overview Socket Programming Basics: Client-Server Communication Building Network Servers with socketserver Implementing Multi-threaded and Multi-process socketserver Advanced Topics & Practical Project Module Review & Final Evaluation	Lectures/Self-dy from slides Lectures/Self-dy from slides Lectures/Self-dy from slides Lectures/Self-dy from slides Lectures/Self-dy from slides nds-on project ork and review eview sessions	Short quiz, practical exercise Homework, practical exercise Short quiz, practical task Homework, practical test Midterm exam Short quiz, applied task Homework, presentation Final exam

		thread-based parallelism and implement multi-threaded and multi-process servers. • Apply knowledge to a large project; troubleshoot and debug networked applications. • Synthesize all course concepts and prepare for the final evaluation.			

93. Module Evaluation
1. Coursework (50 points): Midterm Exam (20 points): Covers topics taught in the first half of the course, usually conducted in Week 9. Practical Projects and Homework (20 points): Distributed throughout the semester to assess students' application of theoretical concepts. Lab Participation (10 points): Evaluates students' engagement in lab sessions and their ability to use Linux commands and manage files. 2. Final Exam (50 points): Covers all course topics from Week 1 to the last week. Aims to assess students' comprehensive understanding of both theoretical and practical aspects of the course.

94. Learning and Teaching Resources	
quired textbooks (curricular books, if any)	4. "Linux Socket Programming by Example", 1st Edition, by Warren Gay. "Python Network Programming Cookbook", 2nd Edition, by Pradeeban Kathiravelu and Dr. M. O. Faruque Sarker.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

IP NETWORKS FAULT DETECTION

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.

39. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Understand the concepts of network fault, failure, and performance degradation. Explain the role of fault detection in the FCAPS (Fault, Configuration, Accounting, Performance, Security) model. Identify key protocols and tools used for network monitoring and management (SNMP, ICMP, Syslog, NetFlow). Recognize best practices in fault detection, root cause analysis, and preventive maintenance.
Skills	
	• Apply troubleshooting techniques (ping, traceroute, packet captures, SNMP monitoring) to identify and diagnose network problems. • Use simulation/emulation tools (Cisco Packet Tracer, GNS3, Wireshark) to replicate and resolve network faults. • Configure network devices to generate, log, and analyze fault data. • Design a simple fault management plan for a small-to-medium network.
Values	
	• Develop responsibility for ensuring network reliability and availability. • Appreciate teamwork and collaboration in diagnosing and resolving complex network issues. • Demonstrate professional ethics in handling sensitive network fault data and logs. • Cultivate a mindset of continuous monitoring and improvement to reduce downtime.

40. **Teaching and Learning Strategies**
Teaching and learning strategies and methods adopted in the implementation of the program in general.

41. Evaluation methods
Student performance will be assessed through **continuous evaluation and final exams**. Continuous assessments include quizzes, lab reports, assignments, and a midterm exam to test applied troubleshooting knowledge. A final project/case study emphasizes real-world fault detection and resolution. The final exam evaluates comprehensive theoretical and practical understanding.

42. **The most important sources of information about the program**
State briefly the sources of information about the program.

Course Description Form

95.	Module Name:
96.	Module Code:
	IP networks Fault detection
97.	Semester / Year:
	1st semester 2025-2026
98.	Description Preparation Date:
99.	Available Attendance Forms:
100.	Number of Credit Hours (Total) / Number of Units (Total)
101.	Module's administrator's (mention all, if more than one name)
	Name: mahmood alfathe Email: mahmood.alfathe@uoninevah.edu.iq
102.	Module's Objectives

Module's Objectives	•

103.	Teaching and Learning Strategies
Strategy	

104. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
12	48				

105. Module Evaluation

- Quizzes & Assignments – 10%
- Tutorial / Lab Reports – 10%
- Midterm Examination – 20%
- Final Project / Case Study – 20%
- Class Participation – 5%
- Final Written Examination – 35%

106. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• Subramanian, M., Network Management: Principles and Practice, Addison-Wesley, 2010. • Mani Subramanian, Network Management: Concepts and Practice: A Hands-On Approach, Pearson, 2010.
Main references (sources)	• Larry L. Peterson & Bruce S. Davie, Comput Networks: A Systems Approach, 5th Edition, Morga Kaufmann, 2011. • William Stallings, SNMP, SNMPv2, SNMPv and RMON 1 and 2, Addison-Wesley, 1999. • Olivier Bonaventure, Computer Networking: Principles, Protocols and Practice (Open Access).
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

NETWORK MONITORING

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.

43. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Understand the fundamentals of network monitoring and its importance in modern IT environments.
Skills	
Learning Outcome 2: Differentiate between security monitoring and performance monitoring, and comprehend their respective challenges and solutions. Learning Outcome 3: Use the Wireshark tool for network analysis, troubleshooting, and threat detection. Learning Outcome 4: Analyze network traffic and identify potential anomalies indicating performance or security issues.	
Values	
Learning Outcomes 4	Develop strategies to secure and optimize network performance based on monitoring data. .
Learning Outcomes 5	Demonstrate ethical responsibility and professional conduct in monitoring and analyzing network traffic.

44. Teaching and Learning Strategies
11- Lectures – Theoretical knowledge supported by real-world examples. 12- Hands-On Labs – Practical sessions using Wireshark for network analysis. 13- Case Studies – Real-world examples to link theory with practice. 14- Seminars – Student-led presentations on network monitoring topics. 15- Interactive Discussions – Peer-to-peer discussions and Q&A sessions. 16- Self-Directed Learning – Independent exploration of assigned readings and resources. 17- Assessments and Feedback – Quizzes and assignments with constructive feedback. 18-

45. Evaluation methods
• Formative Assessments: Quizzes, assignments, and lab projects conducted during the semester to track progress. • Summative Assessments: Midterm and final examinations to evaluate cumulative

understanding.

- Continuous Evaluation: Class participation, presentations, and project reports.

46. The most important sources of information about the program

Required Textbooks:
- Mark Ross, Advanced Network Analysis: Principles and Techniques
- Chris Chapman & Alan Brooking, Network Performance and Security: Testing and Analyzing Using Open Source and Low-Cost Tools
- Richard Bejtlich, The Practice of Network Security Monitoring: Understanding Incident Detection and Response
- Ed Wilson, Jeff Forster, and Ed Tittel, Network Monitoring and Analysis: A Protocol Approach to Troubleshooting

Recommended Texts:
- Laura Chappell, Wireshark Network Analysis
- Chris Sanders, Practical Packet Analysis

Course Description Form

107. Module Name:
Network Monitoring
108. Module Code:

109. Semester / Year:

2024–2025

110. Description Preparation Date:

September 2024

111. Available Attendance Forms:

Theory + Lab (in-class & online support)

112. Number of Credit Hours (Total) / Number of Units (Total)

150 **(hr/sem)**

113. Module's administrator's (mention all, if more than one name)

Name: Dr. Karam Muhammed Mahdi Salih
Email: Karam.mahdi@uoninevah.edu.iq

114. Module's Objectives

Module's Objectives	Provide a comprehensive understanding of network monitoring, covering both theoretical foundations and hands-on skills. Students will learn security and performance monitoring techniques, use Wireshark to analyze and troubleshoot networks, and develop strategies to identify threats and optimize performance.

