

**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**

## **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: University of Baghdad  
Faculty/Institute: College of Science  
Scientific Department: Computer Science  
Academic or Professional Program Name: Computer Science  
Final Certificate Name: Bachelors in computer science  
Academic System: courses  
Description Preparation Date:  
File Completion Date: 22/3/2024

Signature:   
Head of Department Name:  
Mohammed Sabbih Hamoud  
Date:

Signature:   
Scientific Associate Name:  
الاستاذ الدكتور  
نصير ابراهيم عباس  
معاون العميد للشؤون العلمية والدراسات العليا  
Date:

The file is checked by:  
Department of Quality Assurance and University Performance  
Director of the Quality Assurance and University Performance Department:  
Date:  
Signature:

  
Approval of the Dean  
Asst. pro. Dr. Raed F. Hassan

### **1. Program Vision**

The vision of Computer Science Department is to provide a high-quality undergraduate and graduate education in computer science that equips students with the technical skills, problem-solving capabilities, and ethical foundation required for success in various careers, job markets and to contribute to the economic, scientific, and social development of our country, Iraq. Furthermore, the department seeks to perform innovative research in several in-demand areas in Computer Science such as artificial intelligence, cybersecurity, multimedia, and data science, contributing to the advancement of the field and addressing real-world challenges. The department also aims to engage with technology industry, academic institutions, and the community to foster collaboration, share knowledge, and promote the responsible use of technology.

### **2. Program Mission**

The mission of the Computer Science Department is to be widely recognized for enabling students to create, share, and apply knowledge in Computer Science and to educate students to be successful, ethical, and effective problem-solvers and life-long learners who will contribute positively to the economic well-being of our country, Iraq.

### **3. Program Objectives**

The objectives of Computer Science Department are as follows:

1. To prepare students for careers in the technology industry and advanced academic studies.
2. To foster an environment of creativity and innovation, motivating both students and faculty to develop original ideas and solutions to current technological issues.
3. To strengthen collaborations with technology industry leaders, providing students with hands-on experience through internships, projects, and partnerships.
4. To produce impactful research publications and projects that advance the boundaries of computer science.
5. To promote ethical behaviour and responsible use of technology in the digital area.

### **4. Program Accreditation**

Does the program have program accreditation? And from which agency? Yes, According to the requirements of the Ministry of Higher Education and Scientific Research, it aligns with the latest admission requirements for Iraqi universities.

### **5. Other external influences**

Is there a sponsor for the program? Yes, Many Iraqi universities offer programs that are almost supported by Ministry of Higher Education and Scientific Research (MOHESR).

**6. Program Structure- shown in the next item according to course code**

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements				
Department Requirements				
Summer Training	<b>One time either 3<sup>rd</sup> or 4<sup>th</sup> academic year.</b>			
Other				

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

**7. Program Description**

Year/Level	Course Code	Course Name	Credit Hours	
<b>First Year</b>				
1 <sup>st</sup> Semester 2024-2023	CSC11001	Programming Fundamentals I	3	2
	CSC11002	Computer Organization	3	2
	CSC11003	Introduction to Computer Science	3	-
	CSC11004	Calculus	3	-
	CSC11005	English Language I	2	-
	CSC11006	Democracy and Human Rights	2	-
<b>Second Year</b>				
2 <sup>nd</sup> Semester 2024-2023	CSC11007	Programming Fundamentals II	3	4
	CSC11008	Discrete Structures	3	-
	CSC11009	Digital Logic	3	2
	CSC11010	Academic Writing Skills	2	2
	CSC11011	Probability and Statistics	2	-
	CSC11012	Arabic Language I	2	-
<b>Second Year</b>				
1 <sup>st</sup> Semester 2024-2023	CS92100	Introduction to Numerical Analysis	2	2
	CS92101	Microprocessor	2	2

	CS92102	Computation	2	-
	CS92103	Object Oriented Programming I	2	2
	CS92104	Data Structures	2	2
	CS92105	Visual Programming	2	2
	ENG92102	English Language II	2	-
2nd Semester 2024-2023	CS92200	Advanced Numerical Analysis	2	2
	CS92201	Computer architecture	2	-
	CS92202	Basic Language Translation	2	2
	CS92203	Object Oriented Programming II	2	2
	CS9224	Data Structures and Algorithms	2	2
	CS92205	Programming Language Techniques	2	2
	ARA92100	Arabic language II	2	-
<b>Third Year</b>				
1st Semester 2024-2023	CS93100	Advance Computer Architecture	2	-
	CS93101	Computer Graphics	2	2
	CS93102	Database fundamentals	2	2
	CS93103	Web organization	2	1
	CS93104	Software engineering	2	-
	CS93105	Introduction to AI	2	2
	CS93106	Programming with Java	1	2
	ENG92103	English Language III	2	-
2nd Semester 2024-2023	CS93200	Mobile Computing	1	2
	CS93201	Cryptography	2	2
	CS93202	Operating System I	2	-
	CS93203	Computer Networks	1	2
	CS93204	Relational database	1	2
	CS93205	) elective) Digital Image Processing	2	2
	CS93206	)elective)neural networks	2	-
	UOB36036	Research Methodology	1	-
<b>Four Year</b>				

1st Semester 2022-2023	CS94100	Parallel programming	2	2
	CS94101	Operating System II	2	2
	CS94102	Advanced computer Networks	2	2
	CS94103	Elective (Multimedia	2	2
	CS94104	Elective) (Electronic Commerce(	2	-
	CS94105	Elective (Mobile Computing (Advanced(	2	2
2nd Semester 2022-2023	CS94200	Data mining	1	2
	CS94201	Computer security	2	-
	CS94202	Robotics Control	2	-
	CS94203	Elective) (Data Compression	2	2
	CS94204	Elective) (Software Development Tools	1	2
	CS94205	Elective (Advanced Computer Graphics	2	2
	ENG92104	English Language IIII	2	-
	CS94206	Project	2	4

## 8. Expected learning outcomes of the program

### A. Knowledge

1. Enabling the student to gain understanding and knowledge of the components of the operating system.
2. Enabling the student to run and execute programs within the computer.
3. Equipping students with the knowledge and understanding of the conceptual framework, foundations, and applications of computer technologies.
4. Teaching the student to use statistical methods for data processing and solving mathematical problems.

### B. Skills

1. Scientific and practical skills
2. Reminder and analytical skills
3. Skills in use, application, and development
4. General and transferable skills (other skills related to employability and personal development)

### C. Ethics

1. Following scientific advancements through communication with global universities via the internet
2. Participating in scientific conferences inside and outside Iraq
3. Engaging in workshops and scientific seminars inside and outside Iraq
4. Field visits to industrial projects

## 9. Program Skills Outline

				Required program Learning outcomes												
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	
<b>First Year/ First Semester</b>	CSC11001	Programming Fundamentals I	Basic	X	X	X	X	X	X	X	X	X	X	X	X	X
	CSC11002	Computer Organization	Basic	X	X	X		X	X	X	X	X	X	X	X	X
	CSC11003	Introduction to Computer Science	Basic	X	X	X		X	X	X	X	X	X	X	X	X
	CSC11004	Calculus	Basic		X	X		X	X	X	X	X	X	X	X	X
	CSC11005	English Language I	Basic											X	X	
	CSC11006	Democracy and Human Rights	Basic											X	X	
<b>First Year/ Second Semester</b>	CSC11007	Programming Fundamentals II	Basic	X	X	X	X	X	X	X	X	X	X	X	X	X
	CSC11008	Discrete Structures	Basic		X	X		X	X	X	X	X	X	X	X	X
	CSC11009	Digital Logic	Basic	X	X	X		X	X	X	X	X	X	X	X	X
	CSC11010	Academic Writing	Basic											X	X	



		Skills														
	CSC11011	Probability and Statistics	Basic		X	X		X	X	X	X	X	X	X	X	
	CSC11012	Arabic Language I	Basic										X	X		
<b>Second Year/ First Semester</b>	CS92100	Introduction to Numerical Analysis	Basic	X	X	X	X	X	X	X		X	X	X	X	
	CS92101	Microprocessor	Basic	X	X	X	X	X	X	X		X	X	X	X	
	CS92102	Computation	Basic	X		X	X	X	X	X		X	X	X	X	
	CS92103	Object Oriented Programming I	Basic	X	X	X	X	X	X	X		X	X	X	X	
	CS92104	Data Structures	Basic	X	X	X		X	X	X		X	X	X	X	
	CS92105	Visual Programming	Basic	X	X	X	X	X	X	X	X	X	X	X	X	X
	ENG92102	English Language II	Basic										X	X		
<b>Second Year/</b>	CS92200	Advanced Numerical Analysis	Basic	X	X	X	X	X	X	X	X	X	X	X	X	
	CS92201	Computer architecture	Basic	X	X	X		X	X	X	X	X	X	X	X	
	CS92202	Basic Language Translation	Basic	X		X		X	X	X	X	X	X	X	X	

<b>Second Semester</b>	CS92203	Object Oriented Programming II	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS9224	Data Structures and Algorithms	Basic	X	X	X		X	X	X	X	X	X	X	X
	CS92205	Programming Language Techniques	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	ARA92100	Arabic language II	Basic										X	X	
<b>Third Year/ First Semester</b>	CS93100	Advance Computer Architecture	Basic	X	X	X		X	X	X	X	X	X	X	X
	CS93101	Computer Graphics	Basic	X	X	X		X	X	X	X	X	X	X	X
	CS93102	Database fundamentals	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS93103	Web organization	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS93104	Software engineering	Basic	X	X	X		X	X	X	X	X	X	X	X
	CS93105	Introduction to AI	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS93106	Programming with Java	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	ENG92103	English Language III	Basic										X	X	
	CS93200	Mobile Computing	Basic	X	X	X	X	X	X	X	X	X	X	X	X

<b>Third Year/ Second Semester</b>	CS93201	Cryptography	Basic	X	X	X		X	X	X	X	X	X	X	X
	CS93202	Operating System I	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS93203	Computer Networks	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS93204	Relational database	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS93205	elective) Digital Image Processing	Optional	X	X	X	X	X	X	X	X	X	X	X	X
	CS93206	elective)neural networks	Optional	X	X	X		X	X	X	X	X	X	X	X
	UOB36036	Research Methodology	Basic										X	X	
<b>Fourth Year/ First Semester</b>	CS94100	Parallel programming	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS94101	Operating System II	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS94102	Advanced computer Networks	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS94103	elective (Multimedia	Optional	X	X	X	X	X	X	X	X	X	X	X	X
	CS94104	elective) (Electronic Commerce(	Optional	X	X	X		X	X	X	X	X	X	X	X
	CS94105	elective (Mobile Computing	Optional	X	X	X	X	X	X	X	X	X	X	X	X

		(Advanced(													
<b>Fourth Year/ Second Semester</b>	CS94200	data mining	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS94201	Computer security	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS94202	Robotics Control	Basic	X	X	X	X	X	X	X	X	X	X	X	X
	CS94203	elective) (Data Compression	Optional	X	X	X	X	X	X	X	X	X	X	X	X
	CS94204	elective) (Software Development Tools	Optional	X	X	X		X	X	X	X	X	X	X	X
	CS94205	elective (Advanced Computer Graphics	Optional	X	X	X	X	X	X	X	X	X	X	X	X
	ENG92104	English Language III	Basic										X	X	
	CS94206	Project	Basic	X	X	X	X	X	X	X	X	X	X	X	X

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

# **First Grade**

## English Language Course Description

1. Course Name:	
English Language	
2. Course Code:	
3. Semester / Year:	
1 <sup>st</sup> semester/ First Grade/ 2023-2024	
4. Description Preparation Date:	
22/3/2024	
5. Available Attendance Forms:	
In person	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4 credit hours / 2 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Maysa Ibrahim Abdulhussain Email: Maysaa.i@sc.uobaghdad.edu.iq	
8. Course Objectives	
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1. Listening Objectives: <ul style="list-style-type: none"> <li>• Understand and respond to basic greetings, introductions, and simple instructions.</li> <li>• Comprehend and extract information from short, simple spoken passages related to everyday topics.</li> <li>• Identify and understand common vocabulary and expressions in spoken English.</li> </ul> </li> <li>2. Speaking Objectives: <ul style="list-style-type: none"> <li>• Engage in basic conversations using simple greetings, introductions, and expressions related to personal information.</li> <li>• Ask and answer simple questions about personal details, daily routines, and familiar topics.</li> <li>• Participate in short dialogues and role-plays to practice communication skills.</li> </ul> </li> <li>3. Reading Objectives: <ul style="list-style-type: none"> <li>• Read and comprehend simple texts, such as signs, labels, short passages, and dialogues.</li> <li>• Recognize and understand basic vocabulary words and phrases in context.</li> <li>• Extract information from texts related to everyday situations and topics.</li> </ul> </li> <li>4. Writing Objectives: <ul style="list-style-type: none"> <li>• Write short sentences and paragraphs about personal information, experiences, and familiar topics.</li> </ul> </li> </ol>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• Providing the student with the basics of the topics</li> <li>• Discussions and problem solving during the lecture</li> <li>• Asking intellectual questions, such as why and how</li> </ul>

- Giving assignments

#### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Hello! p6		Lectures	Midterm exam Daily evaluations
2	2	Your world p12		Lectures	Midterm exam Daily evaluations
3	ε	All about you p18		Lectures	Midterm exam Daily evaluations
ε	ε	Family and friends p24		Lectures	Midterm exam Daily evaluations
ο	ε	The way I live p32		Lectures	Midterm exam Daily evaluations
6	ε	Every day p40		Lectures	Midterm exam Daily evaluations
7	ε	Mid-term Exam		Lectures	Midterm exam Daily evaluations
8	ε	My favorites p48		Lectures	Midterm exam Daily evaluations
9	ε	Where I live p56		Lectures	Midterm exam Daily evaluations
10	ε	Times past p64		Lectures	Midterm exam Daily evaluations
11	ε	We had a great time! p72		Lectures	Midterm exam Daily evaluations
12	ε	I can do that! p80		Lectures	Midterm exam Daily evaluations
13	ε	Please and thank you p88		Lectures	Midterm exam Daily evaluations

١٤	٤	Here and now p96		<b>Lectures</b>	Midterm exam Daily evaluations
11. Course Evaluation					
Monthly exams - Preparing reports – Laboratory evaluation					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					



## Calculus Course Description

<b>1. Course Name:</b>		
Calculus		
<b>2. Course Code:</b>		
UoB12345		
<b>3. Semester / Year:</b>		
1 <sup>st</sup> semester/ 1 <sup>st</sup> grade/ 2023-2024		
<b>4. Description Preparation Date:</b>		
3-23-2024		
<b>5. Available Attendance Forms:</b>		
weekly		
<b>6. Number of Credit Hours (Total) / Number of Units (Total):</b>		
3		
<b>7. Course administrator's name (mention all, if more than one name)</b>		
Name: Basad Al-sarray Email: basad.husain@sc.uobaghdad.edu.iq		
<b>8. Course Objectives</b>		
<b>Course Objectives:</b>	<ul style="list-style-type: none"> <li>• To understand the fundamental theory of calculus and its applications.</li> <li>• To understand numbers sets, function, limit,</li> <li>• This course deals with the basic concepts of calculus that are related with topics in computer science.</li> <li>• To understand integral, sequences, and types of problems that can be solved.</li> <li>• To perform the analysis of functions in one variable</li> </ul>	
<b>9. Teaching and Learning Strategies</b>		
<b>Strategy</b>	<p>Students are expected to use their mathematical knowledge and practices to solve problems. This course strengthens students' understanding of functions preparation for the process of differentiation and integration. Calculus concepts explored include limits and continuity, derivatives, definite integrals, exponential and logarithmic functions, trigonometric functions, and techniques of integration. Emphasis is placed on the exploration of real-world calculus applications. Students are expected to learn to choose and use appropriate mathematics and statistics to analyze empirical situations, to understand them better, and improve decisions.</p>	
<b>10. Course Structure</b>		
<b>Week No.</b>	<b>Week Title</b>	<b>Material Covered</b>
<b>Week 1</b>	Numbers sets	Types of sets of numbers, natural, integer, rational, and real, intervals
<b>Week 2</b>	Inequality solutions	Solve inequalities
<b>Week 3</b>	Absolute values	Solve inequalities defined by absolute
<b>Week 4</b>	Line equations	Types of line equations
<b>Week 5</b>	Functions	Define function and its types, domain, range, graph of the functions, Rational function, Trigonometric functions, Exponential function.
<b>Week 6</b>	Limit	Computing limit of the functions with different types Rational function, Trigonometric functions, Exponential function. Continuous of the functions

<b>Week 7</b>	Mid-term Exam	
<b>Week 8</b>	Derivative of the functions	Basics of computing derivative of the functions
<b>Week 9</b>	Graph of a function	using asymptotes, critical points, the derivative test for increasing/decreasing functions, and concavity.
<b>Week 10</b>	Application of derivative	solve applied max/min problems, and to solve related rates problems.
<b>Week 11</b>	Integration	General definition: Definite integral, Indefinite integrals.
<b>Week 12</b>	Techniques of integration	Substitution rule of integral, integral by parts, integral by fraction
<b>Week 13</b>	Sequences	General definition, types of sequences, Convergence test of sequences
<b>Week 14</b>	Series	General definition, types of Series, Convergence test of series
<b>Week 15</b>	Power series	Taylor series, Fourier Series
<b>Week 16</b>	<b>Preparatory week before the final exam</b>	
11. Course Evaluation		
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, discussions in class, midterm, final exams, reports, assignment.		
12. Learning and Teaching Resources		
Thomas-Calculus-12th-Edition-George-B.-Thomas.pdf		
<a href="http://www.ahmeddemir.net/wp-content/uploads/2015/07/Thomas-Calculus-12th-Edition-George-B.-Thomas.pdf">http://www.ahmeddemir.net/wp-content/uploads/2015/07/Thomas-Calculus-12th-Edition-George-B.-Thomas.pdf</a>		

## Computer Organization Course Description

1. Course Name:	Computer Organization
2. Course Code:	CSC1102
3. Semester / Year:	1 <sup>st</sup> semester/ First Grade/ 2023-2024
4. Description Preparation Date:	24/3/2024
5. Available Attendance Forms:	In Person in classroom
6. Number of Credit Hours (Total) / Number of Units (Total)	7 ETCS Credits
7. Course administrator's name (mention all, if more than one name)	Name: Zainab Raed Ahmed Email: <a href="mailto:zainab.raid@sc.uobaghdad.edu.iq">zainab.raid@sc.uobaghdad.edu.iq</a> Name: Enas Ali Abdulmunem Email: <a href="mailto:Enas.ali@uobaghdad.edu.iq">Enas.ali@uobaghdad.edu.iq</a>
8. Course Objectives	<p>The objectives of studying computer organization are to provide students with a solid understanding of the internal workings of a computer system, enabling them to analyze, design, and optimize computer systems and software for improved performance and efficiency.</p> <ol style="list-style-type: none"> <li>To understand the internal structure of a computer system; includes learning about the CPU (Central Processing Unit), memory, input/output devices, and the interconnections between them.</li> <li>To understand how instructions are executed within a computer system. This involves learning about the instruction cycle, fetch-decode-execute cycle, and the role of the CPU in executing instructions.</li> <li>To understand the memory organization and hierarchy of memory. This includes learning about primary memory (RAM), secondary memory (hard drives, SSDs), and cache memory.</li> <li>To understand System Design and Architecture; including knowing word size, address bus size, data bus size, and the total memory capacity.</li> </ol>
9. Teaching and Learning Strategies	<ol style="list-style-type: none"> <li>PowerPoint presentation: with pictures, tables, and diagrams to explain the lesson interactively and clearly.</li> <li>Using Visual Aids: such as diagrams and flowcharts to explain complex concepts. Visual representations can make abstract concepts more understandable and help students to understand the relationships between different components of a computer system.</li> <li>Group Projects and Discussion: by assigning group projects or case studies that involve designing, analyzing, or implementing computer systems. Encourage students to work collaboratively, discuss their ideas, and share their findings. This fosters critical thinking, teamwork, and a deeper understanding of computer organization principles.</li> <li>Formative Assessments: Incorporate formative assessments throughout the module to gauge student comprehension and identify areas where additional support may be needed. This can include quizzes, short assignments, or in-class discussions. Provide timely feedback to students to help them track their progress and address any misconceptions.</li> </ol>

5. Active Learning Strategies: Encourage active learning through activities such as group discussions, peer teaching, problem-solving sessions, or debates. This promotes student engagement, critical thinking, and a deeper understanding of computer organization concepts.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Knowing about the history of computers.	Introduction to computer history.	Lecture in Classroom	quiz
2	3	Knowing the computer parts and its subparts	Hardware and Software parts of the computer system.	Lecture in Classroom	quiz
3	3	The input/output devices and their examples.	Input and output devices and their types.	Lecture in Classroom	quiz
4	3	Numbering System and conversion between decimal, binary, and hexadecimal.	Numbering System (Binary, Decimal, Hexadecimal)	Lecture in Classroom	quiz
5	3	Internal memory and its types	Internal memory and its types (RAM, ROM, BIOS).	Lecture in Classroom	quiz
6	3	How to calculate main memory size (word size, data bus, and address bus).	Main memory organization and capacity calculation with practical examples.	Lecture in Classroom	assignment
7	Midterm Exam				
8	3	CPU and its components (ALU, CU, Register sets). The 8086 MP as an example	CPU components (CPU, CU, Register sets), How CPU works (READ and WRITE operations).	Lecture in Classroom	quiz
9	3	Introduction to 8086/8088 Microprocessor	Introduction to 8086/8088 MP and its internal architecture.	Lecture in Classroom	quiz
10	3	Calculate the physical and logical address of 8086 MP with examples.	8086 Physical and logical address	Lecture in Classroom	assignment
11	3	8086/8088 addressing mode	8086/8088 addressing mode with examples.	Lecture in Classroom	quiz
12	3	Hard disk drive (HDD) and how data are organized (sector	Hard disk drive and its organization	Lecture in Classroom	quiz

		and cylinder method)			
13	3	Hard disk capacity calculations	Hard disk capacity calculations with practical examples.	Lecture in Classroom	assignment
14	3	Solid-state external storage devices (SSD, flash memory chip), and optical storage devices (CD, DVD)	Solid-state external storage devices, and optical storage devices	Lecture in Classroom	quiz