115. Teaching and Learning Strategies

Strategy	• Lectures – Theoretical knowledge supported by real-world examples. • Hands-On Labs – Practical sessions using Wireshark for network analysis. • Case Studies – Real-world examples to link theory with practice. • Seminars – Student-led presentations on network monitoring topics. • Interactive Discussions – Peer-to-peer discussions and Q&A sessions. • Self-Directed Learning – Independent exploration of assigned readings and resources. • Assessments and Feedback – Quizzes and assignments with constructive feedback.

116. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	LO1	Introduction to Network Monitoring	Lecture + Discussion	Quiz
2	4	LO2	Principles of Security Monitoring	Lecture + Case Studies	Assignment
3	4	LO2	Performance Monitoring Basics	Lecture + Discussion	Quiz
4	4	LO3	Wireshark Basics	Lecture + Lab	Lab Assignment
5	4	LO3-4	Protocol Analysis and Anomaly Detection	Lab + Case Study	Quiz
6	4	LO4	Advanced Monitoring Techniques	Lecture + Lab	Lab Project

7	4	LO6	Ethical Considerations in Monitoring	Lecture + Seminar	Participation
8	4	LO1-4	Midterm Exam	Exam	Midterm
9	4	LO2-4	Security Case Studies	Case Study	Report
10	4	LO4-5	Performance Troubleshooting	Lab + Case Study	Lab Report
11	4	LO4-5	Capstone Preparation	Seminar	Presentation
12	4	LO5	Capstone Seminar Presentation	Seminar	Project Report
13	4	All	Review Session	Discussion	Participation
15	4	All	Final Exam	Exam	Final Exam
12	4	LO5	Capstone Seminar Presentation	Seminar	Project Report

117. Module Evaluation

- Quizzes: 10%
- Assignments: 5%
- Seminars 5%
- Lab Projects: 15%
- Midterm Exam: 15%
- Final Exam: 50%

Total: 100%

118. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Ross, Chapman & Brooking, Bejtlich, Wilson et al.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Chappell, Sanders.
Electronic References, Websites	IEEE, ACM, Springer, OWASP, Wireshark official documentation.

DATA MINING

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.

47. **Expected learning outcomes of the Module (Course)**	
	Knowledge
Learning Outcomes 1	• Understand the fundamental data mining concepts, including classification, clustering, association rule mining, anomaly detection, and predictive modeling. • Describe common data preprocessing techniques for cleaning, normalization, transformation, and feature selection. • Recognize the mathematical and statistical foundations behind algorithms such as oneRule, k-means, and Naïve Bayes.
	Skills
Learning Outcomes 2	• Apply data mining techniques using tools such as Python (with libraries like scikit-learn, pandas) or Weka, RapidMiner to extract patterns and knowledge from real datasets. • Analyze and interpret data mining results to support decision-making in various application domains.
Learning Outcomes 3	• Evaluate the performance of different data mining algorithms using metrics like accuracy, precision, recall, F1-score, and ROC curves. • Preprocess and prepare datasets for mining by handling missing values, outliers, and redundant features.
	Values
Learning Outcomes 4	• Recognize the ethical implications of data mining, including data privacy, bias in algorithms, and informed consent. • Promote responsible use of mined knowledge, especially in sensitive areas like healthcare, finance, or social media.
Learning Outcomes 5	• Encourage students to build practical projects using data

	mining tools to apply their knowledge to real-world problems.

48. **Teaching and Learning Strategies**
• Lectures with Real-World Examples – Explain data mining concepts using case studies from various industries (e.g., e-commerce, healthcare, cybersecurity). • Hands-On Labs – Provide practical exercises using tools like Orange Data Mining, WEKA, or Python libraries to implement algorithms. • Project-Based Learning – Assign projects where students collect datasets, preprocess data, apply mining techniques, and interpret results.
49. Evaluation methods
Formative assessment Summative assessment

50. **The most important sources of information about the program**
Primary Textbook • Online Learning Platforms • Instructor-Prepared Materials •

Course Description Form

119. Module Name:
ta mining
120. Module Code:
ITNW4765
121. Semester / Year:

/2024–2025
122. Description Preparation Date:
/08/2025
123. Available Attendance Forms:
cel Sheet prepared by the Dep
124. Number of Credit Hours (Total) / Number of Units (Total)
125. Module's administrator's (mention all, if more than one name)
me: Dr Ali H. Al-Shakarchi ıail: ali.al-shakarchi@uoninevah.edu.iq
126. Module's Objectives

Module's Objectives	• Understand key concepts, tasks, and applications of data mining • Apply data preprocessing techniques and implement common data mining algorithms. • Analyze and Interpret results to extract meaningful insights. • Evaluate model performance using appropriate metrics.

127. Teaching and Learning Strategies	
ıtegy	• **Lectures with Real–World Examples** – Explain data mining concepts using case studies from various industries (e.g., e–commerce, healthcare, cybersecurity). • **Hands–On Labs** – Provide practical exercises using

	tools like Orange Data Mining, WEKA, or Python libraries to implement algorithms. • **Project-Based Learning** – Assign projects where students collect datasets, preprocess data, apply mining techniques, and interpret results. • **Collaborative Group Work** – Encourage students to work in teams to solve data mining problems, promoting discussion and peer learning. • **Continuous Assessment through Quizzes** – Reinforce learning with short quizzes on concepts and tools.

128. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the concepts of Data	Introduction to Data Mining, KDD	Lecture, Discussion	Quiz
2	2	Explain the motivating	Motivating Challenges of Data	Lecture, Examples	Quiz
3	2	Identify and explain different	Data Mining Tasks: Predictive	Lecture, Case Studies	Assignment
4	2	Explain factors affecting data	Data Quality and Types of Data	Lecture	Assignment
5	2	Classify attributes into nominal,	Types of Attributes	Lecture, Examples	Quiz
6	2	Describe different data sets and	Types of Data Sets and Handling Non-	Lecture	Quiz
7	2	Apply data preprocessing	Data Preprocessing: Aggregation,	Lecture, Demonstration	Assignment
8	2	Perform dimensionality	Data Preprocessing: Dimensionality	Lecture, Demonstration	Assignment
9	2	Create new features and apply	Data Preprocessing: Feature creation,	Lecture	Quiz
10	2	Explain model evaluation	Model Evaluation Methods	Lecture, Discussion	Quiz
11	2	Differentiate between	Model Evaluation Categories	Lecture	Assignment
12	2	Apply basic classification	Modeling: Classification –	Lecture, Demonstration	Assignment
13	2	Understand heterogeneous and	Heterogeneous and Complex Data	Lecture	Quiz

14	2	Discuss advanced data mining tasks	Advanced Data Mining Tasks	Lecture, Discussion	Assignment
15	2	Review and integrate all course	Course Review & Final Preparation	Lecture, Q&A	Final Exam

Module Evaluation			
Formative Assessment	Quizzes	2 quizzes	10%
	Assignments	2 assignments	10%
	Projects / Labs	2 projects/labs	20%
Summative Assessment	Midterm Exam	2 hours	10%
	Final Exam	3 hours	50%