15 Final exam

## 11. Course Evaluation

### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)		
<b>Formative assessment</b>	<b>Quizzes</b>	2	20% (20)		
	<b>Assignments</b>	2	5% (5)		
	<b>Quizzes / Lab</b>	2	10% (10)		
	<b>assignment/lab</b>	2	5% (5)		
<b>Summative assessment</b>	<b>Midterm exam</b>	2hr	10% (10)		
	<b>Final Exam</b>	3hr	90% (50)		
<b>Total assessment</b>			100% (100 Marks)		

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<ul style="list-style-type: none"> <li>- Computer Organization, First Edition – 2015, by Prof. K.Vikram</li> <li>- Fundamentals of Computer Organization and Architecture, by Mostafa Abd-El-Barr and Hesham El-Rewini, Wiley 2005</li> <li>- THE 80x86 IBM PC AND COMPATIBLE COMPUTERS VOLUMES I &amp; II (Assembly Language, Design, and Interfacing) Fourth edition, by: Muhammad Ali Mazidi &amp; Janice Gillispie Mazidi</li> </ul>
Main references (sources)	Computer Fundamentals and Applications, by Ashok Arora, Vikas Publishing House 2015
Recommended books and references (scientific journals, reports...)	COMPUTER ORGANIZATION AND DESIGN FUNDAMENTALS, First Edition- 2007, by David Tarnoff
Electronic References, Websites	<a href="http://www.ee.ryerson.ca/~courses/coe608/">http://www.ee.ryerson.ca/~courses/coe608/</a>

## Programming Fundamentals I Course Description

<b>1. Course Name:</b>					
Programming Fundamentals I					
<b>2. Course Code:</b>					
CSC11001					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> semester/ First Grade/ 2023-2024					
<b>4. Description Preparation Date:</b>					
23/3/2024					
<b>5. Available Attendance Forms:</b>					
In Person in classroom					
<b>6. Number of Credit Hours (Total) / Number of Units (Total):</b>					
5/4					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Prof. Dr. Bara'a Ali Attea Email: bara.a@sc.uobaghdad.edu.iq Name: Asst. Prof. Dr. Aminah Dahim Abbood Email: aminah.abbood@sc.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objective</b>	<ul style="list-style-type: none"> <li>• To examine a C/C++ program.</li> <li>• To explore how a C/C++ program is processed.</li> <li>• To review the steps required to execute programs written in C++.</li> <li>• To learn what an algorithm is and explore problem-solving techniques.</li> <li>• To become aware of structured design programming.</li> <li>• To become familiar with the basic components of a C++ program, including data types, input/output, control structures, and user-defined functions.</li> </ul>				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises and daily quizzes, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	5	Three main rules for problem solving techniques.			Oral, Practical
2	5	Output statements.			Oral, Practical
3	5	Input statements.			Oral, Practical
4	5	Assignment operator, declaration and assignment statements.			Oral, Practical
5	5	Mathematical operators and expressions.			Oral, Practical

6	5	Pre- and post- increment and decrement. If function, if statements, and body of if statement.			Oral, Practical
7	3	Midterm Exam			Written Exam
8	5	If...else function and if...else statements.			Oral, Practical
9	5	Loop Control Variable (LCV), LCV initialization, LCV conditional expression, and LCV update.			Oral, Practical
10	5	While function, while statements, and body of while statement.			Oral, Practical
11	5	Nested while loops.			Oral, Practical
12	5	For function, for statements, and body of for statement, Nested for loops.			Oral, Practical
13	5	One-Dimensional arrays			Oral, Practical
14	3	<b>Preparatory week before the final Exam</b>			Oral, Practical
15	3	<b>Final Exam</b>			Written Exam

#### 11. Course Evaluation

- Cumulative Score: 40 (Daily Exam 5, Written Exam 15, Report 5, Lab 15)
- Mid-term Exam: 10
- Final-term Exam: 50

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	C++ Programming: From Problem Analysis to Program Design, 5th Edition, D.S. Malik, 2011.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Democracy and human rights Course Description

1. Course Name:					
Democracy and human rights					
2. Course Code:					
3. Semester / Year: 2023-2024/First					
1 <sup>st</sup> semester/ First Grade/ 2023-2024					
4. Description Preparation Date:					
22/3/2024					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30/2, 2023-2024/ First					
7. Course administrator's name (mention all, if more than one name)					
Name: Anwer Ismael Khaleel Email: anwar@ircoedu.uobaghdad.edu.iq					
8. Course Objectives					
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• <b>The student understands what democracy is, its types, human rights, its types and characteristics.</b></li> <li>• <b>Urging the student to understand the meaning of freedom in its correct form and how it is embodied in democratic practices and respect for human rights.</b></li> <li>• <b>Enabling the student to analyze the historical precedents of human applications of democracy and respect for human rights.</b></li> <li>• <b>It evaluates the experiences that have occurred in human societies with regard to democracy and human rights, even if they are in their simple form.</b></li> </ul>				
9. Teaching and Learning Strategies					
<b>Strategy</b>	<p>1- Theoretical methods: (a) - The prescribed book. (b) - Using other means such as presentation. Power Point.</p> <p>2- Practical methods: (a) - Interactive dialogue (b) - Showing documentaries or videos related to the topic of the lecture.</p> <p>3- Carrying out representative activities among students that embody a specific situation related to the topic of the lecture.</p>				
10. Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2	Determine the definition of the concept of human rights Its recipes, types and generations	Definition of the concept of human rights Its recipes, types and generations	theoretical	theoretical
2	2	The historical development of activating human	The historical development of activating human	theoretical	theoretical



		rights and regional and international organizations defending human rights	rights and regional and international organizations defending human rights		
3	2	Definition of democracy and its types	Definition of democracy and its types	theoretical	theoretical
4	2	Elements or components of democracy and conditions for its success	Elements or components of democracy and conditions for its success		
5	2	Elections, their types, pressure groups, their types, and their differences with political parties	Elections, their types, pressure groups, their types, and their differences with political parties		

#### 11. Course Evaluation

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

#### 12. Learning and Teaching Resources

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

## Introduction to Computer Science Course Description

1. Course Name:	
<b>Introduction to computer science</b>	
2. Course Code:	
3. Semester / Year:	
1 <sup>st</sup> semester/ First Grade/ 2023-2024	
4. Description Preparation Date:	
22-03- 2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Nasreen Jawad Kadhim Dr. Ahmed Hashim Husein	
Email: <a href="mailto:nasreen.kadhim@sc.uobaghdad.edu.iq">nasreen.kadhim@sc.uobaghdad.edu.iq</a>	
Email: <a href="mailto:ahmed.husein@sc.uobaghdad.edu.iq">ahmed.husein@sc.uobaghdad.edu.iq</a>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• To identify the computer system and its components together with understanding the needed interaction between these components for performing solutions for given tasks regardless of the programming languages used.</li> <li>• To recognize the safety and security measures when dealing with a computer</li> <li>• To identify the fields of study in computer science and the essential concepts in computer science.</li> <li>• To recognize the different generations to programming languages.</li> <li>• To develop skills in critical thinking and problem solving for the aim to prepare a program designer.</li> <li>• To understand the fundamental stages of the program development life cycle.</li> <li>• To understand the ways to design the solution of a given problem either by writing an algorithm or by drawing a flowchart.</li> <li>• To understand the program control flow.</li> <li>• To understand the stages for compiling and processing a given program.</li> <li>• To identify the common methodologies for programming will be studied.</li> <li>• To identify for the C++ Programming language, Program structure, Processing C++ program, Control structures for Sequential, Branched, and Looping.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• Theoretical concepts, principles related to this module can be delivered through traditional lectures supplemented with examples to improve understanding.</li> <li>• Encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.</li> <li>• Allocating projects to students divided into groups encourages collaboration, problem-solving, and teamwork. Students can work together to solve problems through analyzing problems and designing programs.</li> </ul>

10. Course Structure	
	Material Covered
<b>Week 1</b>	Part 1: Introduction to Computer System Part 2: Safety and security measures when dealing with a computer
<b>Week 2</b>	Computer System Components
<b>Week 3</b>	Part 1: Generations of Programming Languages Part 2: Fields of study in computer science Part 3: Essential concepts in computer science
<b>Week 4</b>	Program Development Life Cycle: Part I
<b>Week 5</b>	Program Development Life Cycle: Part II
<b>Week 6</b>	Program Design: Flowcharts
<b>Week 7</b>	Program Design: Algorithms
<b>Week 8</b>	Program Control Flow
<b>Week 9</b>	Programming with Problem Analysis-Coding-Execution Cycle
<b>Week 10</b>	Programming Methodologies
<b>Week 11</b>	Structure of C++ Program
<b>Week 12</b>	Steps For Processing C++ Program
<b>Week 13</b>	Constructs in C++ for Selection: Part I
<b>Week 14</b>	Constructs in C++ for Selection: Part II
<b>Week 15</b>	Constructs in C++ for Repetition
<b>Week 16</b>	<b>Preparatory week before the final exam</b>

11. Course Evaluation		
Distributing the score out of 50 according to the tasks assigned to the student such as reports, assignments, quizzes, projects, midterm exam and final exam. Assignments 10%, Quizzes 10%, Mid exam 10%, Report 10%, Project 10%, Final exams 50%		
12. Learning and Teaching Resources		
	Text	Available in the Library?
<b>Required Texts</b>	C++ Programming: From Problem Analysis to Program Design, Fifth Edition D.S. Malik	Yes
<b>Recommended Texts</b>	C++ Programming: From Problem Analysis to Program Design (MindTap Course List) 8th Edition D.S. Malik	
<b>Websites</b>	Free	

## Arabic Language Course Description

<b>1. Course Name:</b>					
Arabic language					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
2 <sup>nd</sup> Semester/ 1 <sup>st</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
23 March 2024					
<b>5. Available Attendance Forms:</b>					
On campus, full time					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Eman Hussein Muhy Email: <a href="mailto:Eman.h.m@coeng.uobaghdad.edu.iq">Eman.h.m@coeng.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1. That the student acquires the ability to use the language correctly in communicating with others through speaking, writing, listening and reading. Which makes their affairs easier for them and helps them meet their needs and interests.</li> <li>2. That the student is equipped with what helps them benefit from their free time through reading and reading.</li> <li>3. That students acquire the ability to express themselves and what comes under their senses verbally and in writing.</li> <li>4. That the student is provided with a linguistic wealth by providing them with some words and structures.</li> <li>5. That students acquire the ability to express themselves through linguistic skills related to: speaking, reading, listening, and writing.</li> <li>6. Developing students' inclination towards reading and studying.</li> <li>7. Identify the beauties of the Arabic language and its literature.</li> <li>8. Providing the student with the skills of communicating with Arab heritage and achieving integration between it and various fields of culture.</li> <li>9. Using grammar in reading and writing (through exercises related to the proposed topics)</li> </ol>				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1) Lectures.</li> <li>2) Tutorials.</li> <li>3) Homework and Assignments.</li> <li>4) Tests and Exams.</li> <li>5) In-Class Questions and Discussions.</li> <li>6) Extracurricular Activities.</li> <li>7) Seminars.</li> <li>8) In- and Out-Class oral conversations.</li> </ol>				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
<b>1</b>	<b>2</b>		The origins of the Arabic		

			language		
2	2		Common linguistic errors		
3	2		Common linguistic errors		
4	2		The hamza of cutting and connecting		
5	2		Drawing the middle and extreme hamza		
6	2		Letters that increase in writing		
7	2		punctuation marks		
8	2		Daily exam		
9	2		Number, rules for writing numbers		
10	2		Exam		
11	2		Sound masculine plural		
12	2		The subject and the predicate		
13	2		Abu Al-Qassam Al-Shabi, his life and explanation of the verses		
14	2		Badr Shaker Al-Sayyab, his life and explanation of the verses		
15	2		Dhaad and Dhaa		
16	2		final exam		

#### 11. Course Evaluation

60% final exam, 40% quizzes and HomeWorks and other assignments.

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Mustafa Al-Tuni, The Hamza in the Arabic Language, a Linguistic Study. Saad bin Ali bin Muhammad, the difference between dhaad and dhaa.
Main references (sources)	General Arabic for non-specialist departments. Ab Qader Amin
Recommended books and references (scientific journals, reports...)	Youssef Atta Al-Tarifi is clear in spelling and punctuation Muhammad Al-Adnani, Dictionary of Linguistic Errors
Electronic References, Websites	Websites related to the topics

## Digital Logic Course Description

<b>1. Course Name:</b>					
Digital Logic					
<b>2. Course Code:</b>					
CSC1209					
<b>3. Semester / Year:</b>					
2 <sup>nd</sup> Semester/ 1 <sup>st</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
21/3/2024					
<b>5. Available Attendance Forms:</b>					
Mandatory					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
<b>ECTS Credits : 6</b>					
<b>SWL (hr/sem) : 150</b>					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Bushra A. Sultan Email: <a href="mailto:Bushra.sultan@sc.uobaghdad.edu.iq">Bushra.sultan@sc.uobaghdad.edu.iq</a> Name: Nahlah Abdulrahman Alkhalidi Email: <a href="mailto:Nahlah.a@sc.uobaghdad.edu.iq">Nahlah.a@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	The course will teach the students about different systems in digital computers including: binary, octal, hexadecimal number systems, gray code and ASCII code. The course will help the students to simplify and analyze basic combinational logic circuits and write the Boolean output expression for any combinational logic circuit. In addition, the students will learn to design logic circuits to do specific functions like addition in binary as well as studying the fundamentals of sequential logic devices such as Flip-Flop.				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	The main strategy that will be adopted in delivering this module are: <ol style="list-style-type: none"> <li>1. Power point presentation (Data show).</li> <li>2. Explanation on the white board using different color markers.</li> <li>3. Discussions with the student during teaching.</li> <li>4. Interaction with students through daily problems practice through lecture.</li> <li>5. Solve different problems with more exercises.</li> <li>6. Use tool kits in LABs to design logic circuits in addition to simulator software.</li> <li>7. Prepare reports that develop critical thinking for students.</li> <li>8. Submit assignment that develop student learning.</li> </ol>				
<b>10. Course Structure (Theoretical Part)</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	3		<ul style="list-style-type: none"> <li>• Introduction to Digital computers</li> <li>• Number systems (Binary, Decimal, Octal, and</li> </ul>	Explanation using projectors and	Quizzes, semester exams,

			Hexadecimal)	the blackboard, as well as discussions and questions	homework and the final exam.
2			<ul style="list-style-type: none"> <li>• Conversions from decimal to other bases and vice versa</li> <li>• The relation between the Octal, Hexadecimal and Binary numbers</li> </ul>		
3			<ul style="list-style-type: none"> <li>• Arithmetic Operation</li> <li>• Complements</li> </ul>		
4			<ul style="list-style-type: none"> <li>• The subtraction using complements (1's and 2's complements)</li> <li>• Quiz1</li> </ul>		
5			<ul style="list-style-type: none"> <li>• Binary logic and gates</li> <li>• Boolean functions (logical expression, T.T and logic circuit)</li> </ul>		
6			<ul style="list-style-type: none"> <li>• Simplification of Boolean functions using Boolean algebra</li> <li>• Canonical forms (Sum of Minute terms)</li> </ul>		
7			<ul style="list-style-type: none"> <li>• Canonical forms (product of maxterms), Standard forms (Sum of Products and product of sums)</li> <li>• Conversions between canonical and standard forms and vice versa</li> </ul>		
8			<ul style="list-style-type: none"> <li>• Map simplification</li> </ul>		
9			<ul style="list-style-type: none"> <li>• Product of sum simplification and don't care conditions</li> <li>• Other Logical Operations (NAND and NOR gates)</li> </ul>		
10			<ul style="list-style-type: none"> <li>• The Design procedure of Combinational Circuits</li> <li>• Adder</li> </ul>		
11			<ul style="list-style-type: none"> <li>• Subtractor</li> <li>• Code Convertor</li> </ul>		
12			<ul style="list-style-type: none"> <li>• Comparator</li> <li>• Decoder</li> </ul>		
13			<ul style="list-style-type: none"> <li>• Multiplexer</li> <li>• Midterm Exam</li> </ul>		
14			<ul style="list-style-type: none"> <li>• Read Only Memory (ROM)</li> </ul>		
15	3		<ul style="list-style-type: none"> <li>• Sequential Circuits</li> </ul>		

Course Structure (Practical Part)

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Connect the basic gates (AND,	Computer	Quizzes,

		OR, NOT)		semester exams, homework, Assignments reports and the final exam
2		Connect simple Boolean functions		
3		Simplify complex Boolean function and then connect it using the basic gates		
4		Implement Boolean functions in Standard and canonical form and connect it		
5		Convert Boolean function from standard form to canonical form and connect it		
6		Implement the XOR, XNOR functions and connect it, connect other logic Gates NAND, NOR		
7		Simplify Boolean function using Map method and connect using NAND, NOR gates		
8		Implement the adder and connect it using gates		
9		Implement the subtractor and connect it using gates		
10		Implement the any code conversion system and connect it using gates		
11		Implement the Error Detection Circuit and connect it using gates		
12		Implement the Binary Multiplier and connect it using gates		
13		Implement the Decoder and connect it using gates		
14		Implement any combinational logic circuit using decoder		
15		Implement the multiplexer and connect it using gates		

#### 11. Course Evaluation

- 1- Midterm exam – 15 score.
- 2- Quizzes – 5 score.
- 3- Homeworks – 5 score.
- 4- Mid laboratory – 15 score.
- 5- Final exam – 20 score laboratory + 40 score theoretical.

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

- 1- Logic and Computer Design Fundamentals “2’nd and 3ed editions”, By “M. MORRIS MANO and CHARLES R. KIME, Prentice-Hall, Inc, 2001, 2002.
- 2- " Digital fundamentals "; Thomas L. Floyd; Pearson Prentice Hall,2009



Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Discrete structures Course Description

<b>1. Course Name:</b>					
Discrete structures					
<b>2. Course Code:</b>					
CSC1208					
<b>3. Semester / Year:</b>					
2 <sup>nd</sup> Semester/ 1 <sup>st</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
2024/3/23					
<b>5. Available Attendance Forms:</b>					
2024/3/23					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Uhood Saadi Abulkareem Al-Hassani Email: uhood.s@sc.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1. Discrete Structures are the abstract mathematical structures used to represent discrete objects and relationships between these objects. These discrete structures include logic, sets, permutations, relations, graphs, trees, and finite-state machines.</li> <li>2. Discrete mathematics is about the mathematics of integers and of collections of objects.</li> <li>3. It underlies the operation of digital computers, and is used widely in all fields of computer science for reasoning about data structures, algorithms and complexity.</li> <li>4. Topics covered in the module include logic, proof techniques and sets, functions, relations, summations and recurrences, counting techniques and recursion.</li> </ol>				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	The main strategy that will be adopted in delivering statistics term is to improve student's skills and extending via participation in the exercises. Subsequently, this leads to achieved through classes and some sampling activities that are interesting to the students.				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1		Introduction and basic concepts of Discrete Structures and definitions.		Data show	Quiz
2		Chapter 1: (Mathematical Logic) 1- Introduction 2- Simple Logic Statements 3- Variable Use in Proposition Statements 4- Compound Logic Statements 5- Logical Propositions & Truth tables		Data show	Quiz

		6-Normal forms (conjunctive disjunctive)			
3		7- Logical Equivalence 8- Tautology Statement & Contradiction Statement 9-Logical Implication & Validity of well-formed formula 10-Algebra Of Propositions 11- Conditional Statements Variations		Data show	Quiz
4		Chapter 2: (Sets Theory) 1- Introduction 2- Methods of Expressing Sets 3- Principal Concepts of Sets 4- Venn Diagrams 5- Sets of Numbers 6- Algebra of Sets 7- Family of Sets & index Family of Sets 8- Ordered Pairs & Product Sets		Data show	Quiz
5		Chapter 3: (Relations) 1- Introduction 2- Binary Relation 3- Graph of the Relation 4- Photographer representation of the relations 5-The Domain & the Range of a Relation 6- Identity Relation & Inverse Relation		Data show	Quiz
6		7- Composition Relation 8- Type of Relation 9- Equivalence Relations		Data show	Quiz
7		Mid-term Exam		Data show	Quiz
8		Chapter 4: (Functions) 1- Introduction. 2- Principle Concepts & Definition 3- Models of Functions		Data show	Quiz
9		4-Composition Function 5- Algebra of Function		Data show	Quiz
10		Chapter 5: (Vectors and Matrices) 1- Introduction 2- Vectors 3- Matrices 4- Models of Square Matrices 5- Algebra in the Matrices 6- Determinants		Data show	Quiz
11		7- Minors & Cofactors 8- Find Inverse Square Not Singular		Data show	Quiz

		Matrix			
12		9- Solving System of linear equations using the Nonhomogeneous Matrix inverse and examples		Data show	Quiz
13		10- Grammar Rule and examples		Data show	Quiz
14		Chapter 6: (Graph Theory) 1- Introduction 2- Principal Concepts 3- Type of Graphs		Data show	Quiz
15		4- Definitions 5- Examples of Graphs 6- Graphs & Relation 5. Trees · Properties · Travel strategies 6. Undirected graphs 7. Directed graphs 8. Weighted graphs (in algorithm) Spanning trees/forests		Data show	Quiz
<b>11. Course Evaluation</b>					
40% on the course (5% on the, (on the written final exam, 10% on the final lab exam 50%) 60%. Attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab					
<b>12. Learning and Teaching Resources</b>					
Required textbooks (curricular books, if any)					
Main references (sources)					
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites					

## Programming Fundamentals II Course Description

13. Course Name:					
Programming Fundamentals I					
14. Course Code:					
CSC12107					
15. Semester / Year:					
2 <sup>nd</sup> Semester/ 1 <sup>st</sup> Grade/ Academic Year 2023 -٢٠٢٤					
16. Description Preparation Date:					
23/3/2024					
17. Available Attendance Forms:					
18. Number of Credit Hours (Total) / Number of Units (Total):					
5/4					
19. Course administrator's name (mention all, if more than one name)					
Name: Prof. Dr. Bara'a Ali Attea Email: bara.a@sc.uobaghdad.edu.iq Name: Lec. Wajeeh Email: wajeeh @sc.uobaghdad.edu.iq					
20. Course Objectives					
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>To become aware of 2D arrays.</li> <li>To be familiar with the scope of variables.</li> <li>To become familiar with user-defined functions.</li> </ul>				
21. Teaching and Learning Strategies					
<b>Strategy</b>	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises and daily quizzes, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.				
22. Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	5	Playing with 2D arrays.			Oral, Practical
2	5	Square matrices, main diagonal, and secondary diagonal.			Oral, Practical
3	5	Playing with the triangle components of a square matrix.			Oral, Practical
4	5	Manipulating array indices and elements.			Oral, Practical
5	5	Sorting arrays.			Oral, Practical
6	5	Finding the Kth smallest/largest element in the array without sorting it.			Oral, Practical

7	3	Midterm Exam			Written Exam
8	5	User-defined functions: declaration, header, body, formal parameters, and actual parameters.			Oral, Practical
9	5	Passing parameters by value to a user-defined function.			Oral, Practical
10	5	Passing parameters by address to a user-defined function.			Oral, Practical
11	5	Void user-defined functions.			Oral, Practical
12	5	User-defined function with return.			Oral, Practical
13	5	Passing arrays and matrices to a user-defined function.			Oral, Practical
14	3	<b>Preparatory week before the final Exam</b>			Oral, Practical
15	3	<b>Final Exam</b>			Written Exam

#### 23. Course Evaluation

- Cumulative Score: 40 (Daily Exam 5, Written Exam 15, Report 5, Lab 15)
- Mid-term Exam: 10
- Final-term Exam: 50

#### 24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	C++ Programming: From Problem Analysis to Program Design, Edition, D.S. Malik, 2011.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Probability and Statistics Course Description

1. Course Name:	
Probability and Statistics	
2. Course Code:	
<b>CSC12011</b>	
3. Semester / Year:	
2 <sup>nd</sup> Semester/ 1 <sup>st</sup> Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
3-23-2024	
5. Available Attendance Forms:	
weekly	
6. Number of Credit Hours (Total) / Number of Units (Total):	
2	
7. Course administrator's name (mention all, if more than one name)	
Name: Basad Al-sarray Email: basad.husain@sc.uobaghdad.edu.iq Zeina Mueen Mohammed e-mail: zeina.m@uobaghdad.edu.iq	
8. Course Objectives	
<b>Course Objectives</b>	To understanding the fundamental concepts in statistics and probability and its applications. To understand random number generation and simulation numbers sets, function, limit. This course deals with the basic concepts of probability that are related with topics in computer science. To understand data collections, samples c and variables. To perform the analysis of random experiments
9. Teaching and Learning Strategies	
<b>Strategy</b>	Students are expected to use their knowledge and practices to solve problems. This course strengthens students' understanding of probability in preparation for the process of simulation and data collection. Emphasis is placed on the exploration of real-world probability applications. Students are expected to learn to choose and use appropriate tools in statistical to analyze empirical situations, to understand them better, and to improve decisions
10. Course Structure	
<b>Week</b>	<b>Material Covered</b>
<b>Week 1</b>	Introduction and basic concepts of statistics and definitions. Types of data sets, types of sampling and collecting data.
<b>Week 2</b>	Construction of frequency distributions (grouped data and ungrouped data) Relative frequency distributions and cumulative frequency distributions (less than & more than)
<b>Week 3</b>	Frequency Distribution Charts: Histogram, Polygon, curve and Pie charts.
<b>Week 4</b>	Measures of Central Tendency, Measures of Variation
<b>Week 5</b>	Introduction to probability and counting rules
<b>Week 6</b>	Combinations and Permutation
<b>Week 7</b>	Mid-term Exam
<b>Week 8</b>	Probability of discrete random variable
<b>Week 9</b>	Probability of continuous discrete random
<b>Week 10</b>	Moments computing of density and mas function
<b>Week 11</b>	Discrete probability distribution: (Uniform -Binomial)
<b>Week 12</b>	Continuous probability distribution (Uniform, Normal)
<b>Week 13</b>	Simulation experiments and data generation

<b>Week 14</b>	Preparation of final exam
<b>Week 15</b>	Final exam
11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, discussions in class, midterm, final exams, reports, assignment .	
12. Learning and Teaching Resources	
<b>Elementary Statistics: A Step-by-Step Approach ISE</b>	11th Edition 1265248125 · 9781265248123 By Allan G. Bluman © 2023   Published: September 22, 2022 <a href="https://www.mheducation.co.uk/elementary-statistics-a-step-by-step-approach-ise-9781265248123-emea-group">https://www.mheducation.co.uk/elementary-statistics-a-step-by-step-approach-ise-9781265248123-emea-group</a>



## Course Description Form

### Academic Writing Skills

1. Course Name:
Academic Writing Skills
2. Course Code:
CSC12010
3. Semester / Year:
2/ 1 <sup>st</sup>
4. Description Preparation Date:
24/3/2024
5. Available Attendance Forms:
Face to face in classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
5 ETCS Credits
7. Course administrator's name (mention all, if more than one name)
Name: Zainab Raed Ahmed Email: <a href="mailto:zainab.raid@sc.uobaghdad.edu.iq">zainab.raid@sc.uobaghdad.edu.iq</a>
8. Course Objectives
<p>The objectives of academic writing skills can be understood through different aspects, but here are some key perspectives:</p> <ol style="list-style-type: none"><li>1. Knowledge dissemination and analysis; including sharing and explaining complex ideas, critically evaluating evidence, and contributing to ongoing academic discourse.</li><li>2. Personal and professional development; including developing critical thinking and analytical skills, refining research and information literacy, and enhancing communication skills.</li><li>3. Impact and application; including Influence and persuading, solving problems and proposing, and promoting understanding and collaboration.</li></ol> <p>Overall, the objectives of academic writing skills encompass the development of critical thinking, communication, and research skills, ultimately aiming to contribute to the creation, analysis, and dissemination of knowledge within and beyond academia.</p>
9. Teaching and Learning Strategies
<p>1- Modeling: Demonstrate effective academic writing by providing well-written examples or sharing excerpts from scholarly articles. To understand the conventions, structure, and language used in academic writing.</p> <ol style="list-style-type: none"><li>1. Explicit Instruction: Provide clear explanations of academic writing conventions, including proper formatting, citation styles, and language use. To help students understand the expectations and requirements of academic writing.</li><li>2. Step-by-Step Approach: Break down the academic writing process into manageable steps (e.g., brainstorming, outlining, drafting, revising). To help students navigate the complex task of academic writing, making it more manageable and less overwhelming.</li><li>3. Genre Analysis: Analyze different genres of academic writing (e.g., research papers, essays, literature reviews) to highlight their unique characteristics. To help students recognize and adapt to the specific requirements of different types of academic writing.</li><li>4. Peer Review: Incorporate peer review sessions where students provide feedback on each other's writing. To enhance collaboration, exposes students to diverse writing styles, and provides multiple perspectives for improvement.</li></ol>

5. **Revision Exercises:** Emphasize the importance of revision by assigning exercises that require students to critically review and revise their own work. To promote self-reflection and improvement, fostering a mindset of continuous learning.

6. **In-Class Writing Exercises:** Incorporate in-class writing exercises that focus on specific aspects of academic writing, such as constructing effective introductions or using proper transitions. To provide immediate feedback and allow for real-time clarification of concepts.

7. **Scaffolded Assignments:** Design assignments that gradually increase in complexity, allowing students to build and apply writing skills progressively. To provide a structured learning path, fostering skill development over time.

#### 10. Course Structure

<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2	Introduction to academic writing (type of academic writing, writing process)	Writing Process (Prewriting)	Lecture in Classroom	Writing assignment or quiz
2	2	writing, writing process (research, draft, revise, edit, submit)	Writing Process (continue)	Lecture in Classroom	Writing assignment or quiz
3	2	Structure and organization of academic writing (introduction, body section, conclusion)	Academic Writing Structure	Lecture in Classroom	Writing assignment or quiz
4	2	Academic language (editing, grammar, punctuation, .....)	Writing Language	Lecture in Classroom	Writing assignment or quiz
5	2	Sentence variety and paragraph formatting (topic sentence, supporting idea, ...)	Accademic Writing Formatting	Lecture in Classroom	Writing assignment or quiz
6	2	Fact and opinion paragraph	Fact and opinion paragraph: Writing example	Lecture in Classroom	Writing assignment or quiz
7	Midterm Exam				
8	2	Cause and effect paragraph	Cause and effect paragraph: writng example	Lecture in Classroom	Writing assignment or quiz
9	2	Comparison and contrast paragraph	Comparison and contrast paragraph: writng example	Lecture in Classroom	Writing assignment or quiz
10	2	Process pharagraph	Process pharagraph: Writing example	Lecture in Classroom	Writing assignment or quiz
11	2	Effective writing	Effective writing :writing example	Lecture in Classroom	Writing assignment or

					quiz
12	2	Paraphrasing and summarizing	Paraphrasing and summarizing examples	Lecture in Classroom	Writing assignment or quiz
13	2	Quoting and referencing	Quoting and referencing examples	Lecture in Classroom	Writing assignment or quiz
14	2	Preparation and revision week		Lecture in Classroom	
15	Final exam				

#### 11. Course Evaluation

#### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)		
<b>Formative assessment</b>	<b>Quizzes</b>	2	15% (15)		
	<b>Assignments</b>	2	10% (10)		
	<b>report / Lab</b>	1	5% (5)		
	<b>quiz/lab</b>	2	5% (5)		
	<b>Onsite work/Lab</b>	1	5% (5)		
<b>Summative assessment</b>	<b>Midterm exam</b>	2hr	10% (10)		
	<b>Final Exam</b>	3hr	80% (80)		
<b>Total assessment</b>			100% (100 Marks)		

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	"Academic Writing", by Jeffrey R. Wilson, 2022
Main references (sources)	"Academic Writing Course", study skills in English, third edition by R.R. Jordan, 2003
Recommended books and references (scientific journals, reports...)	Basic Academic Writing", by Moh Hafidz, M.Pd. 2018
Electronic References, Websites	<a href="https://www.coursera.org/courses?query=academic%20writing">https://www.coursera.org/courses?query=academic%20writing</a>

# Second Grade

## The crimes of the Baath regime in Iraq Course Description

<b>1. Course Name:</b>					
The crimes of the Baath regime in Iraq					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
21/3/2024					
<b>5. Available Attendance Forms:</b>					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30 Hr. / 2Un.					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Anwer Ismael Khaleel Email: anwar@ircoedu.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1. Observation.</li> <li>2. Experimentation.</li> <li>3. Practice.</li> <li>4. Creativity.</li> </ol>				
<b>5. Teaching and Learning Strategies</b>					
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1- Theoretical methods: (a)- The prescribed book. (b)- Presenting the lecture through various electronic means.</li> <li>2- Practical methods: (a) - Interactive dialogue between the students and the professor on the one hand and the students among themselves on the other hand.</li> <li>3- Representative activities to embody a specific situation related to the subject of the study.</li> </ol>				
<b>6. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2	Understanding the concept of crime, and defining international crime. Sections of crime.	Crime departments	Electronic offer Discussion	Evaluation through discussion and Daily exam

2	2	Psychological crimes + social crimes carried out by the Baath regime	Psychological crimes The multiple mechanisms of psychological and social crimes used by the Baath regime against the Iraqi people	Electronic offer Discussion	Evaluation through discussion and Daily exam
3	2	Understanding environmental crimes. to the Baathist regime	The consequences of these crimes on the Iraqi environment and the Iraqi individual. Basra Governorate and the city of Halabja and the dangers that befell them due to these environmental crimes The consequences of these crimes on the Iraqi environment and the Iraqi individual.	Electronic offer Discussion	Evaluation through discussion and Daily exam
4	2	The concept of mass graves.	The concept of mass graves.	Electronic offer Discussion	Evaluation through discussion and Daily exam
5	2	University cemeteries in 1963.	University cemeteries in 1963.	Electronic offer Discussion	Evaluation through discussion and Daily exam
6	2	Mass graves for the period between 1979-2023	Mass graves for the period between 1979-2023	Electronic offer Discussion	Evaluation through discussion and Daily exam
6	2	: Mass graves for the period between 1979-2023	: Mass graves for the period between 1979-2023		

#### 7. 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

#### 8. Learning and Teaching Resources

Required textbooks (curricular books, if any)	books once again The Internet
Main references (sources)	Book of crimes of the Baath regime in Iraq

Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	<p>المتضررون من سياسات النظام البائد وثائق تدين النظام البائد - بحث عن حقوق الإنسان، <a href="http://www.un.org/ar/universal-declaration-human">http://www.un.org/ar/universal-declaration-human-</a> <a href="https://mawdoo3.com/D8%A5%D9%8">https://mawdoo3.com/D8%A5%D9%8</a> <a href="https://iraqld.e-sjc-services.iq/LoadLawBook.aspx?page=14&amp;SC=290320063592085&amp;BookID=25626&amp;cfchl tk=wPSIzSh7w4OS3kgq1Xy_PPdkQiQSgHK_AQKuN4siQ2d8-1704313282-0-gaNycGzNDHs">https://iraqld.e-sjc-services.iq/LoadLawBook.aspx?page=14&amp;SC=290320063592085&amp;BookID=25626&amp;cfchl tk=wPSIzSh7w4OS3kgq1Xy_PPdkQiQSgHK_AQKuN4siQ2d8-1704313282-0-gaNycGzNDHs</a> قاعدة التشريعات العراقية</p>

## Introduction to Numerical Analysis Course Description

<b>1. Course Name:</b>					
Introduction to Numerical Analysis					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
21/3/2024					
<b>5. Available Attendance Forms:</b>					
Mandatory					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours theoretical and practical / 3 Units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Najlaa Mohammed Hussein Email: <a href="mailto:najlaa.alkhafaji@sc.uobaghdad.edu.iq">najlaa.alkhafaji@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Numerical analysis is the study of algorithms for solving mathematical problems using computers by providing numerical methods for solving nonlinear equations, interpolation, and calculus.</li> <li>• Improving the student's skills in numerical methods using numerical analysis programs and computer capabilities.</li> <li>• Develop a basic understanding of the construction of numerical algorithms, their application and how to use them for the numerical solution of problems in science and engineering, such as finding the root, approximating functions, differential equations, and direct and iterative methods in linear algebra.</li> <li>• Learn how to estimate and control errors and study the convergence and stability of numerical algorithms.</li> </ul>				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Explain the scientific material to students in detail.</li> <li>2. The student's participation in solving mathematical problems.</li> <li>3. Discussion and dialogue about vocabulary related to the topic.</li> <li>4. Use the Google classroom to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries.</li> <li>5. Also, the Google classroom is used to give homework's and upload the answers and to announce exam dates and grades... etc.</li> </ol>				
<b>6. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation</b>



		Outcomes			method
1	2 Theoretical + 2 Laboratory		1. Introduction 1.1 Numerical Analysis 1.2 Mathematical Model	Explanation using projectors and the blackboard, as well as discussions and questions	Quizzes, semester exams, homework assignments and the final exam.
2			1.3 Approximation & Errors. 1.4 Iterative Methods.		
3			2. Solution of Equations of a Single Variable: 2.1 Bisection Method – Part I		
4			2.1 Bisection Method – Part II		
5			2.2 Newton-Raphson Method – Part I		
6			2.2 Newton-Raphson Method – Part II		
7			2.3 Secant Method – Part I		
8			2.3 Secant Method – Part II		
9			2.4 False Position Method – Part I		
10			2.4 False Position Method – Part II		
11			2.5 Fixed Point Method – Part I		
12			2.5 Fixed Point Method – Part II		
13			2.6 Zeros of Polynomials – Part I		
14			2.6 Zeros of Polynomials – Part II		
15	2		Exam		

#### 7. Course Evaluation

- 1- Midterm exam – 15 score.
- 2- Quizzes – 5 score.
- 3- Homeworks – 5 score.
- 4- Mid laboratory – 15 score.
- 5- Final exam – 20 score laboratory + 40 score theoretical.

#### 8. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	<ol style="list-style-type: none"> <li>1- <b>“Numerical Methods for Engineers and Scientists Using MATLAB”</b>, Ramin S. Esfandiari, CRC Press (Taylor &amp; Francis Group), 2<sup>nd</sup> edition, 2017.</li> <li>2- <b>“Numerical Analysis”</b>, Richard. L. Burden, J. Douglas. Faires and Annette M. Burden, Brooks/Cole, Cengage Learning, 10<sup>th</sup> edition, 2016.</li> <li>3- <b>“Programming with MATLAB for Scientists: A beginner’s Introduction”</b>, Eugeniy E. Mikhailov, CRC Press (Taylor &amp; Francis Group), 2017.</li> </ol>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Visual Programming Course Description

<b>1. Course Name:</b>					
Visual Programming					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
22/3/2024					
<b>5. Available Attendance Forms:</b>					
22/3/2024					
<b>6. Number of Credit Hours (Total) / Number of Units (Total):</b>					
2/2					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Asst. Prof. Dr. Adnan J. Jabir					
Email: <a href="mailto:adnan.jabir@sc.uobaghdad.edu.iq">adnan.jabir@sc.uobaghdad.edu.iq</a>					
Name: Dr. Maysaa Ibrahim					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	The goal of the course is to help students gain knowledge in the basic concepts of object oriented programming and build skills to develop modern software programs using CSharp language. The course covers most of the CSharp language structure and syntax well as how to use features of Windows Forms and Controls to make programs with graphical user interfaces.				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	<p>1- Explaining the scientific material to students in detail.</p> <p>2- Students' participation in solving programming problems.</p> <p>3- Discussion and dialogue about vocabulary related to the topic.</p> <p>4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries.</p> <p>The electronic classroom is also used to give homework assignments and upload answers within the electronic classroom. The classroom is also used to announce exam dates and grades... etc.</p>				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
١	٤		Introduction to CSharp.NET	Lectures Discussion Peer Teaching Practical work	Short exams Mid / final exams Assignments Homeworks Projects
٢	٤		User Interface Design		
٣	٤		Button, Textbox, Label controls		
٤	٤		Variables, Constants scopes and Calculations		
٥	٤		Decisions and loops		

6	ξ		Check Box, Radio Button		
7	ξ		Arrays and collection		
8	ξ		Working with timers and scrollbars		
9	ξ		Lists, checked list, and dropdown controls		
10	ξ		PictureBox and drawings		
11	ξ		Menus, Common Dialog Boxes, and Multiform objects		
12	ξ		User defined function		
13	4		Working with files		
14	4		Object oriented Programs		

11.

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<i>Mastering Microsoft CSharp 2010, Edition by <u>Evangelos Petroutsos</u>,</i>
Main references (sources)	<i>Beginning C# by Matthew Macdonald</i>
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	<i>Online lectures and YouTube lessons.</i>

## Microprocessor Course Description

<b>1. Course Name:</b>					
Microprocessor					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
22-3-2024					
<b>5. Available Attendance Forms:</b>					
Theoretical					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
2 hours per week\ 2 unites					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: lecturer Qaswaa Khaled abood Email: <a href="mailto:qaswaa.k@sc.uobaghdad.edu.iq">qaswaa.k@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	The topic aims to define the concepts of computer architecture in an expanded manner and focuses on modern microprocessor architectures, identifying the types of memory that make up modern computer architectures, and the methods and reasons for improving the performance of modern computers.				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	Explanation on the board and projector. Uploading PDF files of lectures and explanation videos within electronic classes and official department channels. Giving multiple examples related to the subject and having the students solve them in class and urging them to compete and solve them quickly.				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2\week	<b>Introduction to computer architecture</b>		Data show	quiz
2	2\week	<b>Method for I\O programing</b>		Data show	quiz
3	2\week	<b>Programmed I/O tech. soft ware</b>		Data show	quiz
4	2\week	<b>Interrupt tech.</b>		Data show	quiz
5	2\week	<b>Direct Memory Access (DMA) tech.</b>		Data show	quiz
6	2\week	<b>Multiprogramming</b>		Data show	quiz
7	2\week	<b>Multiprocessing</b>		Data show	quiz
8	2\week	<b>Multicore</b>		Data show	quiz
9	2\week	<b>Exam</b>		Data show	quiz
10	2\week	<b>Memory system</b>		Data show	quiz
11	2\week	<b>Memory hierarchy architecture</b>		Data show	quiz
12	2\week	Exam		Data show	quiz

13	2\week	Main and cash memory		Data show	quiz
14		Exam		Data show	quiz
15	2\week	Microcode		Data show	quiz
11. Course Evaluation					
<ul style="list-style-type: none"> <li>• Monthly and daily written exams</li> <li>• Daily class attendance and comments</li> <li>• Implementing and completing the required tasks</li> <li>• Final written exam</li> </ul>					
12. Learning and Teaching Resources					
- Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.			Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.		
Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers Jim Ledin, 2022.			Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers Jim Ledin, 2022.		
<a href="https://www.geeksforgeeks.org/computer-organization-and-architecture">https://www.geeksforgeeks.org/computer-organization-and-architecture.</a> <a href="https://electronicsdesk.com/">https://electronicsdesk.com/</a> <a href="https://en.wikipedia.org/">https://en.wikipedia.org/</a>			<a href="https://www.geeksforgeeks.org/computer-organization-and-architecture">https://www.geeksforgeeks.org/computer-organization-and-architecture.</a> <a href="https://electronicsdesk.com/">https://electronicsdesk.com/</a> <a href="https://en.wikipedia.org/">https://en.wikipedia.org/</a>		

## English Language Course Description

<b>1. Course Name:</b>					
English Language					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
March/ 21/ 2024					
<b>5. Available Attendance Forms:</b>					
Mandatory					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
2 theoretical hours * 15 weeks = 30 hours					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Ahmad Hashim Hussein Email: ahmedhashem@pgiafs.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	<b>Knowledge</b>				
	Learning Outcomes 1	Helping to improve English Language in general.			
	<b>Skills</b>				
	Learning Outcomes 2	In writing English Language			
	Learning Outcomes 3	In Reading English Language			
	<b>Ethics</b>				
	Learning Outcomes 4	Listening in different location.			
Learning Outcomes 5	Speaking in different location.				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	<p>1- Explaining the scientific material to students in detail.                  2- Students' participation in solving exercises inside the class.                  3- Discussion and dialogue about vocabulary related to the topic.                  4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries.</p> <p>The electronic classroom is also used to give homework assignments and upload answers within the electronic classroom. The classroom is also used to announce exam dates and grades... etc.</p>				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2	Present, past, future+ Questions+ Questions words	Unit ١	Datashow + White board	Quiz
2	2	Present tenses + have/have got	Unit ٢	Datashow + White board	Quiz
3	2	Past tenses+ Adverbs + when	Unit 3	Datashow + White board	Quiz

4	2	Quantity + Articles	Unit ε	Datashow + rdWhite boa	Quiz
5	2		Exam		
6	2	Verb patterns+ Future forms+ Phrasal verb	Unit ρ	Datashow + White board	Quiz
7	2	What ... like? + as ... as + Relative pronouns	Unit ϑ	Datashow + White board	Quiz
8	2	Present Perfect+ for and since+ ever and never	Unit υ	how + Datas White board	Quiz
9	2	have to+ should + must	Unit ϕ	Datashow + White board	Quiz
10	2	Past Perfect+ Narrative tenses+ Joining sentences	Unit ϕ	Datashow + White board	Quiz
11	2		Exam		
12	2	Passives	Unit ϑ	Datashow + White board	Quiz
13	2	Present Perfect Continuous	Unit ϑ	Datashow + White board	Quiz
14	2	First conditional <i>if + will</i> + Second conditional <i>if + would</i>	Unit ϑ	Datashow + White board	Quiz
15	2		Exam		

#### 11. Course Evaluation

60% on the written final exam, 40% on the course (30% on the monthly exams, 5% on the quizzes, 5% on the assignments).