129. Learning and Teaching Resources	
quired textbooks (curricular books, if any)	Tan, P. N., Steinbach, M., & Kumar, V. (2016). Introduction to data mining. Pearson Education India.
in references (sources)	Instructor-Prepared Materials
Recommended books and references (scientific journals, reports…)	nnila, H., & Smyth, P. Principles of Data Mining. By David Hand.
ctronic References, Websites	

INTERNET OF THINGS

Module Information معلومات المادة الدراسية		
Module Title	Internet of Things (IOT)	**Module Delivery**
Module Type	**Core**	☒**Theory** ☐**Lecture**
Module Code	**NETW4855**	

ECTS Credits	**6**		☒ **Lab** ☐**Tutorial** ☐**Practical** ☐ **Seminar**	
SWL (hr/sem)	**150**			
Module Level	UGx11 4	**Semester of Delivery**	8	
Administering Department	NETW	**College**	CIT	
Module Leader	Balqees Agha	**e-mail**	Balqees.hasan@uoninevah.edu.iq	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.	
Module Tutor	Hayder Salah	**e-mail**	hayder.salah@uoninevah.edu.iq	
Peer Reviewer Name	Hayder Salah	**e-mail**	hayder.salah@uoninevah.edu.iq	
Scientific Committee Approval Date	20/06/2023	**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

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

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To understand the concepts, definitions, and history of the Internet of Things (IoT). 2. To familiarize with IoT enabling technologies, architecture, and communication protocols. 3. To gain knowledge of IoT data acquisition platforms, including microcontrollers and real-time embedded systems. 4. To learn data analytics techniques and tools for analyzing and visualizing IoT data. 5. To explore the importance of IoT security, including defense mechanisms, privacy

	preservation, and authentication. 6. To understand the integration of IoT with artificial intelligence (AI) and its applications. 7. To gain practical experience in IoT product development, testing, and project implementation. 8. To consolidate knowledge through a comprehensive review of IoT principles.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define and explain the fundamental concepts of the Internet of Things (IoT). 2. Evaluate and select appropriate IoT enabling technologies for specific applications. 3. Analyze and design IoT architectures based on communication and networking protocols. 4. Recognize the major hardware and software components involved in IoT systems. 5. Implement data acquisition and processing using microcontrollers and embedded software. 6. Apply data analytics techniques, including data analysis, visualization, and interpretation, in IoT scenarios. 7. Implement data cleaning methodologies specific to IoT data sets. 8. Assess the security risks and vulnerabilities of IoT systems and propose appropriate countermeasures. 9. Demonstrate understanding of malware control, privacy preservation, trust models, and authentication mechanisms in the IoT context. 10. Apply computational security measures and protocols for IoT access networks. 11. Conduct security testing and vulnerability assessments on IoT devices and networks. 12. Integrate IoT systems with artificial intelligence (AI) technologies for enhanced functionality and decision-making. 13. Utilize IoT platforms for system integration and interoperability. 14. Develop and test IoT products, applying knowledge of software and hardware requirements. 15. Present completed IoT projects effectively. 16. Demonstrate a comprehensive understanding of IoT principles through a review of key concepts and topics.
Indicative Contents المحتويات الإرشادية	IOT Introduction: Explanation of IoT concepts and definitions Understanding the requirements, functionalities, and structure of IoT Overview of IoT enabling technologies Exploration of IoT architecture and its components Introduction to major hardware and software components of IoT Discussion on IoT communication and networking protocols Identification of IoT services and applications Overview of IoT standards and connectivity options IOT Data Acquisition & Platforms: Introduction to microcontrollers (Arduino Uno/Mega2560, Raspberry Pi, ARM) Real-time systems and embedded software in IoT Understanding operating systems and drivers for end device programming Hardware and software requirements for IoT Techniques for data acquisition and platforms used in IoT IOT Data Analytics & Visualization: Data analysis using the Ipython module Visualization and interpretation of data collected from IoT devices Techniques for data cleaning in IoT

	IOT Security: Analysis of attacks, defense, and network robustness in IoT Understanding malware propagation and control in IoT Privacy preservation techniques for data dissemination in IoT Exploring trust and trust models for IoT Authentication methods and techniques in IoT Computational security measures for IoT devices Security protocols for IoT access networks Testing and evaluating security in IoT systems Integration of IoT with AI: Exploring the integration of IoT with artificial intelligence Examining IoT platforms for system integration, such as AllJoyn, Google Thing, and Apple HomeKit IOT Product Development & Testing with Project: Study of IoT software and component fundamentals Familiarization with Arduino/Raspberry Pi and software installation Hands-on exercises for interfacing LED, buzzer, push button, digital sensors, DHT11 sensor, and motor using Arduino/Raspberry Pi Implementation of security measures, including encryption and user authentication, for protecting IoT device communication Utilizing machine learning algorithms for analyzing sensor data and making predictions Developing a comprehensive dashboard for data visualization and analysis
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies for the IoT module include lecture-based instruction for theoretical concepts, hands-on practical sessions with Arduino/Raspberry Pi, lab exercises for component interfacing, interactive discussions on IoT communication and services, data analytics and visualization projects, group work for security and product development, assessments to evaluate understanding and application of concepts, and a comprehensive review before the final exam. These strategies aim to provide a balanced approach, combining theoretical knowledge with practical skills, fostering collaboration, critical thinking, and ensuring students have a thorough understanding of IoT principles and applications.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	88	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	**IOT Introduction** Concepts and Definitions of The Internet of Things (IoT) History of IOT Requirements, Functionalists, and structure of IOT IoT enabling technologies IoT Architecture
Week 2	**IOT Introduction-Continued** The major component of IOT (Hardware & Software) IoT communication and networking protocols, Role of wired and wireless communication. IoT services and applications.

	IoT Standards, Connectivity
Week 3	**IOT Data Acquisition & Platforms** Micro Controllers (Arduino uno/mega2560, Rasberry-Pi, ARM), Real-time systems, and embedded software OS and Drivers (End Device Program) Hardware & Software Requirements
Week 4	**IOT Data Analytics & Visualization** Analysis Of data using the Ipython Module
Week 5	**IOT Data Analytics & Visualization-Continued** Visualization and interpretation of Data
Week 6	**IOT Data Analytics & Visualization-Continued** Data Cleaning in IoT
Week 7	Midterm Exam
Week 8	**IOT Security** Attack, Defense, and Network Robustness of Internet of Things Malware Propagation and Control in the Internet of Things Privacy Preservation Data Dissemination Trust and Trust Models for the IoT Authentication in IoT
Week 9	**IOT Security-Continued** Computational Security for the IoT Security Protocols for IoT Access Networks Security Testing
Week 10	Integration of IoT with AI
Week 11	Integration of IoT with AI-Continued
Week 12	Integration of IoT with AI-Continued
Week 13	IoT platforms for system integration (AllJoyn, Google Thing, Apple HomeKit, etc.)
Week 14	IOT Product Development & Testing with Project
Week 15	IOT Product Development & Testing with Project
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	**Material Covered**
Week 1	Study the fundamentals of IOT softwares and components.
Week 2	Familiarization with Arduino/Raspberry Pi and perform necessary software installation.
Week 3	To interface LED/Buzzer with Arduino/Raspberry Pi and write a program to turn ON LED for 1 sec after every 2 seconds.
Week 4	To interface Push button/Digital sensor (IR/LDR) with Arduino/Raspberry Pi and write a program to turn ON LED when push button is pressed or at sensor detection.
Week 5	To interface DHT11 sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.
Week 6	To interface motor using relay with Arduino/Raspberry Pi and write a program to turn ON motor when push button is pressed.