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	The core textbook is Soars, John and Liz, (2011), New Headway Plus Pre-Intermediate Student's Book, Special Edition, Oxford University Press
Main references (sources)	The core textbook is Soars, John and Liz, (2011), New Headway Plus Pre-Intermediate Student's Book, Special Edition, Oxford University Press
Recommended books and references (scientific journals, reports...)	New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments
Electronic References, Websites	Oxford University Press: The New Headway series is published by Oxford University Press. Visit their website at <a href="http://www.oup.com">www.oup.com</a> and search for "New Headway Plus, Special Edition, pre-Intermediate" or browse their English language teaching section for information on the course.

## Object Oriented Programming Course Description

1. Course Name:					
Object Oriented Programming					
2. Course Code:					
3. Semester / Year:					
1 <sup>st</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
4. Description Preparation Date:					
March/ 21/ 2024					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
7. Course administrator's name (mention all, if more than one name)					
Name: Name: Dunia Fadheel Saffo					
Email: <a href="mailto:dunia.f@sc.uobaghdad.edu.iq">dunia.f@sc.uobaghdad.edu.iq</a>					
Name: Sura Abed Sarab					
Email: <a href="mailto:sura.a@sc.uobaghdad.edu.iq">sura.a@sc.uobaghdad.edu.iq</a>					
8. Course Objectives					
<b>Course Objectives:</b>	<b>Knowledge</b>				
	Learning Outcomes 1	thinking about and organizing code for natural objects, using classes definitions			
	Learning Outcomes 2	such as classes and ,objects			
	Learning Outcomes 3	,data abstraction, methods, method overloading,			
	Learning Outcomes 4	thinking about and organizing code for natural objects, using classes definitions			
	Learning Outcomes 5	understanding and practical mastery of object-oriented concepts			
9. Teaching and Learning Strategies					
<b>Strategy</b>	<p>1- Explaining the scientific material to students in detail.</p> <p>2- Students' participation in solving programming problems.</p> <p>3- Discussion and dialogue about vocabulary related to the topic.</p> <p>4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries.</p> <p>The electronic classroom is also used to give homework assignments and upload answers within the electronic classroom. The classroom is also used to announce exam dates and grades... etc.</p>				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 hrs. + 2hrs. lab.		Revision of structured programming	Data show	quiz



			Principles of object programming		
2	2 hrs. + 2hrs. lab.		Functions in C++ and function overloading Passing parameters by value Passing parameters by reference	Data show	quiz
3	2 hrs. + 2hrs. lab.		classes as data types, Objects, syntax, how to declare objects	Data show	quiz
4	2 hrs. + 2hrs. lab.		<b>Member functions, Data members</b> Access specifiers, public members private members	Data show	quiz
5	2 hrs. + 2hrs. lab.		Accessing of member functions, from within its class, from non-member functions	Data show	quiz
6	2 hrs. + 2hrs. lab.		Arrays of objects (declaration, initialization, processing)	Data show	quiz
7	2 hrs. + 2hrs. lab.		Objects as function arguments	Data show	quiz
8	2 hrs. + 2hrs. lab.		Objects as parameters to member functions	Data show	quiz
9	2 hrs. + 2hrs. lab.		<b>Objects as parameters to non-member functions</b>	Data show	quiz
10	2 hrs. + 2hrs. lab.		Objects as parameters to member functions of another class	Data show	quiz
11	2 hrs. + 2hrs. lab.		Objects as returned types with examples	Data show	quiz
12	2 hrs. + 2hrs. lab.		Constructors and destructors Default and parameterized constructors	Data show	quiz

#### 11. Course Evaluation

60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab).

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1. **C++ Primer"** by Stanley B. Lippman, José Lajoie, and Barbara E. Moo (2012)

2. **Effective C++: 55 Specific Ways to Improve Your Programs and Designs"** by Scott Meyers (2005)

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

**"Effective Modern C++: 42 Specific Ways to Improve Your Programs and Designs"** by Scott Meyers (2014)

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## Data Structures Course Description

<b>1. Course Name:</b>					
Data Structures					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
March/ 21/ 2024					
<b>5. Available Attendance Forms:</b>					
Mandatory					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60/3					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Sarab M. Hameed      Email: sarab.m@sc.uobaghdad.edu.iq Name: Mays Mohammed Hoobi      Email: mays.m@sc.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
Throughout the course, students are expected to Understand the fundamentals of data structures in computer science. Use proper data structures to solve the problem.					
<b>9. Teaching and Learning Strategies</b>					
<ol style="list-style-type: none"> <li>1. Delivering lectures to introduce and explain essential concepts, principles, and theories related to data structures. This helps students build a strong foundation of knowledge.</li> <li>2. Giving hands-on programming exercises helps them to apply the learned concepts and implement data structures. This helps their understanding and enhances their programming skills.</li> <li>3. Providing code walkthroughs and examples demonstrating the implementation and use of various data structures.</li> <li>4. Conducting problem-solving sessions, both in class and through assignments to allows students to apply data structures to solve problems</li> <li>5. Encouraging group projects and activities among students. This promotes teamwork and enhances understanding. Regular evaluations and examinations help gauge students' understanding and progress.</li> </ol>					
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
٢-١	٤	Understand the importance and type of data structures	Overview of data structures Primitive & non-primitive Data structures Static & dynamic variables	Data show	Daily quiz
٣	٢	learn how to write an algorithm and	Algorithm definitions, algorithm analysis	Data show	Daily quiz

		compute the complexity of the algorithm in terms of space and time			
٦-٤	٦	The student acquires knowledge about linear data structures such as arrays and stacks, understanding their functionalities, applications, and methods of implementation.	Array data structure, storage allocation, applications Stack data structure Applications of stack data structure: Infix, postfix, and prefix expressions, algorithm to evaluate a postfix expression, and the algorithm to convert an infix expression into a postfix. recursion	PDF PowerPoint	Orel questions Daily quiz
٧	2		exam		
8-11	6	The student learns about linear data structures, such as Queue and their types, operations, applications, and how to implement them.	Queue data structure, definition, basic operations, and types Circular queue, double-ended queue, priority queue, array representation of queue, Priority queue, array representation of queue.	Data show	Daily quiz
12-14	8	The student learns about linear data structures, specifically linked lists, their types, advantages, disadvantages, operations, applications, and how to represent stacks and queues using linked lists	Linked List, types, advantages, disadvantages, operations, application Single linked linear list & its algorithms Circular linked linear list & its feature	Data show	Daily quiz
15	2		Exam		
11. Course Evaluation					
Daily preparation 5%, Daily Quiz 5%, Monthly exam 20%, Assignment 10%, Final exams 60%					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)					
		1. Yedidyah Langsam, Moshe J. Augenstein, Aaron M. Tenenbaum, , Data Structures using C and C++, Prentice-Hall			

	<ol style="list-style-type: none"><li>2. Nell Dale, Chip Weems Tim Richards, C++ Plus Data Structures, Jones and Bartlet, Inc.</li><li>3. D.S. Malik, Data Structures Using C++, Second Edition Mark Allen Weiss, Data Structures and Algorithm Analysis in C Addison Wesley.</li></ol>
Electronic References, Websites	<p><a href="https://tutorialink.com/ds/">https://tutorialink.com/ds/</a> <a href="https://www.tutorialspoint.com/data_structures_algorithms/index.htm">https://www.tutorialspoint.com/data_structures_algorithms/index.htm</a></p>

## Advanced Numerical Analysis Course Description

<b>1. Course Name:</b>					
Advanced Numerical Analysis					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
2 <sup>nd</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
21/3/2024					
<b>5. Available Attendance Forms:</b>					
Mandatory					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 hours theoretical and practical / 3 Units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Najlaa Mohammed Hussein Email: <a href="mailto:najlaa.alkhafaji@sc.uobaghdad.edu.iq">najlaa.alkhafaji@sc.uobaghdad.edu.iq</a> Name: Lecturer Ghusoon Ghazi Mohammed Email: <a href="mailto:ghusoon.g@sc.uobaghdad.edu.iq">ghusoon.g@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Numerical analysis is the study of algorithms for solving mathematical problems using computers by providing numerical methods for solving nonlinear equations, interpolation, and calculus.</li> <li>• Improving the student's skills in numerical methods using numerical analysis programs and computer capabilities.</li> <li>• Develop a basic understanding of the construction of numerical algorithms, their application and how to use them for the numerical solution of problems in science and engineering, such as finding the root, approximating functions, differential equations, and direct and iterative methods in linear algebra.</li> <li>• Learn how to estimate and control errors and study the convergence and stability of numerical algorithms.</li> </ul>				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1- Explain the scientific material to students in detail.</li> <li>2- The student's participation in solving mathematical problems.</li> <li>3- Discussion and dialogue about vocabulary related to the topic.</li> <li>4- Use the Google classroom to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries.</li> </ol> <p>Also, the Google classroom is used to give homework's and upload the answers and announce exam dates and grades... etc.</p>				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2 Theore		1. Numerical Linear Algebra 1.1 Linear Systems of Equations.	Explan in usin project and f	Quizz semes exam homew assessm
2			1.2 Matrix Notation.		

			1.3 Special Types of Square Matrices. 1.3.1 Symmetric Matrix. 1.3.2 Diagonal Matrix. 1.3.3 Identity Matrix. 1.3.4 Upper Triangular Matrix. 1.3.5 Lower Triangular Matrix. 1.3.6 Banded Matrix.		
3			1.4 Matrix Operating Rules. 1.5 Representing Linear Algebraic Equations in Matrix Form.		
4			1.6 Numerical Methods for Solving Linear System of Equations: 1.6.1 Gauss Elimination Method		
5			1.6.2 LU Decomposition Method.		
6			1.6.3 Vectors and Matrix Norms.		
7			1.6.4 Jacobi's Method.		
8			1.6.5 Gauss-Seidel Method.		
9			2. Interpolation and Polynomial Approximation 2.1 Polynomials.		
10			2.2 Interpolation and the Lagrange Polynomial.		
11			2.3 Newton's Divided Differences.		
12			2.4 Forward Differences.		
13			2.5 Backward Differences.		
14			2.6 Centered Differences.		
15	2		Exam		
11. Course Evaluation					
Midterm exam – 15 score, Quizzes – 5 score, Homeworks – 5 score, Mid laboratory – 15 score. Final exam – 20 score laboratory + 40 score theoretical.					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)		1- <b>“Numerical Methods for Engineers and Scientists Using MATLAB”</b> , Ramin S. Esfandiari, CRC Press (Taylor & Francis Group), 2 <sup>nd</sup> edition, 2017. 2- <b>“Numerical Analysis”</b> , Richard. L. Burden, J. Douglas. Faires and Annette M. Burden, Brooks/Cole, Cengage Learning, 10 <sup>th</sup> edition, 2016. 3- <b>“Programming with MATLAB for Scientists: A beginner's Introduction”</b> , Eugeniy E. Mikhailov, CRC Press (Taylor & Francis Group), 2017.			
Recommended books and references (scientific journals, reports...)					
Electronic Reference Websites					

## Computer architecture Course Description

1. Course Name:					
Computer architecture					
2. Course Code:					
3. Semester / Year:					
2 <sup>nd</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
4. Description Preparation Date:					
22-3-2024					
5. Available Attendance Forms:					
Theoretical					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2 hours per week\ 2 unites					
7. Course administrator's name (mention all, if more than one name)					
Name: lecturer Qaswaa Khaled abood Email: <a href="mailto:qaswaa.k@sc.uobaghdad.edu.iq">qaswaa.k@sc.uobaghdad.edu.iq</a>					
8. Course Objectives					
<b>Course Objective</b>	The topic aims to define the concepts of computer architecture in an expanded manner and focuses on modern microprocessor architectures, identifying the types of memory that make up modern computer architectures, and the methods and reasons for improving the performance of modern computers.				
9. Teaching and Learning Strategies					
<b>Strategy</b>	- Explanation on the board and projector. Uploading PDF files of lectures and explanation videos within electronic classes and official department channels.2- Giving multiple examples related to the subject and having the students solve them in class and urging them to compete and solve them quickly.				
10. Course Structure					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2\week	<b>Introduction to computer architecture</b>		Data show	quiz
2	2\week	<b>Method for I\O programing</b>		Data show	quiz
3	2\week	<b>Programmed I/O tech. soft ware</b>		Data show	quiz
4	2\week	<b>Interrupt tech.</b>		Data show	quiz
5	2\week	<b>Direct Memory Access (DMA) tech.</b>		Data show	quiz
6	2\week	<b>Multiprogramming</b>		Data show	quiz
7	2\week	<b>Multiprocessing</b>		Data show	quiz
8	2\week	<b>Multicore</b>		Data show	quiz
9	2\week	<b>Exam</b>		Data show	quiz
10	2\week	<b>Memory system</b>		Data show	quiz

11	2\week	<b>Memory hierarchy architecture</b>		Data show	quiz
12	2\week	Exam		Data show	quiz
13	2\week	Main and cash memory		Data show	quiz
14		Exam		Data show	quiz
15	2\week	Microcode		Data show	quiz
<b>11. Course Evaluation</b>					
<ul style="list-style-type: none"> <li>• Monthly and daily written exams</li> <li>• Daily class attendance and comments</li> <li>• Implementing and completing the required tasks</li> <li>• Final written exam</li> </ul>					
<b>12. Learning and Teaching Resources</b>					
- Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.			- Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.		
Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers Jim Ledin, 2022.			Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers Jim Ledin, 2022.		
<a href="https://www.geeksforgeeks.org/computer-organization-and-architecture">https://www.geeksforgeeks.org/computer-organization-and-architecture</a> . <a href="https://electronicsdesk.com/">https://electronicsdesk.com/</a> <a href="https://en.wikipedia.org/">https://en.wikipedia.org/</a>			<a href="https://www.geeksforgeeks.org/computer-organization-and-architecture">https://www.geeksforgeeks.org/computer-organization-and-architecture</a> . <a href="https://electronicsdesk.com/">https://electronicsdesk.com/</a> <a href="https://en.wikipedia.org/">https://en.wikipedia.org/</a>		



## Object Oriented Programming II Course Description

1. Course Name:		
Object Oriented Programming II		
2. Course Code:		
3. Semester / Year: SECOND Semester/ SECOND		
2 <sup>nd</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤		
4. Description Preparation Date:		
March/ 21/ 2024		
5. Available Attendance Forms:		
6. Number of Credit Hours (Total) / Number of Units (Total)		
7. Course administrator's name (mention all, if more than one name)		
Name: Dunia Fadheel Saffo		
Email: <a href="mailto:dunia.f@sc.uobaghdad.edu.iq">dunia.f@sc.uobaghdad.edu.iq</a>		
Name: Sura Abed Sarab		
Email: <a href="mailto:sura.a@sc.uobaghdad.edu.iq">sura.a@sc.uobaghdad.edu.iq</a>		
8. Course Objectives		
<b>Course Objectives</b>	<b>Knowledge</b>	
	Learning Outcomes 1	Giving some flexibility to objects access restrictions.
	Learning Outcomes 2	Reusability feature through the use of inheritance property
	Learning Outcomes 3	Classes and objects as dynamic allocated memory locations
	Learning Outcomes 4	Treating different classes as objects of a common superclass (Polymorphism)
	Learning Outcomes 5	<b>Implementing Operator overloading feature</b>
9. Teaching and Learning Strategies		
<b>Strategy</b>	<p>1- Explaining the scientific material to students in detail.</p> <p>2- Students' participation in solving programming problems.</p> <p>3- Discussion and dialogue about vocabulary related to the topic.</p> <p>4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries.</p> <p>The electronic classroom is also used to give homework assignments and upload answers within the electronic classroom. The classroom also used to announce exam dates and grades... etc.</p>	

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 hrs. + 2hrs. lab.		Friendly functions, SYNTAX HOW TO CALL FRIEND FUNCTIONS	Data show	quiz
2	2 hrs. + 2hrs. lab		Members of a class and friend to another class, Non-member functions and friend to many classes, Friend classes	Data show	quiz
3	2 hrs. + 2hrs. lab		Introduction to inheritance, protected access type, differences between private and protected members	Data show	quiz
4	2 hrs. + 2hrs. lab		Inheritance modes, Private mode Public mode, Protected mode	Data show	quiz
5	2 hrs. + 2hrs. lab		Inheritance types, Single inheritance Hierarchical inheritance	Data show	quiz
6	2 hrs. + 2hrs. lab		<b>Inheritance types, multi-level type Multiple type</b>	Data show	quiz
7	2 hrs. + 2hrs. lab		Inheritance types, Hybrid type Diamond problem	Data show	quiz
8	2 hrs. + 2hrs. lab		Solving diamond problem Using scope resolution operator Using virtual inheritance	Data show	quiz
9	2 hrs. + 2hrs. lab		Constructors and destructors within inheritance, Default constructors Parameterized constructors	Data show	quiz
10	2 hrs. + 2hrs. lab		<b>Pointers</b> , Pointers to objects	Data show	quiz
11	2 hrs. + 2hrs. lab		<b>Polymorphism, Binding, Compile time binding, Run time binding Virtual inheritance</b>	Data show	quiz
12	2 hrs. + 2hrs. lab		Operator overloading	Data show	quiz

#### 11. Course Evaluation

60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab).

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1. **C++ Primer''** by Stanley B. Lippman, Josée Lajoie, and Barbara E. Moo (2012)
2. **Effective C++: 55 Specific Ways to Improve Your Programs and Designs''** by Scott Meyers (2005)

Recommended books and references (scientific journals, reports...)	<b>Scientific Researches on Internet</b>
Electronic References, Websites	

## Basic Language Translation Course Description

1. Course Name:	
Basic Language Translation	
2. Course Code:	
3. Semester / Year:	
2 <sup>nd</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21/3/2024	
5. Available Attendance Forms:	
Mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours theoretical and practical / 3 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Wejdan Abdul Ameer Hassan Email: <a href="mailto:wjdan.a@sc.uobaghdad.edu.iq">wjdan.a@sc.uobaghdad.edu.iq</a> Name: Zainab Jawed Ahmed Email: <a href="mailto:Zainab.jawad@sc.uobaghdad.edu.iq">Zainab.jawad@sc.uobaghdad.edu.iq</a>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Compilers play a vital role in the design and implementation of programming languages. By studying compilers, the students gain insights into how programming languages are structured, how syntax and semantics are defined, and how languages are transformed into executable code.</li> <li>• Understanding the principles and techniques used by compilers allows programmers to write code that can be optimized effectively, resulting in faster and more efficient programs.</li> <li>• Compiler course cover topics such as lexical analysis, parsing, and semantic analysis. These concepts are crucial for understanding how compilers detect and report errors in source code.</li> <li>• Compilers employ a range of optimization techniques to improve the performance of programs. By studying compilers, the students learn these optimization strategies and apply them in code, making it run faster and consume fewer resources.</li> <li>• Understanding Program Execution.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<p>1- Explain the scientific material to students in detail.</p> <p>2- The student's participation in solving mathematical problems.</p> <p>3- Discussion and dialogue about vocabulary related to the topic.</p> <p>4- Use the Google classroom to upload lectures in the form of PDF files, where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries.</p> <p>Also, the Google classroom is used to give homework's and upload the answers and announce exam dates and grades... etc.</p>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretical + 2 Laboratory		-Language Processing System - Programming Languages - Translator	Explanation using projectors and the blackboard, as well as discussions and questions	Quizzes, semester exams, homework assignments and the final exam.
2			- Introduction to compiler - phases of compiler		
3			- Lexical Analysis(scanner) - Recognition of token - Lexical Error - Symbol table		
4			- Syntax analyzer(parser) - Syntax error handling - Strategies of error recovery		
5			- Context free grammar, parse tree - Ambiguity, Left Recursion, and - Left Factoring		
6			- Top-down parsing - Predictive parsing		
7			- Bottom-up parsing, - Shift reduce parsing		
8			-LR Parsing		
9			- Semantic analysis - Type system		
10			-Intermediate code Generation (IR)		
11			-Implementation of three address code		
12			-Code Optimization		
13			-Code Optimization Methods		
14			-Code Generation		
15	2		-Exam		
11. Course Evaluation					
1- Midterm exam – 15 score. 2- Quizzes – 5 score. 3- Homeworks – 5 score. 4- Mid laboratory – 15 score. 5- Final exam – 20 score laboratory + 40 score theoretical.					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)					
Main references (sources)		1-Compilers Principles, Techniques, & Tools by Alfred V. Aho, 1986. 2- The design and construction of compilers by JOHN WILEY & SONS,1981. 3- Compilers Principles, Techniques, & Tools by Alfred V. Aho, 2016.			
Recommended books and					

references (scientific journals, reports...)	
Electronic References, Websites	Many References from websites

## Data Structures and Algorithms Course Description

<b>1. Course Name:</b>					
Data Structures and Algorithms					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
2 <sup>nd</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
22/3/2024					
<b>5. Available Attendance Forms:</b>					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
Units = 4, credit hours = 60					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Nasreen Jawad Email: <a href="mailto:nasreen.kadhim@sc.uobaghdad.edu.iq">nasreen.kadhim@sc.uobaghdad.edu.iq</a> Name: Dr. Tareq Zaid Email: <a href="mailto:tarik.z@sc.uobaghdad.edu.iq">tarik.z@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1- Understanding data structures and algorithms and measure its efficiency and its complexity and understanding its application.</li> <li>2- Solving current problems in community or in working market using them.</li> <li>3- Dealing with scientific and application problems and put solutions to them.</li> </ol>				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1- Giving lectures to introduce and explain basic concepts and principles related data structures and algorithms. This helps the student build a strong foundation knowledge</li> <li>2. Giving practical programming exercises helps them apply the concepts they have learned and implement data structures. This helps them understand and enhance their programming skills</li> <li>3. Provide code instructions and examples that illustrate the implementation and of various data structures</li> <li>4. Conduct problem-solving sessions, either in class or through assignments, allow the student to apply data structures to solve problems</li> <li>5. Encouraging group projects and activities among students. This promotes teamwork and promotes understanding.</li> <li>6. Regular assessments and exams help measure student understanding and progress. These can include tests, assignments and examinations that assess theoretical knowledge and practical application</li> </ol>				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
<b>1</b>	2		1. Non-Linear Data Structures		

2	2		2. Tree Data Structure		
3	2		3. Binary Trees		
4	2		4. Binary Tree Traversal and Representation		
5	2		5. Binary Tree Applications		
6	2		6. Binary Tree Operations and Algorithms		
7	2		7. Graph Data Structure		
8	2		8. Sorting Algorithms: Classification Objectives and Programmer considerations.		
9	2		9. Sorting Algorithms: Selection sort, Bubble sort and Insertion sort.		
10	2		10. Sorting Algorithms: Bin sort, Radix sort and Merge sort.		
11	2		11. Sorting Algorithms: Quick sort, Shell sort and Tree sort.		
12	2		12. Complexity of Sorting Algorithms		
13	2		13. Searching Algorithms: Sequential search and Binary search.		
14	2		14. Hashing algorithms		
15	2		15. Complexity of Searching Algorithms.		
16	2		16. <b>Preparatory week before the final Exam</b>		

#### 11. Course Evaluation

Daily preparation 5%  
Daily Quiz 5%  
Monthly exam 20%  
Assignment 10%  
Final exams 60%

#### 12. Learning and Teaching Resources

1. Mark Allen Weiss (2014). Data Structures and Algorithm Analysis in C++. Fourth Edition. Addison-Wesley Publishing Company.
2. Kent D. Lee and Steve Hubbard (2015). Data



Structures and Algorithms with Python. Springer International Publishing Switzerland.