Week 7	Midterm Exam
Week 8	Implement security measures such as encryption and user authentication to protect IoT device communication.
Week 9	Implement security measures-Continued
Week 10	Use machine learning algorithms to analyze sensor data and make predictions
Week 11	Use machine learning algorithms to analyze sensor data and make predictions-Continued
Week 12	Use machine learning algorithms to analyze sensor data and make predictions-Continued
Week 13	Build a comprehensive dashboard to visualize and analyze data collected from IoT devices
Week 14	Students work on their IoT with machine learning projects, including data collection, preprocessing, model training, and evaluation.
Week 15	Students present their completed projects
Week 16	A comprehensive review of IoT principles

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Vijay Madisetti, Arshdeep Bahga, Internet of Things, 'A Hands on Approach', University Press. 2. Dr. SRN Reddy, Rachit Thukral and Manasi Mishra, 'Introduction to Internet of Things: A practical Approach', ETI Labs. 3. Pethuru Raj and Anupama C. Raman, 'The Internet of Things: Enabling Technologies, Platforms, and Use Cases', CRC Press	Yes
Recommended Texts	Jeeva Jose, 'Internet of Things', Khanna Publishing House, Delhi Adrian McEwen, 'Designing the Internet of Things', Wiley Raj Kamal, 'Internet of Things: Architecture and Design', McGraw Hill	No
Websites		

Grading Scheme
مخطط الدرجات

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

Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

INTERNET SECURITY

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.

51. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	4. **Understand Fundamental Security Principles**: Gain a comprehensive understanding of core internet security concepts, including the **CIA triad (Confidentiality, Integrity, Availability)**, common attack vectors (e.g., spoofing, DoS, ARP poisoning), and defense mechanisms. 5. **Analyze Network Vulnerabilities & Protocols**: Identify security weaknesses in **network protocols (TCP/IP, ARP, DHCP, HTTP)** and wireless/WLAN systems and evaluate their impact on organizational security. 6. **Apply Security Solutions & Best Practices**: Learn to implement **security measures** (e.g., IPSec, firewalls, IDS/IPS, VLAN segmentation, encryption standards like WPA3) to mitigate risks at different OSI layers.
Skills	
Learning Outcomes 2	3. **Configure and Implement Security Measures** Develop hands-on skills in setting up **firewalls, VPNs (IPSec), and intrusion detection/prevention systems (IDS/IPS)** to protect network infrastructure. 4. **Detect and Mitigate Cyber Attacks** Gain practical experience in identifying and responding to threats such as **ARP spoofing, MAC flooding, DHCP starvation, and DoS attacks** using tools like Wireshark, Nmap, and Dynamic ARP Inspection (DAI).
Learning Outcomes 3	**Secure Wireless and Wired Networks** Learn to enforce security protocols (e.g., **WPA3, 802.1X authentication**) and apply best practices for **port security, VLAN segmentation, and encryption** to safeguard both wired and wireless environments.
Values	

Learning Outcomes 4	3. **Ethical Responsibility in Cybersecurity** Cultivate a strong sense of **professional ethics**, understanding the importance of protecting user privacy, data integrity, and organizational assets while adhering to legal and regulatory frameworks. 4. **Commitment to Continuous Learning** Develop a mindset of **lifelong learning** to stay updated with evolving cyber threats, security technologies, and best practices in the fast-changing field of internet security.
Learning Outcomes 5	2. **Collaboration and Accountability** Foster **teamwork and accountability** in securing networks, emphasizing transparency, shared responsibility, and effective communication when addressing security incidents or implementing protective measures.

52. **Teaching and Learning Strategies**
5. **Interactive Lectures** – Combine theory with real-world examples, case studies, and live demonstrations to reinforce key concepts. 6. **Hands-on Labs** – Use virtual labs (e.g., Packet Tracer, Wireshark) for practical exercises in configuring firewalls, VPNs, and IDS/IPS. 7. **Group Projects** – Assign collaborative tasks (e.g., designing a secure network, simulating attacks/defenses) to enhance teamwork and problem-solving. 8. **Assessments & Feedback** – Conduct quizzes, penetration testing challenges, and structured feedback sessions to track progress and improve understanding.

53. **Evaluation methods**
Formative assessment Summative assessment

54. **The most important sources of information about the program**
Primary Textbook •
Online Learning Platforms •
Instructor–Prepared Materials •

Course Description Form

130. Module Name:
Internet Security
131. Module Code:
F0411
132. Semester / Year:
1st /2024–2025
133. Description Preparation Date:

12/08/2025
134. Available Attendance Forms:
Excel Sheet prepared by the Dep
135. Number of Credit Hours (Total) / Number of Units (Total)
136. Module's administrator's (mention all, if more than one name)
Name: Dr Ali H. Al-Shakarchi Email: ali.al-shakarchi@uoninevah.edu.iq
137. Module's Objectives

Module's Objectives	**5. Understand Core Security Principles** **xplain the CIA triad (Confidentiality, Integrity, Availability), common cyber threats (e.g., spoofing, DoS), and defense mechanisms across network layers.** **6. Analyze Network Vulnerabilities** **ntify risks in TCP/IP, ARP, DHCP, and wireless protocols and assess their impact on organizational security.** **7. Implement Protective Measures** **Configure firewalls, VPNs (IPSec), IDS/IPS, and encryption (WPA3, MAC filtering) to mitigate attacks like ARP spoofing and MAC flooding.** **8. Developing Ethical Cybersecurity Practices** **Apply ethical hacking principles, adhere to legal standards, and promote proactive threat monitoring and response.**

138. Teaching and Learning Strategies	
Strategy	5. **Interactive Lectures** – Combine theory with real-world examples, case studies, and live demonstrations to reinforce key concepts. 6. **Hands-on Labs** – Use virtual labs (e.g., Packet Tracer, Wireshark) for practical exercises in configuring firewalls, VPNs, and IDS/IPS.

	7. **Group Projects** – Assign collaborative tasks (e.g., designing a secure network, simulating attacks/defenses) to enhance teamwork and problem-solving. 8. **Assessments & Feedback** – Conduct quizzes, penetration testing challenges, and structured feedback sessions to track progress and improve understanding.

139. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Explain CIA triad and security fundamentals	Introduction to Internet Security	Lecture + Case Studies	Quiz
2	3	Analyze wired vs wireless vulnerabilities	Physical Network Security	Demo + Lab (Packet Tracer)	Lab Report
3	3	Identify TCP/IP protocol	Network Protocols Security	Lecture + Wireshark	Quiz
4	3	Detect and prevent ARP spoofing attacks	Data Link Layer Attacks I	Lab (ARP spoofing	Assignment
5	3	Mitigate MAC flooding and port	Data Link Layer Attacks II	Hands-on Lab	Lab Report
6	3	Prevent DHCP attacks	DHCP Security	Lecture + Case Study	Quiz
7	3	Secure STP protocols	Spanning Tree Protocol Security	Demo + Configuration	Assignment
8	3	Implement VLAN security	Virtual LAN Security	Lab (VLAN configuration)	Lab Report
9	3	Evaluate wireless security protocols	Wireless LAN Security	Lecture + Hands-on	Quiz
10	3	Configure IPSec in different modes	Network Layer Security	Lab (IPSec tunnel setup)	Assignment
11	3	Implement VPN solutions	Virtual Private Networks	Case Study + Configuration	Lab Report
12	3	Deploy IDS/IPS systems	Intrusion Detection Systems	Demo (Snort) + Lab	Quiz
13	3	Configure firewall rules and NAT	Firewall Technologies	Hands-on Lab (pfSense)	Assignment
14	3	Integrate security measures	Comprehensive Network Defense	Group Project	Project Presentation
15	3	Review all security concepts	Course Review & Final Prep	Q&A Session	Final Exam

140. Module Evaluation

Formative Assessment	Quizzes	2 quizzes	10%
	Assignments	2 assignments	10%
	Projects / Labs	2 projects/labs	20%

Summative Assessment	Midterm Exam	2 hours	10%
	Final Exam	3 hours	50%

141. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	lings, W. (1995). Network and internetwork security: principles and practice. Prentice-Hall, Inc..
Main references (sources)	Instructor-Prepared Materials
Recommended books and references (scientific journals, reports…)	ptography and Network Security Author: Behrouz A. Forouzan
Electronic References, Websites	https://www.w3schools.com/cybersecurity/

MOBILE APPLICATION

55. **Program Vision**
Program vision is written here as stated in the university's catalogue and website.

56. **Program Mission**
Program mission is written here as stated in the university's catalogue and

website.

57. Program Objectives

General statements describing what the program or institution intends to achieve.

58. Program Accreditation

Does the program have program accreditation? And from which agency?

59. Other external influences

Is there a sponsor for the program?

60. Program Structure

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

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

61. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	**practical**

62. Expected learning outcomes of the program	
Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

63. Teaching and Learning Strategies
Teaching and learning strategies and methods adopted in the implementation of the program in general.
64. Evaluation methods
Implemented at all stages of the program in general.

65. Faculty						
Faculty Members						
Academic Rank	**Specialization**		**Special Requirements/Skills (if applicable)**		**Number of the teaching staff**	
	General	**Special**			**Staff**	**Lecturer**

Professional Development
Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full–time, and part–time faculty at the institution and department level.
Professional development of faculty members
Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

66. **Acceptance Criterion**
(Setting regulations related to enrollment in the college or institute, whether central admission or others)
67. **The most important sources of information about the program**
State briefly the sources of information about the program.
68. Program Development Plan

Course Description Form

142. Course Name:
Mobile Application
143. Course Code:
144. Semester / Year:
Second/Fourth
145. Description Preparation Date:
30/5/2025
146. Available Attendance Forms:
Presence
147. Number of Credit Hours (Total) / Number of Units (Total)
Five hours = theoretical (2) + practical (2) + Tutorial (1)
148. Course administrator's name (mention all, if more than one name)
Name: Dr. Mohamad Mumtaz Aldabagh Email: mohamad.aldabagh@uoninevah.edu.iq

149. Course Objectives	
Course Objectives	• An Ability to develop a deeper understanding of mobile systems, their challenges, and their programming. • An ability of getting hands-on experience on programming applications for mobile devices that includes the integration of sensed information. • An ability to learn to work in small effective teams. • An ability to discuss and present new mobile research topics and technologies in oral and written form.

150. Teaching and Learning Strategies	
Strategy	• Use class time for live-coding sessions that demonstrate how each concept translates into real Flutter code. • In labs, walk students through a short, working demo (scrolling list, custom navigation flow, etc.). • Immediately challenge them to extend or "remix" the demo with new features, explaining every line they add or modify.

151. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	5	Show Course syllabus	Development Concepts	Theoretical	
	5	Knowledge for Mobile development Concepts	Introduction To Flutter Framework	Theoretical	Homework
	5	Knowledge & introduce Flutter Framework	Foundation of Flutter framework & Flutter	Theoretical Tutorial	Assignment
	5	Knowledge & introduce Flutter Widgets	Flutter lifecycle & architecture	Theoretical Tutorial	Assignment
	5	Programming skills to use Widgets	Flutter Widgets I	Theoretical Practical Tutorial	Lab session and Assignment
	5	Programming skills to build mobile UI	Flutter Widgets II	Theoretical Practical Tutorial	Quiz Exam
	5	Knowledge and features to use Dart language	Dart Programming Concepts I	Theoretical Practical Tutorial	Lab session and Assignment
	5	Midterm Exam	Midterm	Exam	Midterm Exam
	5	OOP concepts using Dart	Dart Programming Concepts II (OOP)	Theoretical Practical Tutorial	Lab session and Assignment
	5	Classify the widgets to build UI, Knowledge about Single-Child.	Single-Child Layout Widgets I	Theoretical Tutorial	Lab session and Assignment
	5	Use More Single-Child widgets to build nice UI.	Single-Child Layout Widgets II	Theoretical Practical Tutorial	Quiz exam
	5	Use Multi-Child to build more complex UI	Multi-Child layout widgets I	Theoretical Practical Tutorial	Lab session
	5	Cover more Multi-Child widgets	Multi-Child layout widgets II	Theoretical Practical Tutorial	Lab session and Assignment
	5	Knowledge about Sliver widgets, types.	Sliver- Widgets	Theoretical Practical Tutorial	Lab session and Assignment
	5	Presentation, Programming Skills	Project presentation	Presentation	

		for students project.			
	5	Review and shared Prefinal.	Review Week		

152. Course Evaluation

- Participation (5%)
- Theory Quizzes (10%)
- Midterm (15%)
- Lab Activities (10%)
- Project (10%)
- Final Exam (50%)

153. Learning and Teaching Resources

Required textbooks (curricular books, if any)	-
Main references (sources)	Beginning Flutter: A Hands On Guide to App Development. By Marco L. Napoli. 2019.
Recommended books and references (scientific journals, reports…)	Beginning App Development with Flutter. By Rap Payne. 2019. Flutter for Beginners. By Alessandro Biessek. 2019.
Electronic References, Websites	https://docs.flutter.dev

WEBSITE PROGRAMMING II

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.

69. Expected learning outcomes of the Module (Course)	
Knowledge	
Learning Outcomes 1	Demonstrate an understanding of client–server topologies, web programming concepts, and the role of PHP and MySQL in dynamic website development.
Learning Outcomes 2	Explain the syntax, operators, control structures, and functions of PHP in relation to web application design
Learning Outcomes 3	Describe the use of databases in web applications, including database creation, table management, and integration with PHP
Skills	
Learning Outcomes 1	Apply PHP and MySQL to design, implement, and test simple dynamic websites and applications
Learning Outcomes 2	Use PhpMyAdmin and related tools to manage databases and connect them with web applications
Learning Outcomes 3	Develop, validate, and manage interactive web forms with appropriate handling of user input and security considerations
Values	
Learning Outcomes 1	Demonstrate responsibility, academic integrity, and professional ethics in coding, project work, and collaborative activities
Learning Outcomes 2	Exhibit teamwork, problem-solving, and self-directed learning skills essential for continuous professional development in the field of web programming

70. Teaching and Learning Strategies
The teaching and learning strategies for this module combine theory with practice to ensure students achieve the intended knowledge, skills, and values. Lectures and explanatory sessions will provide the theoretical foundations of web programming and encourage interaction through guided discussions and Q&A. Practical coding exercises and laboratory work will reinforce lecture content, enabling students to

write, test, and debug code in PHP and MySQL. Problem-based and project-based learning will simulate real-world website development, while collaborative activities such as pair programming and group tasks will foster teamwork, peer learning, and communication skills. In addition, students will be encouraged to engage in independent and self-directed study, conducting research on advanced tools and practices to strengthen critical thinking and lifelong learning abilities. Online resources such as W3Schools and the recommended textbooks will supplement classroom instruction, providing continuous support for skill development. Regular review and reflection sessions will also be integrated throughout the semester to consolidate learning, clarify complex topics, and prepare students for assessments.

71. Evaluation methods	
10% (10)	Quizzes
10% (10)	Assignments
10% (10)	Projects / Lab.
10% (10)	Report
10% (10)	Midterm Exam
50% (50)	Final Exam

72. **The most important sources of information about the program**
- Michael Glass et al. 2004. *Beginning PHP, Apache, MySQL Web Development.* - Elizabeth Castro. 2006. "*HTML, XHTML, and CSS"*

Course Description Form

154. Module Name:	
Website Programming II	
155. Module Code:	
NETW315	
156. Semester / Year:	
Second /2024-2025	
157. Description Preparation Date:	
158. Available Attendance Forms:	
In Person	
159. Number of Credit Hours (Total) / Number of Units (Total)	
/3	
160. Module's administrator's (mention all, if more than one name)	
Name: Zaid Jasim Mohammed Al-Araji Email: zaid.jasim@uoninevah.edu.iq	
161. Module's Objectives	
dule's Objectives	The module aims to develop students' understanding of the complete process of web development and website engineering by emphasizing the interrelation between design, programming, and authoring. It seeks to enhance students' abilities in designing and implementing both static and dynamic web applications using client-side and server-side technologies. In addition, the module introduces essential concepts of computer networks related to the TCP/IP application layer to strengthen the connection between networking and web development. By the end of this course, students are expected to be capable of planning, designing, and programming websites effectively while applying professional standards and problem-solving skills.
162. Teaching and Learning Strategies	
ategy	The teaching and learning strategies for this module combine theory with practice to ensure students achieve the intended knowledge, skills, and values. Lectures and explanatory sessions will provide the theoretical foundations of web programming and encourage interaction through guided discussions and Q&A. Practical coding exercises and laboratory work will reinforce

	lecture content, enabling students to write, test, and debug code in PHP and MySQL. Problem-based and project-based learning will simulate real-world website development, while collaborative activities such as pair programming and group tasks will foster teamwork, peer learning, and communication skills. In addition, students will be encouraged to engage in independent and self-directed study, conducting research on advanced tools and practices to strengthen critical thinking and lifelong learning abilities. Online resources such as W3Schools and the recommended textbooks will supplement classroom instruction, providing continuous support for skill development. Regular review and reflection sessions will also be integrated throughout the semester to consolidate learning, clarify complex topics, and prepare students for assessments.

163. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
35.	2+2	Understand client–server models and the importance of web topologies	Website Introduction: Client server topologies, reason, and objectives.	Lecture + Discussion	Quiz
36.	2+2	Identify PHP files and describe PHP capabilities; Write basic PHP code	• What is a PHP File? • What Can PHP Do? • PHP Coding: PHP Intro, PHP Installation editor, PHP Syntax, PHP Comments PHP Variables, PHP Echo / Print, PHP Data Types	Lecture + Lab	Assignment
37.	2+2	Use PHP operators and conditions in	PHP Strings, PHP Math, PHP Constants	Lecture + Practical Coding	Quiz

		programming	PHP Operators, PHP If...Else...Elseif		
38.	2+2	Apply control structures and functions in PHP	PHP Switch, PHP Loops PHP Functions, PHP Arrays	Lecture + Lab	Quiz
39.	2+2	Build and validate basic forms in PHP	PHP Forms, PHP Form Handli PHP Form Required	Lecture + Practical Exercise	Assignment
40.	2+2	Implement email handling in forms; Connect PHP with MySQLi	PHP Form E-mail PHPMySQLi	Lecture + Lab	Project
41.	2+2	Demonstrate applied understanding through individual research	Assignment: on a selective Topic related to the websites tool (10%)	Independent Study	Assignment (10%)
42.	2+2	Understand PhpMyAdmin and its role in web development	PhpMyAdmin, review, overall usage and benefits You can find phpmyadmin inside XAMPP collection tool.	Lecture + Demo	Quiz
43.	2+2	Consolidate learning through review of previous topics	Review.	Discussion + Problem-solving	–
44.	2+2	Assess mid-semester progress	Midterm exam	Written Exam	Midterm (10%)
45.	2+2	Deepen knowledge of PhpMyAdmin for database management	PhpMyAdmin review	Lab + Demo	Quiz
46.	2+2	Create and manage databases using PHP + MySQL	MySQL Database PHP + MySQL Database PHP + MySQL Connect PHP + MySQL Create DB PHP + MySQL Create Table	Lab + Hands-on Practice	Project
47.	2+2	Insert and retrieve data in PHP + MySQL	PHP + MySQL Insert Data PHP + MySQL Get	Lab + Hands-on Practice	Report

			Last ID		
48.	2+2	Summarize and review all module topics	Review	Group Discussion	–
49.	2+2	Evaluate final course outcomes	**Exam**	Written Exam	Final Exam (50%)

50. Module Evaluation	
10% (10)	Quizzes
10% (10)	Assignments
10% (10)	Projects / Lab.
10% (10)	Report
10% (10)	Midterm Exam
50% (50)	Final Exam

51. Learning and Teaching Resources	
quired textbooks (curricular books, if any)	1- Michael Glass et al. 2004. *Beginning PHP, Apache, MySQL Web Development.* 2- Elizabeth Castro. 2006. "*HTML, XHTML, and CSS"*
in references (sources)	
Recommended books and references (scientific journals, reports...)	
ctronic References, Websites	https://www.w3schools.com/

Distributed SYSTEMS

73. Expected learning outcomes of the Module (Course)
Knowledge
29. Fundamental Concepts: Understand the definition of a distributed system as a collection of autonomous computing elements that appears as a single, coherent system to users. 30. System Classification: Distinguish between and understand the characteristics of different types of distributed systems, including high-performance distributed computing systems, distributed systems for pervasive computing, and distributed information systems. 31. Processes and Threads: Differentiate between a computer program, a process (an instance of program execution), and a thread. Understand the benefits of using threads, such as improved performance and parallelism. 32. Virtualization: Comprehend what virtualization is, how it works, and its role as a foundational element of cloud computing. You will also learn the differences between Type 1 and Type 2 hypervisors. 33. Code Migration: Learn the reasons for migrating code in a distributed system, including improving performance, enhancing privacy, increasing security, and adding flexibility. 34. Communication: Understand various communication mechanisms in distributed systems, such as remote procedure calls (RPC) and different models of communication (e.g., persistent vs. transient, synchronous vs. asynchronous).
Skills
21. Distributed Systems Implementation: Use the Ray library to scale and distribute compute-intensive workloads. 22. Task Dependencies: Implement complex workflows by chaining tasks together and passing the output of one task as input to another. 23. Asynchronous Programming: Define and invoke remote functions to perform tasks asynchronously.