3. Rance D. Necaie (2011). Data Structures and Algorithms Using Python. John Wiley & Sons, Inc.

## Programming Language Techniques Course Description

<b>1. Course Name:</b>					
Programming Language Techniques					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
2 <sup>nd</sup> Semester/ 2 <sup>nd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
22/3/2024					
<b>5. Available Attendance Forms:</b>					
In person					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
4 credit hours / 4 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Maysa Ibrahim Abdulhussain Email: Maysaa.i@sc.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>			<b>Learn about the HTML,CSS and AS?P.NET</b> <ul style="list-style-type: none"> <li>● Learn the basics of Web development</li> <li>● Identify the libraries provided by language</li> <li>● Design and implement graphical u interfaces that respond to events</li> </ul>		
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	Providing the student with the basics of the topics - Discussions and problem solv during the lecture - Asking intellectual questions, such as why and how - Giv assignments				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	٤	Web Design Basics	Web Design Basics	Lectures	Midterm exam Daily evaluations
٢	٤	Introduction to HTML	Introduction to HTML	Lectures	Midterm exam Daily evaluations
٣	٤	HTML elements	HTML elements	Lectures	Midterm exam Daily evaluations
٤	٤	ASP.Net Basics	ASP.Net Basics	Lectures	Midterm exam Daily evaluations
٥	٤	ASP.Net Lifecycle and Lifecycle events	ASP.Net Lifecycle and Lifecycle events	Lectures	Midterm exam Daily evaluations
٦	٤	State Management techniques of ASP.Net	State Management techniques of ASP.Net	Lectures	Midterm exam Daily evaluations
٧	٤	Session, Cookies, Hidden Fields	Session, Cookies, Hidden Fields	Lectures	Midterm exam Daily evaluations
٨	٤	Server Side Controls	Server-Side Controls	Lectures	Midterm exam Daily evaluations

9	ε	<b>Web Forms and common Controls</b>	<b>Web Forms and common Controls</b>	<b>Lectures</b>	<b>Midterm exam Daily evaluations</b>
10	ε	<b>Page events</b>	<b>Page events</b>	<b>Lectures</b>	<b>Midterm exam Daily evaluations</b>
11	ε	<b>Menus</b>	<b>Menus</b>	<b>Lectures</b>	<b>Midterm exam Daily evaluations</b>
12	ε	<b>Connecting ASP with SQL</b>	<b>Connecting ASP with SQL</b>	<b>Lectures</b>	<b>Midterm exam Daily evaluations</b>
13	ε	<b>Data Controls</b>	<b>Data Controls</b>	<b>Lectures</b>	<b>Midterm exam Daily evaluations</b>
14	ε	<b>Master Details Pages</b>	<b>Master Details Pages</b>	<b>Lectures</b>	<b>Midterm exam Daily evaluations</b>

#### Course Evaluation

Monthly exams, Preparing reports, Laboratory evaluation

#### 11. Learning and Teaching Resources

Required textbooks (curricular books, any)	<i>Mastering Microsoft C# 2010, 1st Edition by Evangelos Petroustos, 2010</i>
Recommended books and references (scientific journals, reports...)	<i>Beginning ASP.NET3.5 in C#2008 by Matthew Macdonald</i>  <i>Online lectures and YouTube lessons.</i>
Electronic References, Websites	

# Third Grade

## Introduction to AI Course Description

<b>1. Course Name:</b>	
Introduction to AI	
<b>2. Course Code:</b>	
<b>3. Semester / Year:</b>	
1 <sup>st</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤	
<b>4. Description Preparation Date:</b>	
01-09-2024	
<b>5. Available Attendance Forms:</b>	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
4/3	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: Assistant Prof. Dr. Rawaa Dawoud Al-Dabbagh Email: rawaa.hassan @sc.uobaghdad.edu.iq Name: Dr. Dhuha Abdulhadi Abduljabbar Email: <a href="mailto:dhuha.abd@sc.uobaghdad.edu.iq">dhuha.abd@sc.uobaghdad.edu.iq</a>	
<b>8. Course Objectives</b>	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Provide an overview of fundamental AI concepts, including machine learning, natural language processing, robotics, expert systems, and more.</li> <li>• Explore various AI algorithms and techniques, such as search algorithms, knowledge representation, and optimization methods.</li> <li>• Familiarize students with AI programming languages (e.g., Python) and tools commonly used in AI development. Provide hands-on experience in implementing AI algorithms.</li> <li>• Develop problem-solving skills in the context of AI applications. Encourage students to analyze real-world problems and devise AI-based solutions.</li> </ul>
<b>9. Teaching and Learning Strategies</b>	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Lectures: Traditional lectures can be used to introduce foundational concepts, theories, and algorithms in AI. Lectures can incorporate visual aids, examples, and case studies to enhance understanding.</li> <li>2. Practical Coding Assignments: Assigning coding assignments that involve implementing AI algorithms and techniques allows students to gain hands-on experience. They can work with programming languages such as Python.</li> <li>3. Group Projects: Encouraging students to work in groups on AI projects promotes collaboration, problem-solving, and teamwork. Projects can involve tasks like developing a chatbot, building a recommendation system, or designing an image recognition system.</li> <li>4. Case Studies: Analyzing real-world case studies that demonstrate the application of AI techniques in various domains (e.g., healthcare, finance, or transportation) helps students understand practical challenges and ethical considerations.</li> </ol>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		<b>Introduction to AI</b> <ul style="list-style-type: none"> <li>• Definition and history of AI.</li> <li>• Types of AI: Narrow AI vs. General AI.</li> <li>• Applications of AI in various domains.</li> </ul>		
2	2		<b>Problem-Solving Concepts</b> <ul style="list-style-type: none"> <li>• Definition of problems and states.</li> <li>• Problem-solving agents.</li> <li>• Breadth-First Search (BFS) algorithm: principles and applications.</li> </ul>		
3	2		<b>Depth-First Search and Uniform Cost Search</b> <ul style="list-style-type: none"> <li>• Depth-First Search (DFS) algorithm.</li> <li>• Uniform Cost Search (UCS) for optimal pathfinding.</li> <li>• Comparing BFS, DFS, and UCS.</li> </ul>		
4	2		<b>Heuristic Functions and Greedy Best-First Search</b> <ul style="list-style-type: none"> <li>• Introduction to heuristic functions.</li> <li>• Greedy Best-First Search algorithm.</li> <li>• Applications and limitations of Greedy Search.</li> </ul>		
5	2		<b>A* Search Algorithm</b> <ul style="list-style-type: none"> <li>• Overview of A* Search.</li> <li>• Admissibility and consistency of A* heuristic.</li> <li>• Optimality of A* and its applications.</li> </ul>		
6	2		<b>Adversarial Search</b> <ul style="list-style-type: none"> <li>• Introduction to adversarial search.</li> <li>• Minimax algorithm: principles and implementation.</li> <li>• Hands-on session: Simulating and visualizing adversarial games.</li> </ul>		

7	2		<b>Alpha-Beta Pruning</b> <ul style="list-style-type: none"> <li>• Understanding Alpha-Beta Pruning for optimization.</li> <li>• Implementation of Alpha-Beta Pruning in adversarial search.</li> <li>• Comparing the performance of Minimax with and without Alpha-Beta Pruning.</li> </ul>		
8	2		<b>Comparison and Evaluation</b> <ul style="list-style-type: none"> <li>• Comparing uninformed and informed search algorithms.</li> <li>• Real-world applications and case studies.</li> </ul>		
9	2		<b>Basics of Knowledge Representation</b> <ul style="list-style-type: none"> <li>• Role of knowledge representation in AI.</li> <li>• Semantic Networks and their applications.</li> <li>• Introduction to Frames.</li> </ul>		
10	2		<b>First-Order Logic</b> <ul style="list-style-type: none"> <li>• Syntax and semantics of First-Order Logic.</li> <li>• Representing knowledge using logic.</li> <li>• Rule-based systems.</li> </ul>		
11	2		<b>Ontologies and Semantic Web</b> <ul style="list-style-type: none"> <li>• Understanding ontologies.</li> <li>• Introduction to RDF (Resource Description Framework).</li> <li>• Overview of OWL (Web Ontology Language).</li> </ul>		
12	2		<b>AI Project Kickoff</b> <ul style="list-style-type: none"> <li>• Overview of the AI project.</li> <li>• Selecting a problem domain.</li> <li>• Planning and scoping the project.</li> </ul>		
13	2		<b>Practical Implementation of Search Algorithms</b> <ul style="list-style-type: none"> <li>• Hands-on session: Implementing search algorithms in Python.</li> <li>• Debugging and optimizing code.</li> <li>• Integrating search algorithms into the project.</li> </ul>		

١٤	٢		<b>Ethical Considerations in AI</b> <ul style="list-style-type: none"> <li>• Importance of ethics in AI.</li> <li>• Ethical guidelines and responsible AI development.</li> <li>• Group discussions on ethical dilemmas.</li> </ul>		
١٥	٢		<b>Final Project Presentation</b> <ul style="list-style-type: none"> <li>• Project presentations.</li> <li>• Reflective essays on project experiences.</li> </ul>		
١٦	٢		<b>Preparatory week before the final exam</b>		
Course Structure (Practical Part)					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	٢		<b>Python Basics and Setup</b> <ul style="list-style-type: none"> <li>• Introduction to Python programming.</li> <li>• Setting up the Python environment for AI development.</li> <li>• Basic Python syntax, data types, and control structures.</li> </ul>		
٢	٢		<b>AI Lab Orientation</b> <ul style="list-style-type: none"> <li>• Overview of the AI Lab projects.</li> <li>• Introduction to tools and resources for AI development.</li> <li>• Collaborative tools setup.</li> </ul>		
٣	٢		<b>Implementing Breadth-First Search (BFS)</b> <ul style="list-style-type: none"> <li>• Understanding BFS algorithm.</li> <li>• Hands-on: Coding BFS in Python.</li> </ul>		
٤	٢		<b>Depth-First Search (DFS) and Uniform Cost Search (UCS)</b> <ul style="list-style-type: none"> <li>• Practical implementation of DFS and UCS.</li> <li>• Debugging and optimizing search algorithms in Python.</li> </ul>		
٥	٢		<b>Greedy Best-First Search Implementation</b> <ul style="list-style-type: none"> <li>• Principles of Greedy Best-First Search.</li> <li>• Coding exercise: Implementing Greedy</li> </ul>		



			Search in Python.		
٦	٢		<b>Implementing A* Search Algorithm</b> <ul style="list-style-type: none"> <li>• Overview of A* algorithm.</li> <li>• Hands-on: Coding A* Search in Python.</li> </ul>		
٧	٢		<b>Minimax Algorithm</b> <ul style="list-style-type: none"> <li>• Introduction to adversarial search.</li> <li>• Minimax algorithm: principles and implementation in Python.</li> </ul>		
٨	٢		<b>Alpha-Beta Pruning</b> <ul style="list-style-type: none"> <li>• Understanding Alpha-Beta Pruning for optimization.</li> <li>• Implementation of Alpha-Beta Pruning in adversarial search.</li> <li>• Practical coding exercises and application in board games.</li> </ul>		
٩	٢		<b>Advanced Topics in Adversarial Search</b> <ul style="list-style-type: none"> <li>• Extensions and variations of adversarial search algorithms.</li> <li>• Practical coding exercises exploring variations in game scenarios.</li> </ul>		
١٠	٢		<b>Implementing Semantic Networks and Frames</b> <ul style="list-style-type: none"> <li>• Hands-on: Coding semantic networks and frames in Python.</li> <li>• Practical applications and case studies.</li> </ul>		
١١	٢		<b>First-Order Logic in Python</b> <ul style="list-style-type: none"> <li>• Representing knowledge using First-Order Logic.</li> <li>• Coding exercises for rule-based systems.</li> </ul>		
١٢	٢		<b>Group Project Kickoff</b> <ul style="list-style-type: none"> <li>• Defining the project scope.</li> <li>• Initial planning and task distribution.</li> </ul>		
١٣	٢		<b>Project Work</b> <ul style="list-style-type: none"> <li>• Hands-on coding sessions for the group project.</li> </ul>		

			<ul style="list-style-type: none"> <li>Group discussions and consultations.</li> </ul>		
١٤	٢		<b>Project Presentations and Reviews</b> <ul style="list-style-type: none"> <li>Group presentations of final projects.</li> </ul>		
١٥	٢		<ul style="list-style-type: none"> <li><b>Q&amp;A sessions and peer reviews.</b></li> </ul>		
١٦	٢		<b>Preparatory Week before the Final Exam</b>		

### 11. Course Evaluation

Distributing the score out of ٤٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	<p>Nilsson, N. J. (1998). <i>Artificial intelligence: Structures and strategies for complex problem solving</i> (5th ed.). Pearson.</p> <p>Russell, S., &amp; Norvig, P. (2010). <i>Artificial intelligence: A modern approach</i> (3rd ed.). Pearson.</p> <p>Poole, D. L., &amp; Mackworth, A. K. (2017). <i>Artificial Intelligence Foundations of Computational Agents</i>. Cambridge University Press.</p>
Recommended books and references (scientific journals, reports...)	<p>Mitchell, M. (2019). <i>Artificial intelligence: A guide for thinking humans</i>. Farrar, Straus and Giroux.</p>
Electronic Websites	<p><b>Coursera AI Courses</b>  <a href="https://www.coursera.org/courses?query=artificial%20intelligence">https://www.coursera.org/courses?query=artificial%20intelligence</a></p>

## Computer Graphics Course Description

1. Course Name:	
Computer Graphics	
2. Course Code:	
3. Semester / Year:	
1 <sup>st</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -2024	
4. Description Preparation Date:	
21-3-2024	
5. Available Attendance Forms:	
Class attendance system	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Suhaila Najim Mohammed Email: <a href="mailto:suhailan.mo@sc.uobaghdad.edu.iq">suhailan.mo@sc.uobaghdad.edu.iq</a> Name: Dr. Huda M. Radha Email: <a href="mailto:huda.rada@sc.uobaghdad.edu.iq">huda.rada@sc.uobaghdad.edu.iq</a>	
8. Course Objectives	
<b>Course Objectives</b>	The main objective of this course is to introduce students the fundamental concepts in computer graphics including a range of computer graphics techniques and algorithms covering 2D graphics. It focuses on key algorithmic techniques, mathematical and programmatic foundations of computer graphics, including modeling and animating 2D and. Topics include digital image representation, two- dimensional shape representations (e.g. Lines, circles, and curves), geometrical transformations (e.g. rotations, scales, translations, reflection, shearing and combined transformation), the rasterization pipeline, ray tracing & visual perception.
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Delivering lectures to introduce and explain essential concepts, principles, and theories related to computer graphics. This helps students build a strong foundation of knowledge.</li> <li>2. Giving hands-on programming exercises helps them to apply the learned concepts and implement 2D graphics. This helps their understanding and enhances their programming skills.</li> <li>3. Providing code walkthroughs and examples demonstrating the modeling of 2D scenes.</li> <li>4. Conducting problem-solving sessions, both in class and through assignments to allows students to use graphics primitives and transformations for objects modeling and rendering.</li> <li>5. Encouraging group projects and activities among students. This promotes teamwork and enhances understanding.</li> <li>6. Regular evaluations and examinations help gauge students' understanding and progress. These can include quizzes, assignments, and exams that assess theoretical knowledge and practical application of computer graphics.</li> <li>7. Recommending textbooks, internet resources, and supplementary references might help students study more effectively.</li> </ol>
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduction to computer graphics	Introduction to the C# programming language environment and the tools it provides for dealing with computer graphics	Data show	quiz
2	4	Understanding the human visual system, computer image representation, color models, display devices, vector graphics, raster graphics, basic terms related to display devices.	Dealing with geometric shapes (point, line, and rectangle)	Data show	quiz
3	4	Understanding 2D graphics, graphics output primitives, basic geometric shapes, desired properties of line drawing algorithms, DDA line drawing algorithm	Dealing with geometric shapes (circle, arc, polygon, and curve)	Data show	quiz
4	4	Understanding line drawing algorithms (Bresenham line drawing algorithm and Mid-Point algorithm)	Modeling some 2D shapes (such as cube and grid)	Data show	quiz
5	4	Understanding circle drawing algorithms, circle properties, polar coordinate method, and circle symmetry property	Modeling some scenes (such as a smiling face, and drawing birds)	Data show	quiz
6	4	Understanding circle drawing algorithms (Bresenham circle drawing algorithm and Mid-Point algorithm)	Programming line drawing algorithms	Data show	quiz
7	4	Curve definition, Bezier curves, types of Bezier curves (linear Bezier curves, quadratic Bezier curves, cubic Bezier curves), applications of curves	Programming circle drawing algorithms	Data show	quiz
8	4	Understanding basic 2D transformations (translate, scale, and shear)	Programming methods for drawing curved shapes	Data show	quiz
9	4	Understanding basic 2D transformations (reflection, rotation, composition, and affine transformations)	Dealing with basic 2D transformations	Data show	quiz
10	4	Introducing the concepts of 2D views (cuts, point cuts, and line	Modeling some complex	Data show	quiz

		cuts)	geometric shapes using translation, scaling, rotation and reflection		
11	4	Building hierarchical modeling of complex objects, scene diagrams, and transformation stacks	Modeling some scenes using basic transformations (such as drawing a butterfly)	Data show	quiz
12	4	Introducing the concepts of three-dimensional views, parallel projection, perspective projection, and depth determination	Introduction to OpenGL	Data show	quiz
13	4	Understanding polygon representation of objects, meshes and surfaces	Drawing a 3D shape using OpenGL	Data show	quiz
14	4	Understanding basic 3D transformations (move, rotate, scale, reflect, shearing, and compound transformations)	Dealing with basic 3D transformations	Data show	quiz
15	4	Mid-Exam	Mid-Exam + display of projects completed by students	Data show	quiz

#### 11. Course Evaluation

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

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1) "Fundamentals of Computer Graphics", S. Marschner, and P. Shirley, CRC Press (A K Peters), 2021. 2) "Computer Graphics: Principles and Practice", J. F. Hughes, A. V. Dam, M. McGuire, D. F. Sklar, J. D. Foley, S. K. Feiner, and K. Akeley, Addison-Wesley (Pearson Education), 2014.
Main references (sources)	1. Steve Marschner and Pete Shirley. Fundamentals of Computer Graphics. A K Peters, 2021. 2. John F. Hughes, Andries van Dam, Morgan McGuire, David F. Sklar, James D. Foley, Steven K. Feiner, and Kurt Akeley. Computer Graphics: Principles and Practice. 2014.
Recommended books and references (scientific journals, reports...)	1) "Introduction to Computer Graphics". F. Klawonn, Springer-Verlag London, 2 <sup>nd</sup> Edition, 2012. 2) "OpenGL Programming Guide", Addison-Wesley (Pearson Education), D. Shreiner, G. Sellers, J. Kessenich, B. Licea-Kane, Edition, 2013.
Electronic References, Websites	1) <a href="https://www.coursera.org/learn/interactive-computer-graphics">https://www.coursera.org/learn/interactive-computer-graphics</a> 2) <a href="https://www.sciencedirect.com/journal/computers-and-graphics">https://www.sciencedirect.com/journal/computers-and-graphics</a> 3) <a href="https://www.frontiersin.org/journals/computer-science/sections/computer-graphics-and-visualization">https://www.frontiersin.org/journals/computer-science/sections/computer-graphics-and-visualization</a>