24. Parallel Computing: Automatically parallelize dependent tasks on multiple workers and simplify code by avoiding manual synchronization
Values
The module's value lies in teaching a practical skill set for building modern, scalable, and resilient software. It emphasizes designing systems that can improve performance, privacy, and security by leveraging distributed computing concepts. The course provides a foundation for careers in cloud computing, data science, and other fields that rely on large-scale distributed applications

35. **Teaching and Learning Strategies**
1. Deliver the course material to students in a detailed manner. 2. Engage students in solving practical problems through laboratory sessions. 3. Encourage discussion and dialogue on topics related to the subject.

36. Evaluation methods
Weekly, monthly, and daily examinations, in addition to the final year exam

37. **The most important sources of information about the program**
7. Distributed Systems, 4th Edition (2023), by Maarten van Steen and Andrew S. Tanenbaum. 8. Distributed Systems: An Algorithmic Approach, Second Edition (2015), by Sukumar Ghosh.

Course Description Form

164. Module Name:	
Distributed Systems	
165. Module Code:	
NETW401	
166. Semester / Year:	
Semester 8 /2024-2025	
167. Description Preparation Date:	
2025-9-2	
168. Available Attendance Forms:	
169. Number of Credit Hours (Total) / Number of Units (Total)	
170. Module's administrator's (mention all, if more than one name)	
Name: Dr. Balqees Talal Hasan Email: balqees.hasan@uoninevah.edu.iq	
171. Module's Objectives	
Module's Objectives	• The main objectives of this module are to: • Understand System Fundamentals: Comprehend the core definit and characteristics of distributed systems. • Master Key Concepts: Gain a deep understanding of concepts such processes, threads, code migration, virtualization, and inter-proc communication mechanisms. • Develop Practical Skills: Acquire the ability to implement and man distributed applications using modern libraries like Ray. • Analyze System Challenges: Be able to address the challen involved in designing and building a distributed system, includ synchronization, fault tolerance, and security
172. Teaching and Learning Strategies	
Strategy	nteractive lectures: Instead of relying solely on theoretical explanations, lectures l integrate discussions and group problem-solving, encouraging students to think critically and participate actively. Hands-on laboratory practice: Emphasis will be placed on practical work through

	licated labs, allowing students to directly apply theoretical concepts on Linux systems and strengthen their skills in file, process, and network management. Project-based learning: Students will be assigned small practical projects requiring m to apply multiple course concepts to solve specific problems, helping them connect different topics together. Discussions and Q\&A: Time will be allocated during lectures for open cussions, where students can ask questions and exchange ideas about course concepts, deepening their understanding. Self-directed learning: Students will be encouraged to use available resources, h as recommended textbooks, to explore additional Linux commands and concepts independently.

173. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
12- 4-3 6-5 8-7 9 11-10 13-12 -14	8	fine distributed tems and differentiate ween various types high-performance nputing, pervasive nputing, and information systems. plain what a process describe process es, and understand use of threads for formance and parallelism. derstand the concept virtualization and the ferences between pe 1 and Type 2 hypervisors. plain the reasons for le migration rformance, privacy, urity) and understand concept of process migration. fferentiate between nsient and persistent nmunication and derstand synchronous	• Introduction Classification • Processes Threads • Virtualization • Code Migration • Communication • Practical Distributed Systems (P Work) • Module Review Final Project	Lectures/Self-udy from slides Lectures/Self-udy from slides Lectures/Self-udy from slides Lectures/Self-udy from slides Lectures/Self-udy from slides nds-on project ork and review eview sessions	nort quiz, actical exercise Homework, actical exercise nort quiz, practical task Homework, practical test Midterm exam nort quiz, applied task Homework, presentation Final exam

		asynchronous models. plement remote ctions, chain tasks, parallelize nputations using a tributed systems library like nthesize all concepts apply them to a nprehensive project to nonstrate practical skills.			

174. Module Evaluation
1. Coursework (50 points): Midterm Exam (20 points): Covers topics taught in the first half of the course, usually conducted in Week 9. Practical Projects and Homework (20 points): Distributed throughout the semester to assess students' application of theoretical concepts. Lab Participation (10 points): Evaluates students' engagement in lab sessions and their ability to use Linux commands and manage files. 2. Final Exam (50 points): Covers all course topics from Week 1 to the last week. Aims to assess students' comprehensive understanding of both theoretical and practical aspects of the course.

175. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	5. Distributed Systems, 4th Edition (2023), by Maarten van Steen and Andrew S. Tanenbaum. 6. tributed Systems: An Algorithmic Approach, Second Edition (2015), by Sukumar Ghosh.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

COMPUTER ARCHITECTURE

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.

74. **Expected learning outcomes of the Module (Course)**	
Knowledge	
Learning Outcomes 1	• Understand the design and organization of memory units including flip-flops, registers, and memory hierarchy. • Understand microprocessor architectures from Intel 8086 to Pentium processors, including addressing modes and protected mode operations.
	Skills
Learning Outcomes 2	• Analyze and apply memory addressing techniques and microprocessor functionalities in low-level computing tasks.
Learning Outcomes 3	• Design and simulate basic digital logic circuits such as flip-flops, multiplexers, and decoders.
Values	
Learning Outcomes 4	• Appreciate the importance of understanding hardware-software interaction for software engineers. • Demonstrate responsibility in using architectural knowledge ethically, especially regarding memory access and security.
Learning Outcomes 5	• Commit to continuous learning of evolving processor architectures and memory systems.

75.	**Teaching and Learning Strategies**
19- At each topic, try to connect the next and the previous topics. For instance, when explaining the addressing mode, the D flip-flop is mentioned as the basic unit. 20- Use analogy between the CPU addressing and the residential address. So that the pointer address is a house address and the region is the segment. 21- illustrate processor architecture and memory operations. 22- Encourage **discussion and problem-solving** to relate theoretical concepts to practical software-hardware interaction.	

76.	**Evaluation methods**
Formative Assessment Summative Assessment	

77.	**The most important sources of information about the program**
• **Primary Textbook** • **Online Learning Platforms** • **Instructor–Prepared Materials**	

Course Description Form

176. Module Name:	
Computer Architecture	
177. Module Code:	
NVITSW3522	
178. Semester / Year:	
2024–2025	
179. Description Preparation Date:	
11/08/2025	
180. Available Attendance Forms:	
Excel Sheet prepared by the Dep	
181. Number of Credit Hours (Total) / Number of Units (Total)	
182. Module's administrator's (mention all, if more than one name)	
Name: Ali H. Al-Shakarchi Email: ali.al-shakarchi@uoninevah.edu.iq	
183. Module's Objectives	
Module's Objectives	Understanding the computer architecture which contains: • The basic memory unit (flip-flop) • The memory design and addressing • The microprocessor basic internal units • Basic memory addressing between the CPU the memory banks • The microprocessor addressing modes form 8086 to Pentium processor • The 80386 to Pentium processor protected mode addressing.
184. Teaching and Learning Strategies	
Strategy	• Students are taught how the CPU and memory interact duri memory allocation, including the roles of cache and registers optimizing performance. The course emphasizes understandi memory protection mechanisms and privilege levels to ensu secure and efficient system operation. These concepts a

	demonstrated through theoretical explanations, analogies, a hands-on lab exercises that simulate real hardware behavior. • Understand and comprehend the mechanism of designi large memory from smaller available memories. • Learn the addressing mechanism in computers and metho of memory protection.

185. Module Structure **Theory and Lab**

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understand Boolean algebra basics and Karnaugh maps	Review of Boolean Algebra & K-map	Lecture, discussion	Quiz / Class activity
2	4	Explain logic gates and design combinational logic circuits	Logic Circuits & Combinational Logic	Lecture, examples, demo	Quiz / Assignment
3	4	Describe flip-flops and their role as basic memory units	Sequential Logic Circuits (Flip-flops)	Lecture, lab practice	Lab exercise
4	4	Understand multiplexers, demultiplexers, decoders, and encoders	Multiplexers and Decoders	Lecture, practical examples	Quiz / Assignment
5	4	Explain shift registers and types (SISO, PISO, SIPO, PIPO)	Registers	Lecture, lab	Lab exercise
6	4	Understand RAM organization, address decoding, and memory expansion	Memory Units	Lecture, hands-on lab	Lab exercise
7	4	Describe memory hierarchy, cache memory, multiprogramming, and cache performance	Memory Organization & Cache	Lecture, examples, demo	Quiz / Assignment
8	4	Evaluate knowledge of weeks 1-7	Mid-term Exam	Written & practical exam	Mid-term exam
9	4	Understand cache memory organization and cache mapping techniques	Cache Memory Organization	Lecture, demo, discussion	Quiz / Assignment
10	4	Explain cache write policies and associative memory concepts	Cache Write Policies & Associative Memory	Lecture, examples, lab	Lab exercise
11	4	Describe virtual memory concepts	Virtual Memory, Paging & Segmentation	Lecture, coding practice	Assignment

		including paging and segmentation			
12	4	Practice virtual memory management techniques	Virtual Memory Tutorial	Lecture, practical exercises	Lab exercise
13	4	Apply memory management models and paging/segmentation addressing	Programming Model & Memory Management	Lecture, coding lab	Lab exercise
14	4	Review and prepare for the final exam	Exam Preparation	Review sessions, Q&A	—
15	4	ess overall knowledge and skills	Final Exam	tten & practical exam	Final exam

186. Module Evaluation

Formative Assessment	Quizzes	2 quizzes	10%
	Assignments	2 assignments	10%
	Projects / Labs	2 projects/labs	20%
Summative Assessment	Midterm Exam	2 hours	10%
	Final Exam	3 hours	50%

187. Learning and Teaching Resources

Required textbooks (curricular books, if any)	ıno, M. M., Abel, P. (2005). Computer stem Architecture. United Kingdom: Pearson Education, Limited.
Main references (sources)	Instructor-Prepared Materials
Recommended books and references (scientific journals, reports…)	d-El-Barr, M., & El-Rewini, H. (2005). ndamentals of computer organization and architecture. John Wiley & Sons.
Electronic References, Websites	Geeksforgeeks: https://www.geeksforgeeks.org

REAL-TIME SYSTEM

78. Expected learning outcomes of the Module (Course)	
Knowledge	
	Understand real-time concepts, classifications, task synchronization, and deadlock in RTOS
Skills	
	Integrate multiple tasks in RTOS.
	Analyze scheduling problems mathematically
Values	
	Responsibility in secure and fair system design

79. Teaching and Learning Strategies

- Detailed explanation of course material
- Student participation in solving mathematical problems
- Discussions on topic-related concepts
- Link each topic to the previous one
- Use analogies between RT resources and real-life waiting problems
- Use examples from Windows/Linux/Mac OS or Android/iOS scheduling

80. Evaluation methods

- Daily, weekly, and monthly quizzes
- Final exam

81. The most important sources of information about the program

- Mall, Rajib. *Real-Time Systems: Theory and Practice*. Pearson Education India, 2009
- Cheng, Albert MK. *Real-Time Systems: Scheduling, Analysis, and Verification*. John Wiley & Sons, 2003

Course Description Form

188. Module Name:
Real-Time Systems
189. Module Code:
NETW403
190. Semester / Year:
2024–2025, Second Semester (Spring)
191. Description Preparation Date:
15/09/2024
192. Available Attendance Forms:
Paper and Electronic
193. Number of Credit Hours (Total) / Number of Units (Total)
3 Units
194. Module's administrator's (mention all, if more than one name)
Name: Dr. Azhar Sabah Abdulaziz Email: : azhar.abdulaziz@uoninevah.edu.iq

195. Module's Objectives	
Module's Objectives	1. **Understand real-time system concepts** 2. **Classify real-time systems** 3. **Design requirements for RTOS** 4. **Schedule aperiodic tasks in RTOS** 5. **Schedule periodic tasks in RTOS** 6. **Task synchronization** 7. **Deadlock in RTOS**

196. Teaching and Learning Strategies	
Strategy	• Detailed explanation of course material • Student participation in solving mathematical problems • Discussions on topic-related concepts

	• Link each topic to the previous one • Use analogies between RT resources and real-life waiting problems Use examples from Windows/Linux/Mac OS or Android/i scheduling

197. Module Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand real-t system concepts classifications	Introduction to R Time Systems	Lecture + Discussion	Class Participation
2	2	Understand RTO role	Introduction to RTOS	Lecture + Slides	Quiz
3	2	Analyze RTOS components	RTOS Componen	Lecture + C Analysis	Homework
4	2	Apply aperiodic t scheduling	Aperiodic Task Scheduling	Lecture + Practical Examples	Quiz
5	2	Evaluate aperiodi scheduling performance	Scheduling Examples	Case Study Discussion	Mini Report
6	2	Apply periodic ta scheduling	Periodic Task Scheduling	Lecture + Practical Exercise	Quiz
7	2	Analyze periodic scheduling result	Periodic Schedul Examples	Case Study Simulation	Homework
8	2	Assess theoretica and practical understanding	Midterm Exam	Written Exa	Midterm
9	2	Understand task synchronization techniques	Task Synchronization	Lecture + Practical De	Quiz
10	2	Apply synchronization tools in RTOS	Synchronization Examples	Practical Exercise + Discussion	Practical Repo
11	2	Understand deadl in RTOS	Deadlock in RTO	Lecture + Scenario Analysis	Quiz
12	2	Analyze deadlock cases and avoidar methods	Deadlock Examp	Case Study Simulation	Homework
13	2	Comprehensive	General Review	Review Sess	Prep Quiz

		review of schedu and synchronizat		+ Interactive Q&A	
14	2	Final exam preparation	Preparation Week	Review + Practice Exa	Self-Assessme

198. Module Evaluation

Daily Quizzes 10%
Homework 10%
Lab Work 20%
Midterm Exam 10%
Final Exam 50%

199. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	• Mall, Rajib. *Real-Time Systems: Theory and Practice*. Pearson Education India, 2009 • Cheng, Albert MK. *Real-Time Systems: Scheduling, Analysis, and Verification*. John Wiley & Sons, 2003
Electronic References, Websites	