## Course Description Form

<b>1. Course Name:</b>					
Database fundamentals					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -۲۰۲۴					
<b>4. Description Preparation Date:</b>					
3/2024					
<b>5. Available Attendance Forms:</b>					
Attendance time					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60/3					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Mehdi G. Duaimi Email: <a href="mailto:mehdi.k@sc.uobaghdad.edu.iq">mehdi.k@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<p>Defining and explaining fundamental of database concepts. Designing a database schema. Executing SQL statements for data retrieval and manipulation.</p> <p>Understanding the role of databases in applications. Performing data modeling and schema design. Optimizing query performance.</p>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		<p>Instructors aim to consolidate active learning and critical thinking by engaging students in practical activities such as designing database schemas, writing SQL queries, and solving real-world database challenges. The strategy encourages collaboration, independent problem-solving, and the use of technology tools to enhance the learning experience. This will be achieved through classes, interactive tutorials and by considering types of various lab. assignments; involving some activities that are interesting to the students.</p>			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	4	Understand fundamental database principles.	Database System Concepts	Lectures	Exams (various types) Student feedback
2	4	Comprehend database system components.	Database Architecture	- Lectures - Reports and studies	Exams (various types) Assessment of reports and studies.
3	4	Know the role and functions of DBMS.	Database Management System	Lectures.	Exams (various types)
4	4	Learn about	Database Schema	Lectures.	Student feedback.

		database structure and user roles.	& Database Users	Exams (various types). Group work	Workshops. Assessment of reports and studies
5	4	Model real-world entities and relationships.	The Entity Relationship Data Model	Lectures. Exams (various types). Group work	Student feedback. Workshops. Learning matrix
6	4	Ensure data quality & Applying advanced E-R modeling and business rules.	Relational Integrity & The Enhanced E-R Model and Business Rules	Lectures	Exams (various types). Learning matrix
7	4	Design databases using the ER model.	Conceptual Design with the ER Model	Lectures. Exams (various types). Group work	Student feedback 3. Workshops   4. Reports and studies
8	4	Master SQL for data retrieval and manipulation.	Queries and Updates in SQL	Lectures. Group work	Exams (various types). Learning matrix
9	4	Understand the basics of relational databases.	The Relational Data Model	Lectures. Group work Workshops Reports and studies	Exams (various types). Student feedback. Assessment of reports and studies
10	4	Convert ER diagrams to relational schemas.	Mapping from ER Diagrams to Relational Model	Lectures.	Exams (various types). Student feedback
11	4	Explore advanced SQL and DBMS features.	SQL and DBMS Functionality	Lectures.	Exams (various types) Student feedback Learning matrix
12	4	Define and apply data integrity constraints.	Constraints and Keys	Lectures. Group work	Exams (various types). Student feedback
13	4	Create relation schemas in SQL.	Defining a Relation Schema in SQL	Lectures. Reports and studies	Exams (various types). . Assessment of reports and studies
14	4	Model data hierarchies effectively.	DBMS Generalization & Specialization	Lectures. Workshops	Exams (various types) Student feedback Learning matrix
15	4	Understand relational algebra for querying data.	Relational Algebra Syntax and Semantics	Lectures.	Exams (various types). Student feedback

Lab Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1		Introduction to Database System	Discussions Seminars Lectures HomeWorks Reports	Quizzes Semester e Final Exam
2	1		Importing and Linking Information from an External Source		
3	1		Creating and working with Tables		
4	1		Data Types and Table Properties		
5	1		Field Properties		
6	1		Formatting Fields		
7	1		Sorting and Filtering		
8	1		Creating Relationship and Referential Integrity		
9	1		Introduction to SQL and Query types		
10	1		Creating and working with Queries (QBE)		
11	1		DDL: Part I		
12	1		DDL: Part II		
13	1		DML: Select Query		
14	1		Action Queries		
15	1		Exam		
<b>Course Evaluation</b>					
60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.					
<b>Learning and Teaching Resources</b>					
Required textbooks (curricular books, if any)					
Main references (sources)			1- Kroenke, D. M., Auer, D. J., Vandenberg, S. L., & Yoder, R. C. (2018). Database Processing. Fundamentals, Design, and Implementation 2- Alexander, M., & Kusleika, R. (2019). Access Bible. John Wiley & Sons.		
Recommended books and references (scientific journals, reports...)			Books and research papers from Scopus and WoS databases.		
Electronic References, Websites					
<b>11. Course Evaluation</b>					
Quizzes 5, Assignments 5, Lab. 10, Projects 5, Midterm Exam 25, Final Exam 50					
<b>12. Learning and Teaching Resources</b>					



Required textbooks (curricular books, if any)	Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", 4th Edition, McGraw Hill, 2018. S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management Systems", Springer, 2007.
Main references (sources)	David M. Kroenke, David J. Auer. "Database processing: fundamentals, design, and implementation."—Edition 15, Pearson Education, Prentice Hall. 2018. Mike McGrath. 'Access in easy steps: Illustrated using Access 2019 Paperback. In Easy Steps Limited (2019).
Recommended books and references (scientific journals, reports...)	<a href="https://www.inderscience.com/jhome.php?jcode=ijiids">https://www.inderscience.com/jhome.php?jcode=ijiids</a> <a href="https://dl.acm.org/journal/tods">https://dl.acm.org/journal/tods</a>
Electronic References, Websites	<a href="https://www.inderscience.com/jhome.php?jcode=ijiids">https://www.inderscience.com/jhome.php?jcode=ijiids</a> <a href="https://www.sciencedirect.com/topics/immunology-and-microbiology/database-management-system">https://www.sciencedirect.com/topics/immunology-and-microbiology/database-management-system</a>

## English Language III Course Description

1. Course Name:	<b>English Language III</b>
2. Course Code:	UOB23118
3. Semester / Year:	1 <sup>st</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 - ٢٠٢٤
4. Description Preparation Date:	24/3/2024
5. Available Attendance Forms:	In person - In classroom
6. Number of Credit Hours (Total) / Number of Units (Total)	2
7. Course administrator's name (mention all, if more than one name)	Name: Zainab Raed Ahmed Email: <a href="mailto:zainab.raid@sc.uobaghdad.edu.iq">zainab.raid@sc.uobaghdad.edu.iq</a>
8. Course Objectives	<ol style="list-style-type: none"> <li>1. To develop students' language skills in English, focusing on the intermediate level.</li> <li>2. To enhance students' ability to communicate effectively and confidently in various everyday situations.</li> <li>3. To expand students' vocabulary and understanding of grammar structures.</li> <li>4. To promote cultural awareness and understanding through authentic texts and materials.</li> <li>5. To provide a solid foundation for further language learning and progression.</li> </ol>
9. Teaching and Learning Strategies	<ol style="list-style-type: none"> <li>1. Communicative Approach: Emphasize communicative activities that promote interaction among students. Encourage pair and group work, role-plays, and discussions to practice language skills in meaningful contexts.</li> <li>2. Integrated Skills: Integrate the four language skills (speaking, listening, reading, and writing) in lessons to create a balanced approach to language learning. Provide opportunities for students to use and develop these skills simultaneously.</li> <li>3. Vocabulary Expansion: Incorporate vocabulary-building exercises and activities throughout the course. Use real-life contexts, visuals, and practical examples to help students learn and remember new words.</li> <li>4. Grammar Focus: Teach and reinforce grammar structures in a systematic and progressive manner. Provide clear explanations, examples, and practice exercises to ensure students understand and can apply the grammar rules correctly.</li> <li>5. Authentic Materials: Include authentic texts, such as articles, newspaper clippings, songs, and videos, to expose students to real-world language usage. This helps develop their reading and listening comprehension skills and exposes them to cultural aspects of English-speaking countries.</li> <li>6. Cultural Awareness: Integrate cultural topics and discussions into the lessons to foster cultural awareness and sensitivity. Encourage students to share their own cultural backgrounds and experiences to promote understanding and appreciation of diverse perspectives.</li> <li>7. Error Correction: Provide constructive feedback and error correction during speaking and</li> </ol>

writing activities. Help students identify and correct their mistakes, focusing on accuracy while encouraging fluency and self-expression.

8. **Technology Integration:** Utilize technology tools, such as interactive whiteboards, online resources, and language learning apps, to engage students and enhance their language learning experience. Incorporate multimedia materials for listening and speaking practice.
9. **Regular Assessment:** Assess students' progress regularly through quizzes, tests, and assignments. Provide timely feedback to guide their learning and address areas that need improvement.
10. **Individualization:** Cater to the individual needs and learning styles of students. Offer differentiated tasks and activities to ensure all learners are appropriately challenged and supported.
11. **Cooperative Learning:** Promote collaboration and teamwork among students through pair work, group projects, and peer feedback. This encourages active participation and a supportive learning environment.
12. **Review and Revision:** Schedule regular review sessions to consolidate previously learned material. Encourage students to revise and practice independently, providing resources for self-study and additional practice.

#### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Naming tenses Present, Past, Present Perfect Auxiliary verbs	A world of difference	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
2	2	Present tenses Simple and continuous	The working week	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
3	2	Past tenses Simple and continuous	Good times, bad times	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
4	2	Advice, obligation, and permission Modal and related verbs	Getting it right	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
5	2	Future forms Will, going to, or Present Continuous?	Our changing world	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
6	2	Information	What matters to me	Lecture	Either quiz

		questions, Adjectives		in Classroom	(Listening, reading, grammar, vocabulary), or writing assignment
7	<b>Midterm Exam</b>				
8	2	Present Perfect Simple and continuous	Passions and fashions	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
9	2	Verb patterns idioms	No fear	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
10	2	Conditionals Second & Third conditionals	It depends how you look at it	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
11	2	Noun phrases Possessives	All things high tech	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
12	2	Modals of probability Phrasal verbs	Seeing is believing	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
13	2	Reported speech	Telling it how it is	Lecture in Classroom	Either quiz (Listening, reading, grammar, vocabulary), or writing assignment
14	2	Revision week			
15	<b>Final exam</b>				

#### 11. Course Evaluation

Listening quiz (10%)+Reading quiz (10%)+ writing assignment (10%)+ Grammar & Vocabulary quiz (10%)= 40 % + 60% final exam

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Soars, John and Liz, (2011), New Headway Plus, Special Edition, Intermediate Level, Oxford University Press
Main references (sources)	New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments
Recommended books and references (scientific	Oxford University Press: The New Headway

journals, reports...)	series is published by Oxford University Press. Visit their website at <a href="http://www.oup.com">www.oup.com</a> and search for "New Headway Plus, Special Edition, Intermediate" or browse their English language teaching section for information on the course.
Electronic References, Websites	<a href="https://elt.oup.com/student/headway/beg/?cc=gl&amp;l&amp;selLanguage=en">https://elt.oup.com/student/headway/beg/?cc=gl&amp;l&amp;selLanguage=en</a>

## Advance Computer Architecture Course Description

<b>1. Course Name:</b>					
Advance Computer Architecture					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
22/03/2024					
<b>5. Available Attendance Forms:</b>					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
Credit Hours (Total) is 30 / 2 Units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Lecturer: Nahlah Abdulrahman Alkhalidi Email: nahlah.a@sc.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
Course Objectives		1- Understand and understand computers and solve existing problems in society or in the labor market. 2- Dealing with scientific and applied problems and developing solutions to them. 3- Understanding computer methods and techniques in solving the problems of scientific and economic institutions.			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>					
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to computer architecture		- Short exams Quarterly and final. - Homework assignments. - Discussion sessions - Presentations for students. - Making posters.
2	2		Processor and its architecture		
3	2		Intel 80x86 Base Architecture		
4	2		Intel 80386 MP architecture		
5&6	2		Instruction Pipelining		
7	2		Intel 80386 MP Processing Modes		
8	2		Intel 80486 MP architecture		

9 &10	2		Intel Pentium Processor		
11	2		Memory Subsystem The Fetch/Decode Unit		
12	2		Instruction Set Architecture Features		
13	2		MMX™ Technology Instructions		
14 & 15	2		Intel Pentium III Processor		

#### 11. Course Evaluation

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

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer Organization and Architecture Designing for Performance, 8th Edition, by William Stallings.
Main references (sources)	Basic Computer Architecture, Smruti R. Sarangi, 2021 Modern Computer Architecture and Organization: Learn X86, ARM, and RISC-V Architectures and the Design of Smartphones, PCs, and Cloud Servers ۞ Jim Ledin, 2022.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	<ul style="list-style-type: none"> <li>- <a href="https://www.geeksforgeeks.org/computer-organization-and-architecture">https://www.geeksforgeeks.org/computer-organization-and-architecture</a>.</li> <li>- <a href="https://electronicsdesk.com/">https://electronicsdesk.com/</a></li> <li>- <a href="https://en.wikipedia.org/">https://en.wikipedia.org/</a></li> </ul>

## Programming with Java Course Description

1. Course Name:

Programming with Java

2. Course Code:

3. Semester / Year:

2023/2024

4. Description Preparation Date:

22/3/2024

5. Available Attendance Forms:

In person

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

3 credit hours / 2 units

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

Name: Dr Haneen Ahmed

Email: haneen.a@sc.uobaghdad.edu.iq

8. Course Objectives

- Course Objectives**
- Learn about the Java programming method and its capabilities
  - Learn the basics of the Java language
  - Identify the libraries provided by the language
  - Design and implement graphical user interfaces that respond to events
  - Dealing with files

9. Teaching and Learning Strategies

- Strategy**
- Providing the student with the basics of the topics
  - Discussions and problem solving during the lecture
  - Asking intellectual questions, such as why and how
  - Giving assignments

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1 theoretical + 2 practical	Introduction to java Programming	Introduction to java Programming	lectures	Midterm exam Daily evaluations
2	1 theoretical + 2 practical	Java Fundamentals	Java Fundamentals	lectures	Midterm exam Daily evaluations
3	1 theoretical + 2 practical	Principles of object-oriented programming	Principles of object-oriented programming	lectures	Midterm exam Daily evaluations
4	1 theoretical + 2 practical	Introducing Classes, Objects, and Methods	Introducing Classes, Objects, and Methods	lectures	Midterm exam Daily evaluations
5	1 theoretical + 2 practical	GUIs in Java	GUIs in Java	lectures	Midterm exam Daily evaluations
6	1 theoretical	Java AWT	Java AWT	lectures	Midterm exam



	+ 2 practical	Java Swing toolkit and widgets	Java Swing toolkit and widgets		Daily evaluations
7	1 theoretical + 2 practical	GUI Components	GUI Components	lectures	Midterm exam Daily evaluations
8	1 theoretical + 2 practical	Exam	Exam	lectures	Midterm exam Daily evaluations
9	1 theoretical + 2 practical	Exception Handling	Exception Handling	lectures	Midterm exam Daily evaluations
10	1 theoretical + 2 practical	Input/output and files	Input/output and files	lectures	Midterm exam Daily evaluations
11	1 theoretical + 2 practical	Input/output and files	Input/output and files	lectures	Midterm exam Daily evaluations
12	1 theoretical + 2 practical	Java Collections	Java Collections	lectures	Midterm exam Daily evaluations
13	1 theoretical + 2 practical	Random number	Random number	lectures	Midterm exam Daily evaluations
14	1 theoretical + 2 practical	Introduction client server programming	Introduction client server programming	lectures	Midterm exam Daily evaluations
15	1 theoretical + 2 practical	Network programming	Network programming	lectures	Midterm exam Daily evaluations

#### 11. Course Evaluation

- Monthly exams
- Preparing reports
- Laboratory evaluation

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Cay S. Horstmann, **Core Java Volume I – Fundamentals**, 11th Edition, Prentice Hall  
Herbert Schildt, **Java - The Complete Reference**, 11th Edition, McGraw Hill Education

Main references (sources)

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

Electronic References, Websites

<https://www.tutorialspoint.com/java>  
<http://docs.oracle.com/javase/tutorial/java>  
<http://java.sun.com/docs/books/tutorial/index.html>

## Software engineering Course Description

1. Course Name:					
Software engineering					
2. Course Code: CSC35129					
3. Semester / Year: Semester					
1 <sup>st</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
4. Description Preparation Date:					
23/03/2024					
5. Available Attendance Forms: In person					
6. Number of Credit Hours (Total) / Number of Units (Total):					
30 Hours					
7. Course administrator's name (mention all, if more than one name)					
Name: 1- Dr. Faten Abed Ali Dawood					
Email: <a href="mailto:faten.dawood@sc.uobaghdad.edu.iq">faten.dawood@sc.uobaghdad.edu.iq</a>					
Name: 2- Dr. Safaa Khalil Mortada					
Email: <a href="mailto:safaa.alwajidi@sc.uobaghdad.edu.iq">safaa.alwajidi@sc.uobaghdad.edu.iq</a>					
8. Course Objectives					
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• <b>Helping students to gain a broad understanding of software engineering applications by analyzing requirements to design and implement the software product according to recognized standard specifications.</b></li> <li>• <b>Developing skills that enable students to analyze and design high-quality software systems with good reliability that meet the requirements of the labor market.</b></li> </ul>				
9. Teaching and Learning Strategies					
<b>Strategy</b>	<p>1- Theoretical and practical lectures using modern presentation techniques and students' participation in scientific discussions through brainstorming to obtain the required conclusions that enhance the student's broad understanding of the lecture.</p> <p>2- Students' participation in solving programming problems that occur during the design and implementation of the applied software system.</p> <p>3- Discussion and dialogue about vocabulary related to the topic.</p> <p>4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where they are explained in detail in the lecture, with many examples solved, discussed with students, and their questions answered. The electronic classroom is also used to give homework assignments, upload answers within the electronic classroom, and also announce exam dates and grades...etc.</p>				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand the methods and how to apply them	Introduction to Software Engineering	In person	1-Questions and answers, 2- Quiz , Homework assignments
2	2	=====	Software Process	=====	=====

3	2		Types of requirements (User & System)		
4	2		Requirements engineering process		
5	2		Functional & Non-Functional Requirements		
6	2		Software Development -Process Models		
7	2		The Waterfall Model		
8	2		V-shaped model		
9	2		Evolutionary Development Model		
10	2		Incremental Model lifecycle		
11	2		Spiral Model life cycle		
12	2		Software Analysis & Design - Data Flow Diagram		
13	2		Software Testing		
14	2		Team- Work Presentation- I		
15	2		Team- Work Presentation- II		

#### 11. Course Evaluation

Quizzes	3	5% (5)
Assignments	2	10% (10)
Projects	1	10% (10)
Report	1	5% (5)
Midterm Exam	2hr	20% (20)
Final Exam	3hr	50% (50)

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- Software Engineering, 10th Edition by Ian Sommerville, 2016 2- Software Engineering: A Practitioner's Approach, 8th Edition by Roger S. Pressman, Bruce Maxim, 2015 3- Introduction to Software Engineering, 2nd Edition by Ronald J. Leach, 2016
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	1- <a href="https://www.tutorialspoint.com/software_engineering/index.htm">https://www.tutorialspoint.com/software_engineering/index.htm</a> 2- <a href="https://www.geeksforgeeks.org/software-engineering-introduction-to-software-engineering">https://www.geeksforgeeks.org/software-engineering-introduction-to-software-engineering</a>

## Web organization Course Description

1. Course Name:	
Web organization	
2. Course Code:	
CSC24023	
3. Semester / Year:	
1 <sup>st</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 - 2024	
4. Description Preparation Date:	
21-3-2024	
5. Available Attendance Forms:	
Attendance: theoretical + practical	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 hours per week / 2 units	
7. Course administrator's name (mention all, if more than one name)	
<b>1- Name:</b> Assistant Professor Dr. Ammar I. Shihab <b>Email:</b> <a href="mailto:ammar.i@sc.uobaghdad.edu.iq">ammar.i@sc.uobaghdad.edu.iq</a> <b>2- Name:</b> Lecturer Mustafa Salman <b>Email:</b> <a href="mailto:mustafa.abd@sc.uobaghdad.edu.iq">mustafa.abd@sc.uobaghdad.edu.iq</a>	
8. Course Objectives	
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1. Providing an easy-to-use user interface and an excellent user experience for users.</li> <li>2. Improving the user experience through increasing speed of loading and responsiveness, and ensuring a responsive design that is suitable for all devices.</li> <li>3. Organizing website content and making it easy to access and search.</li> <li>4. Increasing website traffic and improving search engine rankings (SEO).</li> <li>5. Improving quality and efficiency through applying best design practices and providing the best technological solutions for website development.</li> <li>6. Enhancing personal or business branding through the website, and improving communication and interaction with customers.</li> </ol>
1. Teaching and Learning Strategies	
<b>Strategy</b>	<p>The main strategy that will be adopted in delivering this module are:</p> <ol style="list-style-type: none"> <li>1. Power point presentation (Data show).</li> <li>2. videos, is posted online and available so that students can read or listen to it whenever and as many times it is desired or needed</li> <li>3. Lecture Document: i.e., a PDF file containing between 25 and 40 PowerPoint slides, with pointers to required or recommended textbooks, posted online</li> <li>4. Lecture Video: i.e., one or more video recordings of an explanation of the lecture slides, posted together with the lecture document</li> <li>5. Explanation on the white board using different color markers.</li> <li>3. Discussions with the student during teaching.</li> <li>4. Interaction with students through daily problems practice through lecture.</li> <li>5. Solve different problems with more exercises.</li> <li>6. Use tool kits in LABs to design simple cryptosystem in addition to simulator software.</li> <li>7. Prepare reports that develop cryptography thinking for students.</li> <li>8. Submit assignment that develop student learning.</li> </ol>

2. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3 hours/ In weeks	Chapter 1: Web Basics and Overview, What is the Internet, The World Wide Web, web Environment, How does the Browser Fetch the Pages, What is an HTML File, Website styles	Introduction to web concepts.	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
2	3 hours/ In weeks	Web Design, Site Planning, Site Goals and Guidelines, Audience Analysis, Analyze the “Competition”, Know Resources & Abilities.	Understanding web design	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
3	3 hours/ In weeks	Site Map, Storyboards, Design (or redesign)	the site , Web hosting, Domain name, publishing, Testing, Marinating, Promotion	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
4	3 hours/ In weeks	Search Engine, Robots and Spiders and Crawlers, Directories, Meta Tags, Defined, Description, Keywords.	Conceptual of SEO	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
5	3 hours/ In weeks	Chapter2:The Basic, Links, and Images, HTML/XHTML, CSS (Cascading Style Sheets), JavaScript/DOM scripting, Server-side programming, XML, Java, Ajax	Topics in Web Design	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
6	3 hours/ In weeks	Site Types, Web Page Addresses (URLs), Default files,	How the Web Works, Coping with various browser versions,	Theoretical and practical lectures	Theoretical exams + practical assessment +

			type of Link's URL, Linking Within Your Own Site,		practical exams
7	3 hours/ In weeks	Chapter 3 : Topics in Web Design:	Tables, Forms, and the Standards, Advanced Table Elements, How Forms Work, From Data Entry to Response, The Action Attribute, The Method Attribute	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
8	3 hours/ In weeks	The POST method, The GET method, The Standards, HTML5. Character Encoding	Understanding new portal work	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
9	3 hours/ In weeks	Exam#1(Chapters 1, 2 & 3)	Exam mid1	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
10	3 hours/ In weeks	Chapter 4 :CSS for Presentation, Cascading Style Sheets Orientation, Benefits of CSS, How CSS Work, CSS rules, CSS Providing Values	, How CSS Work, CSS rules, CSS Providing Values	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
11	3 hours/ In weeks	Attaching the styles to the document	CSS Concepts, Conflicting styles: the cascade	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
12	3 hours/ In weeks	Chapter 5: type of webpages and Data environment	Fixed pages, elastic pages, Liquid pages	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
13	4 hours/ In weeks	Chapter 6 : information architecture	Information architecture , web Usability, web categories etc..	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
14	4 hours/ In weeks	CSS rules Specificity,	Rule order, Assigning Importance, box,	Theoretical and practical	Theoretical exams + practical

			and table model	lectures	assessment + practical exams
15	4 hours/ In weeks	Final Exam	Final Exam	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
<b>3. Course Evaluation</b>					
Conducting daily, monthly exams and daily evaluation in addition to the practical part in the laboratory. The pursuit grade is 40% and the final exam grade is 60%.					
<b>4. Learning and Teaching Resources</b>					
Required textbooks (curricular books, if any)	Sklar, Joel. <i>Principles of web design: the web technologies series</i> . Cengage Learning, 2011.				
Main references (sources)	Beaird, Jason, Alex Walker, and James George. <i>The principles of beautiful v design</i> . Sitepoint, 2020				
Recommended books and references (scientific journals, reports...)	Various research works in internet				
Electronic References, Websites	<a href="https://books.google.iq/books?hl=en&amp;lr=&amp;id=1cgIAAAQBAJ&amp;oi=fnd&amp;pg=PR5&amp;dq=web+design+principles&amp;ots=05f68YTSkz&amp;sig=9cQxWgfwuCe0_KdfoaQrWqYSvdw&amp;redir_esc=y#v=onepage&amp;q=web%20design%20principles&amp;f=false">https://books.google.iq/books?hl=en&amp;lr=&amp;id=1cgIAAAQBAJ&amp;oi=fnd&amp;pg=PR5&amp;dq=web+design+principles&amp;ots=05f68YTSkz&amp;sig=9cQxWgfwuCe0_KdfoaQrWqYSvdw&amp;redir_esc=y#v=onepage&amp;q=web%20design%20principles&amp;f=false</a>				

## Digital Image Processing Course Description

1. Course Name:
<b>Digital Image Processing</b>
2. Course Code:
<b>CUE31055</b>
3. Semester / Year:
2 <sup>nd</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 - ٢٠٢٤
4. Description Preparation Date:
<b>22/March/2024</b>
5. Available Attendance Forms:
<b>Morning and Evening attendance</b>
6. Number of Credit Hours (Total) / Number of Units (Total)
<b>4 hours (2 Theoretical / 2 Practical) / 3 Units</b>
7. Course administrator's name (mention all, if more than one name)
<b>Name: Mohammed Sabih</b> <b>Email: <a href="mailto:mohammed.s@sc.uobaghdad.edu.iq">mohammed.s@sc.uobaghdad.edu.iq</a></b> <b>Name: Rafal Ali</b> <b>Email: <a href="mailto:Rafal.a@sc.uobaghdad.edu.iq">Rafal.a@sc.uobaghdad.edu.iq</a></b>
<b>8. Course Objectives</b>
<ol style="list-style-type: none"> <li>1. Enable students to define the scope of the field called digital image processing.</li> <li>2. Knowledge of image processing in its space domain and in the frequency domain.</li> <li>3. Discussing the methods used in this field, as well as knowing the basics of the digital image in terms of its composition, the processes of converting it into a digital image, and processing color and non-color digital images.</li> <li>4. Using computer programming in the laboratory to clarify and achieve the above-mentioned goals using programming languages.</li> <li>5. Discussing the basics of digital image compression and the algorithms used in this field.</li> <li>6. Building applied projects that employ digital images for community service purposes.</li> </ol>
<b>9. Teaching and Learning Strategies</b>
<ol style="list-style-type: none"> <li>1. Explaining the scientific material to students in detail, having students participate in solving mathematical problems, and using the blackboard to explain and solve examples.</li> <li>2. Use Power Point presentation programs in the classroom when giving lectures.</li> <li>3. Discussion and dialogue about vocabulary related to the topic</li> <li>4. Using computer programming in the laboratory for practical application using the C# environment.</li> <li>5. Use the electronic platform Google Classroom to provide students with lectures.</li> </ol>



10. Course Structure				
Week	Hours (Theoretical and Practical)	Unit or subject name	Learning method	Evaluation method
1	4	- Imaging system - Source of Images - Image Digitization (Quantization and Sampling)	Data Show	Quiz
2	4	- Basic Operation on Digital image - Basics of Digital image - Image representation - Types and Format of digital image	Data Show	Quiz
3	4	- Relationship between pixels - Types of operation	Data Show	Quiz
4	4	- Mathematical operation on Digital image - Array and matrix operation - Linear and Nonlinear - Arithmetic and Logic operations - Convolution	Data Show	Quiz
5	4	- Image Histogram - Histogram Modification - Equalization -Global Features	Data Show	Quiz
6	4	- Frequency domain and filters	Data Show	Quiz
7	4	- Enhance brightness of digital image	Data Show	Quiz
8	4	- Digital image enhancement - Spatial Filters (Mean and Weighted Mean Filter)	Data Show	Quiz
9	4	- Digital image enhancement - Spatial Filters (Min, Max and Median Filter)	Data Show	Quiz
10	4	- Edge Detection - Prewitt, Sobel and Laplace Filter	Data Show	Quiz
11	4	- Discrete Fourier Transform (DFT) and Low Pass Filter - Convert image to frequency domain	Data Show	Quiz
12	4	- Image compression - Discrete Wavelets Transform (DWT)	Data Show	Quiz

### 11. Course Evaluation

60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab).

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Rafael C. Gonzalez, Richard E. Wood. Digital image processing 4th edition 2018. Pearson Education. Inc. Pearson , Prentice Hall.
Main references (sources)	Digital Image Processing and Analysis, 2 <sup>nd</sup> edit

	by Scott E Umbaugh, 2010.
Recommended books and references (scientific journals, reports...)	Wilhelm Burger, Principles of Digital Image Processing: Fundamental Techniques, 2009th Edition.
Electronic References, Websites	<a href="https://sisu.ut.ee/imageprocessing/book/1">https://sisu.ut.ee/imageprocessing/book/1</a>

## Cryptography Course Description

1. Course Name:					
Cryptography					
2. Course Code:					
3. Semester / Year:					
2 <sup>nd</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
4. Description Preparation Date:					
March/ 21/ 2024					
5. Available Attendance Forms:					
Mandatory					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60/3					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Sarab M. Hameed      Email: sarab.m@sc.uobaghdad.edu.iq					
Name: Mustafa Basim Mahmood      Email: mostafa.bassem@sc.uobaghdad.edu.iq					
8. Course Objectives					
<ol style="list-style-type: none"> <li>Understand the basic concepts, history, and importance of cryptography in modern computing and communication systems.</li> <li>Understand different encryption algorithms, characteristics, operations, and applications.</li> <li>Students will learn a strong understanding of the mathematical principles underlying cryptography.</li> <li>Explore the mathematical principles underlying cryptography, including number theory and algebraic structures.</li> <li>Learn about classical cryptographic techniques such as substitution ciphers, transposition ciphers, and their vulnerabilities.</li> <li>Study modern cryptographic primitives including symmetric cryptography, public key cryptography, and cryptographic hash functions.</li> <li>Explore different cryptographic tools and how to use these tools effectively.</li> </ol>					
9. Teaching and Learning Strategies					
<ol style="list-style-type: none"> <li>Delivering lectures to introduce and explain essential concepts, principles, and theories related to cryptography. This helps students build a strong foundation of knowledge.</li> <li>Giving hands-on programming exercises helps them to apply the learned concepts and implement cryptographic algorithms.</li> <li>Conducting problem-solving sessions, both in class and through assignments to both in class and through assignments to allow students to apply cryptographic algorithms</li> <li>Encouraging group projects and activities among students. This promotes teamwork and enhances understanding.</li> <li>Regular evaluations and examinations help gauge students' understanding and progress.</li> </ol>					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١-2	٤	Understand the importance of cryptography, goals, and types.	Introduction to cryptography, types of cryptography	Data show White Board	Daily quiz
٣-4	4	Learn about classical cryptographic	Classical cryptography Including	Data show White Board	Daily quiz

		techniques such as substitution, and transposition ciphers, and their vulnerabilities.	substitution and transposition ciphers		
5	2	Understand the mathematical principles underlying cryptography.	Some notions of number theory	Data show White Board	Daily quiz
6	2		Exam		
7-9	6	Learn modern cryptographic primitives including symmetric key cryptography such as DES, 3 DES, and AES	Modern symmetric cipher	Data show White Board	Daily quiz
10-12	6	Learn modern public key cryptography such as RSA, Diffie Hellman...	Asymmetric cipher and its applications	Data show White Board	Daily quiz
13-14	4	Understand what cryptographic hash functions and their applications	Cryptographic hash function	Data show White Board	Daily quiz
15	2		Exam		

#### 11. Course Evaluation

Daily preparation 5%, Daily Quiz 5%, Monthly exam 20%, Assignment 10%, Final exams 60%

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

1. William Stallings. Cryptography and Network Security Principles and Practice, eighth Edition, Pearson, 2023.
2. Bruce Schneier, Applied Cryptography, Second Edition: Protocols, Algorithms, and Source Code in C, John Wiley & Sons, Inc.
3. Dan Boneh and Victor Shoup, A Graduate Course in Applied Cryptography, 2023.

Electronic References, Websites

<https://crypto.stanford.edu/~dabo/courses/OnlineCrypto/>  
<https://docs.microsoft.com/en-us/windows/win32/seccrypto/about-cryptography>  
<https://www.tutorialspoint.com/cryptography/index.htm>

## Relational database Course Description

1. Course Name:					
Relational database					
2. Course Code:					
3. Semester / Year: 2/3					
2 <sup>nd</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
4. Description Preparation Date:					
3/2024					
5. Available Attendance Forms:					
Attendance time					
6. Number of Credit Hours (Total) / Number of Units (Total)					
45/2					
7. Course administrator's name (mention all, if more than one name)					
Name: Mehdi G. Duaimi					
Email: <a href="mailto:mehdi.k@sc.uobaghdad.edu.iq">mehdi.k@sc.uobaghdad.edu.iq</a>					
8. Course Objectives					
In this course, the student is expected to learn how to create databases efficiently, as well as learn database programming languages and understand their basic structure. The student gains a deep understanding of the design and development of database systems based on foundations, standards and practical applications. The course is also interested in addressing recent trends in the field of databases, such as relational databases and databases that rely on multi-object programming.					
9. Teaching and Learning Strategies					
Thinking strategy according to the student's ability. High thinking skill strategy. Critical thinking strategy in learning. Brainstorming. Creative thinking.					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٣	Understand the foundational principles and methodologies of database design.	Database Design Theory and Methodology	Lectures Reports and studies	Exams (various types) Student feedback.
2	٣	Learn how to design and implement relational databases effectively.	Relational Database Design & Implementation	Lectures Workshops	Exams (various types). Assessment of reports and studies
3	٣	Comprehend the concept of functional dependencies in database design.	Functional Dependencies	Lectures.	Exams (various types)
4	٣	Learn rules to derive additional functional dependencies from existing ones.	Inference Rules for Functional Dependencies	Lectures Group work Workshops	Exams (various types). Student feedback. Learning matrix. Assessment of reports and studies
5	٣	Understand the	Normalization;	Lectures	Exams (various types).

		normalization process to organize data efficiently.	Defining Normal Forms:	Group work Workshops	Student feedback. Learning matrix
6	३	Define basic and further normal forms for structured data.	Basic and Further Normal forms	Lectures	Exams (various types).
7	३	Explore techniques for improving the quality and efficiency of database schemas.	Schema Refinement in Database Design	Lectures Group work Workshops	Exams (various types). Student feedback.
8	३	Learn the stages of developing a database application system from conception to implementation.	The Database Application System Life Cycle	Lectures. Group work	Exams (various types). Learning matrix
9	३	Understand the process of designing the database schema; Explore transaction design for data consistency.	Schema and Transaction Design	Lectures. Group work Reports and studies	Exams (various types). Student feedback. Assessment of reports and studies
10	३	Learn how to manage transactions and control concurrency in a multi-user database environment.	Transaction management and concurrency control	Lectures. Workshops	Exams (various types). Student feedback
11	३	Optimize database performance by tuning its design and configurations.	Database Tuning; Tuning the Database Design	Lectures. Reports studies	Exams (various types) Student feedback Learning matrix
12	३	Explore techniques for enhancing the overall performance of a database system.	Database Performance Optimization	Lectures. Group work. workshops	Exams (various types). Student feedback
13	३	Understand strategies and mechanisms for database recovery in case of failures.	Database Recovery	Lectures. Reports studies	Exams (various types). . Assessment of reports and studies
14	३	Explore advanced database design concepts beyond the basics.	Extended Database Design	Lectures. Workshops	Exams (various types) Student feedback Learning matrix
15	३	Review and consolidate knowledge of the covered topics.	Review for the above topics	Lectures.	Exams (various types). Student feedback

## 11. Course Evaluation

Quizzes 5, Assignments 5, Lab. 10, Projects 5, Midterm Exam 25, Final Exam 50

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", 4th Edition, McGraw Hill, 2018. S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management Systems", Springer, 2007.
Main references (sources)	David M. Kroenke, David J. Auer. "Database processing: fundamentals, design, and implementation."—Edition 15, Pearson Education, Prentice Hall. 2018. Mike McGrath. 'Access in easy steps: Illustrated using Access 2019 Paperback. In Easy Steps Limited (2019).

Recommended books and references (scientific journals, reports...)	<a href="https://www.inderscience.com/jhome.php?jcode=ijiids">https://www.inderscience.com/jhome.php?jcode=ijiids</a> <a href="https://dl.acm.org/journal/tods">https://dl.acm.org/journal/tods</a>
Electronic References, Websites	<a href="https://www.inderscience.com/jhome.php?jcode=ijiids">https://www.inderscience.com/jhome.php?jcode=ijiids</a> <a href="https://www.sciencedirect.com/topics/immunology-and-microbiology/database-management-system">https://www.sciencedirect.com/topics/immunology-and-microbiology/database-management-system</a>

## Computer Networks Course Description

1. Course Name:					
Computer Networks					
2. Course Code:					
3. Semester / Year:					
2 <sup>nd</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
4. Description Preparation Date:					
March/ 21/ 2024					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
7. Course administrator's name (mention all, if more than one name)					
Name: Asst. Prof. Dr. Husam Ali					
Email: <a href="mailto:husam.a@sc.uobaghdad.edu.iq">husam.a@sc.uobaghdad.edu.iq</a>					
Name: Suhad Faisal					
Email: <a href="mailto:suhad.f@sc.uobaghdad.edu.iq">suhad.f@sc.uobaghdad.edu.iq</a>					
8. Course Objectives					
<ul style="list-style-type: none"> <li>• Working with networks often involves teamwork and collaboration. Students should enhance their communication skills and learn to collaborate effectively with peers in network design, implementation, and troubleshooting scenarios.</li> <li>• Through hands-on labs, projects, and case studies, students should develop critical thinking and analytical skills necessary to evaluate network architectures, identify optimization opportunities, and make informed decisions.</li> </ul>					
9. Teaching and Learning Strategies					
<ol style="list-style-type: none"> <li>1. .Explaining the scientific material to students in detail</li> <li>2. .Students' participation in solving programming problems</li> <li>3. .logue about vocabulary related to the topicDiscussion and dia</li> <li>4. Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples .ion with students, and answers to their inquiriesolved on the blackboard, discuss</li> <li>5. The electronic classroom is also used to give homework assignments and upload answers within the electronic classroom. The classroom is also used to announce exam dates and .grades... etc</li> </ol>					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1		<b>Network Components</b>	Data show	quiz
2	1		<b>Network Representations and Topologies</b>	Data show	quiz
3	1		<i>Common Types of Networks</i>	Data show	quiz
4	1		<i>Internet Connections</i>	Data show	quiz
5	1		<i>Reliable Networks</i>	Data show	quiz



6	1		<b>Network Trends</b>	Data show	quiz
7	1		<b>Network Security</b>	Data show	quiz
8	1		<b>The IT Professional</b>	Data show	quiz
9	1		<b>Basic Switch and End Device Configuration</b>	Data show	quiz
10	1		<b>isco IOS AccessC</b>	Data show	quiz
11	1		IOS Navigation	Data show	quiz
12	1		<b>The Command Structure</b>	Data show	quiz

#### 11. Course Evaluation

60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	<ol style="list-style-type: none"> <li>1. Cisco Networking Academy 20 <a href="https://www.netacad.com/courses/networking/cna-introduction-networks">https://www.netacad.com/courses/networking/cna-introduction-networks</a>.</li> <li>2. Computer networking a top down appro 5th edition, Kurose , Ross.</li> <li>3. Data Communications and Networking Behrouz A.Forouzan 5th edition.</li> <li>4. CISCO websites, References.</li> </ol>
Recommended books and references (scientific journals, reports...)	<p><b>Mastering Computer Networking:</b></p> <p><b>Essential Techniques Kindle Edition</b></p>
Electronic References, Websites	

## Operating System I Course Description

1. Course Name:	
Operating System I	
2. Course Code:	
3. Semester / Year:	
2 <sup>nd</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
22\3\2024	
5. Available Attendance Forms:	
Mandatory attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours (2 units)	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Nada A.Z. Abdullah Email: <a href="mailto:nada.abdullah@sc.uobaghdad.edu.iq">nada.abdullah@sc.uobaghdad.edu.iq</a> Name: Dr. Mariam A. Yasir Email : <a href="mailto:Maryam.a@sc.uobaghdad.edu.iq">Maryam.a@sc.uobaghdad.edu.iq</a>	
8. Course Objectives	
<ul style="list-style-type: none"> <li>• Recognize the importance of the operating systems.</li> <li>• Recognize how the applications interact with the operating system as the later working as intermediary program between the machine and the application.</li> <li>• Know how the operating systems transport the application requests to the hardware.</li> <li>• Understand how operating systems managing resources such as processors, memory and I/O.</li> <li>• Realize the efficiency or the deficiency of the different techniques used by some operating systems.</li> </ul>	
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Attend Lectures: Regularly attend lectures to grasp the foundational concepts and understand the material presented by the instructor.</li> <li>2. Take Detailed Notes: Take thorough and organized notes during lectures to aid in comprehension and review later.</li> <li>3. Read the Textbook: Read the recommended textbook to gain additional insights, explanations, and examples related to operating systems.</li> <li>4. Engage in Discussions: Participate in class discussions, group study sessions, or online forums to exchange ideas.</li> <li>5. Complete Assignments and Projects: Actively engage in practical assignments and projects to apply theoretical concepts and enhance student hands-on skills.</li> <li>6. Practice with Sample Problems: Solve sample problems and practice exercises provided by the instructor or in the textbook to reinforce student understanding.</li> <li>7. Utilize Online Resources: Make use of online tutorials, educational websites, and video lectures to supplement student learning and explore different perspectives on the topics.</li> <li>8. Create Concept Maps or Diagrams: Visualize complex concepts by creating concept maps or diagrams to establish connections and enhance understanding.</li> <li>9. Form Study Groups: Collaborate with classmates to discuss challenging topics, solve problems collectively, and share different perspectives.</li> </ol>
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	2	Understanding OS Overview	Operating System Overview	White board+ Data show	Oral exam
٢	2	Remember the Computer system components	Computer system components	White board+ Data show	Oral exam
٣	2	Understand the Interrupts	Interrupts	White board+ Data show	Oral exam
٤	2	Know the different types of Input output devices	Input output devices	White board+ Data show	Oral exam
٥	2	Exam1	Exam1		
٦	2	Understand Process	Process	White board+ Data show	Oral exam
٧	2	How the Process creation and termination is performed	Process creation and termination	White board+ Data show	Oral exam
٨	2	Understand Process scheduling	Process scheduling	White board+ Data show	Oral exam
٩	2	What is IPC	IPC	White board+ Data show	Oral exam
١٠	2	Message System	Message System	White board+ Data show	Oral exam
١١	2	Exam2	Exam2		
١٢	2	Know the types of Scheduling algorithms	Scheduling algorithms	White board+ Data show	Oral exam
١٣	2	Know how the FCFS, SJF, and Priority work	FCFS, SJF, Priority	White board+ Data show	Oral exam
١٤	2	Know how the Round robin, and Multi queue scheduling work	Round robin, Multi queue scheduling	White board+ Data show	Oral exam
١٥	2	Exam3	Exam		

#### 11. Course Evaluation

- Daily exams
- Participation degrees in answering questions during the lecture
- Monthly exams
- Reports
- Seminars

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Silberschatz, Galvin, Gagne. Operating System Concepts. John Wiley & sons, inc 2013
Main references (sources)	2. Operating systems design and implementation, Andrew s. Tanenbaum, Prentice-Hall
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

## Software Engineering Course Description

1. Course Name:					
Software Engineering					
2. Course Code:					
3. Semester / Year:					
2 <sup>nd</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 - ٢٠٢٤					
4. Description Preparation Date:					
٢٠٢٤\٣\٢٠					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
٢					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Safaa Khalil & Dr. Fatin AbdAli					
Email: safaa.alwajidi@sc.uobaghdad.edu.iq					
8. Course Objectives					
<ul style="list-style-type: none"> <li>• <b>Teaching the Skills Software Engineering</b></li> <li>• <b>Knowing the SE Ethics</b></li> <li>• <b>Prepare Students for the SW market</b></li> </ul>					
9. Teaching and Learning Strategies					
<p>- Theoretical and practical lectures using modern presentation techniques</p> <p>- Students participate in scientific discussions through brainstorming to obtain the required conclusions</p> <p>Which enhances the student's broad understanding of the lecture</p> <p>- Practical training through projects and homework</p>					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	٢	فهم الطرق وكيفية تطبيقها	Introduction to Software Engineering	محاضره	
٢	٢	Software Process			
٣	٢	Types of SW requirements			
٤	٢	Requirements Engineering Process			
٥	٢	Functional and Non-functional Requirements			
٦	٢	Software Design Process			
٧	٢	Software Development Process Models			
٨	٢	The Waterfall Model			
٩	٢	V-Shaped Model			

١٠	٢	Evolutionary Development Model			
١١	٢	Incremental Model Life Cycle			
١٢	٢	Spiral Modl Life Cycle			
11. Course Evaluation					
Report 20%					
Quiz 5 %					
Daily preparation and attendance 5%					
Assignments 10%					
Exams 60%					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			<b>1 – Software Engineering 10th Edition by Ian Sommerville, ISBN 978-0133943030</b>		
Main references (sources)			<b>1 – Software Engineering 10th Edition by Ian Sommerville, ISBN 978-0133943030</b>		
Recommended books and references (scientific journals, reports...)					
Electronic References, Websites			<a href="https://software-engineering-book.com/">https://software-engineering-book.com/</a>		

## Course Description Form

1. Course Name:					
Research Methodology					
2. Course Code:					
3. Semester / Year:					
2 <sup>nd</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
4. Description Preparation Date:					
March / ٢١ / ٢٠٢٤					
5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total)					
15 Hours / One Unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Asst. Prof. Dr. Zeina Mueen Mohammed					
Email: zeina.m@uobaghdad.edu.iq					
Name: Dr. Dhuha Abdulhadi Abduljabbar					
Email: dhuha.abd@sc.uobaghdad.edu.iq					
8. Course Objectives					
<ol style="list-style-type: none"> <li>1. Teach students the correct methodology for conducting scientific research.</li> <li>2. Developing students' scientific writing skills, as they learn how to write structured academic scientific reports.</li> <li>3. Identify the types of scientific research and distinguish between them.</li> <li>4. Providing students with the skill of scientific searching on the Internet.</li> <li>5. Encouraging research programs and participating in scientific conferences and seminars.</li> </ol>					
9. Teaching and Learning Strategies					
<ol style="list-style-type: none"> <li>1. Lectures (hard copy).</li> <li>2. Presentations.</li> <li>3. Field visits.</li> <li>4. Electronic classes and websites.</li> <li>5. Assigning the student some individual and group assignments.</li> <li>6. Managing the lecture in a way that indicates the importance of time.</li> </ol>					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
١	1		Introduction to Research Methodology –Part 1 (a) A review of the Fundamentals (b) Definitions of Research (c) Objectives of Research	Data show	quiz
٢	1		Introduction to Research Methodology –Part 2 (d) Motivation in Research (e) General Characteristics of	Data show	quiz

			Research (f) Types of Research		
२	1		The Research Problem –Part 1 (a) What is a Research Problem (b) Selecting the Problem (c) Sources of the Problem	Data show	quiz
३	1		The Research Problem –Part 2 (d) Statement of a Problem (e) Evaluation of a Problem	Data show	quiz
४	1		The Review of Literature (a) Meaning of Review of Literature (b) Objectives of Review of Literature (c) Sources of Literature (d) Reporting the Review of Literature	Data show	quiz
५	1		Exam		
६	1		The Research Approach –Part1 (a) The Qualitative Approach (b) The Quantitative Approach	Data show	quiz
७	1		The Research Approach –Part2 (c) The Mixed-Methods Approach (d) Criteria for Selecting a Research Approach	Data show	quiz
८	1		Data Collection Methods –Part1 (a) Questionnaires (b) Interviews	Data show	quiz
९	1		Data Collection Methods –Part2 (c) Focus Groups (d) Observation	Data show	quiz
१०	1		Sampling (a) Meaning and Definition of Sampling (b) Functions of Population and Sampling (c) Methods of Sampling	Data show	quiz
११	1		Preparation of the Research – part 1 (a) Characteristics of a Good Research Title (b) Structure of research paper: (1) Abstract	Data show	quiz



<b>13</b>	1		Preparation of the Research – part 2 Structure of research paper: (2) Introductions (3) Review of the literature (4) Methodology	Data show	quiz
<b>14</b>	1		Preparation of the Research – part 3 Structure of research paper: (5) Result & Discussions (6) Conclusions	Data show	quiz
<b>15</b>	1		Exam		

#### 11. Course Evaluation

60% for the written final exam, 40% for the course (5% for the attendance, 15% for the first monthly exam, 15% for the second monthly exam, 5% for the quizzes and homework).

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	<ol style="list-style-type: none"> <li>1. Mishra, S. B., &amp; Alok, S. (2022). Handbook of research methodology.</li> <li>2. Kumar, R. (2018). Research methodology: A step-by-step guide for beginners. Sage.</li> <li>3. Kothari, C. R. (2004). Research methodology: Methods and techniques. New Age International.</li> </ol>
Recommended books and references (scientific journals, reports...)	Books and research papers from Scopus and WoS databases
Electronic References, Websites	

## Mobile Computing Course Description

1. Course Name:					
Mobile Computing					
2. Course Code:					
3. Semester / Year:					
2 <sup>nd</sup> Semester/ 3 <sup>rd</sup> Grade/ Academic Year 2023 -٢٠٢٤					
4. Description Preparation Date:					
2023-20224					
5. Available Attendance Forms:					
Physical attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
1 theoretical hours (weekly) + 2 practical hours (weekly)/ Two units					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Alyaa Mohammed Noori Idan Al-Barrak Email: Alyaa.al-barrak@sc.uobaghdad.edu.iq					
8. Course Objectives					
<p><b>a. Preparing specialists who are familiar with the basics of mobile phone computing in theory and practice and who can fill the needs of the labor market.</b></p> <p><b>b. Cooperating with state institutions and the private sector by providing scientific advice and consultations.</b></p>			<ul style="list-style-type: none"> <li>• <b>Conducting scientific research and trying to keep pace with scientific development.</b></li> </ul>		
9. Teaching and Learning Strategies					
<p>i. Theoretical lectures in class, in addition to downloading PDF files into the electronic class for reference when needed.</p> <p>ii. Practical lectures in the laboratory in addition to electronic classes for practical mobile phone computing</p> <p>iii. Educational videos via the official YouTube channel</p> <p>iv. Recorded lectures for Google Mate that are uploaded to the electronic classroom, recorded from past years.</p> <p>v. Electronic books and lectures that can be consulted.</p>					
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First Week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Introduction to Mobile computing	Attending a theory lecture	Daily and monthly exam and homework
2 <sup>nd</sup> week	1	Understanding the lecture from a theoretical perspective,	Application of Mobile	Attending a theory lecture	Daily and monthly

		future and practical developments, and their impact on the student's professional aspect and market requirements	Application and Limitations		exam and homework
3 <sup>rd</sup> week	1	Be prepared for the frequent exams	1 <sup>st</sup> exam	In-person examination	
4 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Multiplexing Types	Attending a theory lecture	Daily and monthly exam and homework
5 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	CDMA working examples	Attending a theory lecture	Daily and monthly exam and homework
6 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Mobile computing Network	Attending a theory lecture	Daily and monthly exam and homework
7 <sup>th</sup> week	1	Be prepared for the frequent exams	Second Exam	In-person examination	
8 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Mobile generations	Attending a theory lecture	Daily and monthly exam and homework
9 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	A simplified reference model	Attending a theory lecture	Daily and monthly exam and homework
10 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Introduction to GSM	Attending a theory lecture	Daily and monthly exam and homework

11 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Architecture	Attending a theory lecture	Daily and monthly exam and homework
12 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Architecture	Attending a theory lecture	Daily and monthly exam and homework
13 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Services	Attending a theory lecture	Daily and monthly exam and homework
14 <sup>th</sup> week	1	Be prepared for the frequent exams	Third Exam	In-person examination	
15 <sup>th</sup> week	1	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	revision	Attending a theory lecture	Daily and monthly exam and homework

#### 11. Course Evaluation

- Quarterly attendance exams (3 exams are conducted and the two highest grades are chosen)
- Daily exams out of 10 and the best ones are selected
- Take the practical exams more than twice and choose the highest grade among them
- An assignment that gives a class time to submit.

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, any)	Asoke K Talukder (Author), Roopa Yavagal, "Mobile Computing: Technology, Applications, and Service Creation" McGraw Hill; 1st edition (November 16, 2006).
Main references (sources)	Charles Harper, "Mobile Computing." (2022)
Recommended books and references (scientific journals, reports...)	Pattnaik, P.K. and Mall, R., 2015. Fundamentals of Mobile Computing. PHI Learning Pvt. Ltd.
Electronic References, Websites	www.geeksforgeeks.org

# Fourth Grade

## Course Description Form

1. Course Name:	
Operating System II	
2. Course Code:	
3. Semester / Year:	
1 <sup>st</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
22\3\2024	
5. Available Attendance Forms:	
Mandatory attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours (3 units)	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Nada A.Z. Abdullah Email: <a href="mailto:nada.abdullah@sc.uobaghdad.edu.iq">nada.abdullah@sc.uobaghdad.edu.iq</a> Name: Dr. Mariam Abdulraheem Email : <a href="mailto:Maryam.a@sc.uobaghdad.edu.iq">Maryam.a@sc.uobaghdad.edu.iq</a>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Recognize the importance of the operating systems.</li> <li>• Recognize how the applications interact with the operating system as the later working as intermediary program between the machine and the application.</li> <li>• Know how the operating systems transport the application requests to the hardware.</li> <li>• Understand how operating systems managing resources such as processors, memory and I/O.</li> <li>• Realize the efficiency or the deficiency of the different techniques used by some operating systems.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Attend Lectures: Regularly attend lectures to grasp the foundation concepts and understand the material presented by the instructor.</li> <li>2. Take Detailed Notes: Take thorough and organized notes during lectures aid in comprehension and review later.</li> <li>3. Read the Textbook: Read the recommended textbook to gain additional insights, explanations, and examples related to operating systems.</li> <li>4. Engage in Discussions: Participate in class discussions, group study sessions, or online forums to exchange ideas.</li> <li>5. Complete Assignments and Projects: Actively engage in practical assignments and projects to apply theoretical concepts and enhance study.</li> </ol>

hands-on skills.

6. Practice with Sample Problems: Solve sample problems and practice exercises provided by the instructor or in the textbook to reinforce student understanding.

7. Utilize Online Resources: Make use of online tutorials, educational websites, and video lectures to supplement student learning and explore different perspectives on the topics.

8. Create Concept Maps or Diagrams: Visualize complex concepts by creating concept maps or diagrams to establish connections and enhance understanding.

9. Form Study Groups: Collaborate with classmates to discuss challenging topics, solve problems collectively, and share different perspectives

#### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	understanding Synchronization and Race condition	Synchronization and Race condition	White board+ Data show	Oral exam
2	2	understanding Critical section solutions	Critical section solutions	White board+ Data show	Oral exam
3	2	understanding Atomic instruction	Atomic instruction	White board+ Data show	Oral exam
4	2	understanding Semaphores	Semaphores	White board+ Data show	Oral exam
5	2		Exam		
6	2	Main memory	Main memory	White board+ Data show	Oral exam
7	2	Contiguous allocation	Contiguous allocation	White board+ Data show	Oral exam
8	2	Paging	Paging	White board+ Data show	Oral exam
9	2	Segmentation	Segmentation	White board+ Data show	Oral exam
10	2	Paging segmentation implementation	Paging segmentation implementation	White board+ Data show	Oral exam
11	2		Exam		
12	2		Seminars	White board+ Data show	Oral exam
13	2	Virtual memory	Virtual memory	White board+ Data show	Oral exam
14	2	Page fault	Page fault	White board+ Data show	Oral exam
15	2		Exam		

#### 11. Course Evaluation

<ul style="list-style-type: none"> <li>• Daily exams</li> <li>• Participation degrees in answering questions during the lecture</li> <li>• Monthly exams</li> <li>• Reports</li> <li>• Seminars</li> </ul>	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1. Silberschatz, Galvin, Gagne. Operating System Concepts. John Wiley & sons , inc 2013
Main references (sources)	∨.Operating systems design and implementation, Andrew s. Tanenbaum, Prentice-Hall
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	



## Electronic Commerce Course Description Form

<b>1. Course Name:</b>					
Electronic Commerce					
<b>2. Course Code:</b>					
<b>447 CECOM</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 - ٢٠٢٤					
<b>4. Description Preparation Date:</b>					
<b>20/3/2024</b>					
<b>5. Available Attendance Forms:</b>					
20/3/2024					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
2/2 (30)					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Pro. Dr. Ghadah K. Al-Khafaji Email: <a href="mailto:ghada.toma@sc.uobaghdad.edu.iq">ghada.toma@sc.uobaghdad.edu.iq</a>					
Name: Asst. Pro. Dr. Bushra A. Sultan Email: <a href="mailto:Bushra.sultan@sc.uobaghdad.edu.iq">Bushra.sultan@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>	1- To gain an understanding of the theories and concepts underlying e-commerce. 2-To understanding of basic concepts, theories, and business models underlying e-commerce with the theory and concepts to what e-marketers are doing in "the real world" via purchasing using online payments. 3- To understanding the relation between E-C and E-B. 4- To improve familiarity with current challenges and issues in e-commerce especially the security one.				
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	1- Explaining the scientific material to students in detail. 2- Students' participation in solving programming problems. 3- Discussion and dialogue about vocabulary related to the topic. 4- Use the electronic classroom (Google Classroom) to upload lectures in the form of PDF files (in short form), where their details are explained in the lecture, with many examples solved on the blackboard, discussion with students, and answers to their inquiries.  The electronic classroom is also used to give homework assignments and upload answers within the electronic classroom. The classroom is also used to announce exams, dates and grades... etc.				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
			1- Introduction to Commerce and E-Commerce:	Data	Quiz

		<p>Introduction, An overview, History of ecommerce; Differences/similarities between e-commerce and traditional commerce Advantages/Disadvantages, Features &amp; scope characteristics, Development /infrastructures along process and examples.</p> <p>2- Continue with e-Com Principles: E-Commerce Steps Flow, E-Commerce in Figures, Buyer/Seller Rules, Why Internet Commerce. Internet Commerce Strategies, Benefits and Types of E-Commerce Sites</p> <p>3- Ecommerce /E-Business Models Distinguish between e-commerce and e business; structure, Macro &amp; environment.</p> <p>4- E-C Classification Models: Identifying Transaction Partners Model with advantages/disadvantages and features of each type</p> <p>5- Degree of digitization, Impact of E-C and Social Impact E-Commerce Process Models , The Criteria that Determine the Level of Advancement in EC/EB</p> <p>6- On line Shopping/ E-Shop</p> <p>7- First Exam</p> <p>8-The Benefits and Limitation of E-C (customer, organization &amp; Social, Online Banking What is online banking, how to register for online banking, ad special facilities offered by some internet banking</p> <p>9- Architecture framework of E-C. Issues, challenges and problems (technical/non- technical)</p> <p>10- Second Exam</p> <p>11- Components of E-C with Payment Systems &amp; Online shopping: The Electronic payments (credit, debit, wallet), and on line shopping features and restrictions</p> <p>12- Electronic Data Interchange: EDI documents, Steps in EDI system, structures, Advantages/Disadvantages EDI Working Concept, Implementation difficulties of EDI, Financial EDI, types</p> <p>13- Online advertising: Introduction to online adverting, Internet advertising compared to traditional advertising, Advantages and disadvantages of online advertising types, Web Commerce &amp; Online Auctions</p> <p>14- M-Commerce: Overview of M-Commerce, Generations of Mobile Wireless Technology, advantages, features and differences</p> <p>15- Internet e-commerce Security, E-Commerce &amp; Ethics</p>	show	
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**1. Course Evaluation**

Daily and monthly exams and quizzes, class participation and attendance, in addition to preparing reports so that the endeavor is 40% and the final exam is 60%.

**1. Learning and Teaching Resources**

Required textbooks (curricular board if any)	1- E-Commerce Business Model 2020: This Book Includes: Online Marketing Strategies, Dropshipping, Amazon FBA - Step-by-Step
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Guide with Latest Techniques to Make Money Online and Reach Financial Freedom. (2020). Jim, W. and George, B. Independently published

2-The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power. (2019), Michael A. , Annabelle G., and David B. Harper Business; Illustrated edition

3- Electronic Commerce 2018 A Managerial and Social Networks Perspective. (2018) Turban, E., Outland, J., King, D., Lee, J.K., Liang, T.-P., Turban, D.C. Springer International Publishing

4-Introduction to E- Commerce: Combining Business and Information Technology. (2016), Martin, K. Deloitte.

5-E Commerce and EBuisness, Zorayda Ruth B. Andam , (2013)

6- E\_ Commerce Strategy, Technologies and Applications, David Whiteley. (2010).

Main references (sources)

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

Electronic References, Websites

<https://www.slideshare.net/Saddamuddin/ecommerce-short-notes>  
[http://wikipedia.org/wiki/online\\_advertising](http://wikipedia.org/wiki/online_advertising)

[https://backup.pondiuni.edu.in/storage/dde/dde\\_ug\\_pg\\_books/E-%20Commerce.pdf](https://backup.pondiuni.edu.in/storage/dde/dde_ug_pg_books/E-%20Commerce.pdf)  
 استخدام لبعض مواقع التجاره الالكترونيه الموثوقه مثل bay & Amazon

### Multimedia Course Description Form

<b>1. Course Name:</b>	
Multimedia	
<b>2. Course Code:</b>	
CSC415	
<b>3. Semester / Year:</b>	
1 <sup>st</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤	
<b>4. Description Preparation Date:</b>	
23/March/2024	
<b>5. Available Attendance Forms:</b>	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
4 hours (2 Theoretical / 2 Practical) / 3 Units	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: Mohammed Sabih Email: Mohammed.s@sc.uobaghdad.edu.iq	
Name: Rafal Ali Email: <a href="mailto:Rafal.a@sc.uobaghdad.edu.iq">Rafal.a@sc.uobaghdad.edu.iq</a>	
<b>8. Course Objectives</b>	
<b>Course Objectives</b>	<ol style="list-style-type: none"> <li>1. Enable students to define the scope of the field called Multimedia.</li> <li>2. Know the processing of multimedia components (including text, sound, image, video) in its space domain and in the frequency domain.</li> <li>3. Discussing the methods used in this field, as well as knowing the basics of the text, sound, image, video in terms of its composition, the processes of converting it into a digital, and processing.</li> <li>4. Using computer programming in the laboratory to clarify and achieve the above-mentioned goals using programming languages.</li> <li>5. Discussing the basics of sound, image, video compression and the algorithms used in this field.</li> <li>6. Building applied projects that employ Multimedia components for community service purposes.</li> </ol>
<b>9. Teaching and Learning Strategies</b>	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Explaining the scientific material to students in detail, having students participate in solving mathematical problems, and using the blackboard to explain and solve examples.</li> <li>2. Use Power Point presentation programs in the classroom when giving lectures.</li> <li>3. Discussion and dialogue about vocabulary related to the topic</li> <li>4. Using computer programming in the laboratory for practical application using the C# environment.</li> <li>5. Use the electronic platform Google Classroom to provide students with lectures.</li> </ol>

<b>10. Course Structure</b>				
<b>Week</b>	<b>Hours (Theoretical and Practical)</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	4	-Definition of Multimedia -Components of MM -Digital representation of MM components -Compression in MM	Data Show	Quiz
2	4	-MM system -MM Related Technology -Media classification	Data Show	Quiz
3	4	-MM application -Interactivity -Categories of MM	Data Show	Quiz
4	4	-Exploring MM on the web -Multimedia data -Global structure of MM	Data Show	Quiz
5	4	-Basics of Sound -Characteristics of sound wave -Frequency content of audio signal -Digital audio	Data Show	Quiz
6	4	-Nyquist Theorem -Quantization and transmission of audio	Data Show	Quiz
7	4	-Audio compression -Examples	Data Show	Quiz
8	4	-Basics of image -Number of colors -Types of images	Data Show	Quiz
9	4	-Types of Digital Image File Format -Image digitization	Data Show	Quiz
10	4	-Basics of Video -Characteristics of video -Color models	Data Show	Quiz
11	4	-Video size -Examples	Data Show	Quiz
12	4	-Video Formats	Data Show	Quiz

### 11. Course Evaluation

60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab).

### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of Multimedia, 2nd Edition, by Zenian Li, Jiangchuan Liu, Mark S. Drew.
Main references (sources)	Digital Video Processing, 2nd Edition, by A. Murugusundaramoorthy, Arun G. M. Tekalp.
Recommended books and references (scientific journals, reports...)	Rafael C. Gonzalez, Richard E. Wood. Digital image processing 4th edition 2018. Pearson Education. Inc. Pearson , Prentice Hall.
Electronic References, Websites	<a href="#">What is Multimedia? - GeeksforGeeks</a>

## Mobile Computing Course Description Form

<b>1. Course Name:</b>					
Mobile Computing (Advanced)					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
1 <sup>st</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
2023-20224					
<b>5. Available Attendance Forms:</b>					
Physical attendance					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
2 theoretical hours (weekly) + 2 practical hours (weekly)/ three units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Alyaa Mohammed Noori Idan Al-Barrak Email: Alyaa.al-barrak@sc.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
<b>a. Preparing specialists who are familiar with the basics of mobile phone computing in theory and practice and who can fill the needs of the labor market.</b>			<b>• Conducting scientific research and trying to keep pace with scientific development.</b>		
<b>b. Cooperating with state institutions and the private sector by providing scientific advice and consultations.</b>					
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	<ul style="list-style-type: none"> <li>i. Theoretical lectures in class, in addition to downloading PDF files into the electronic class for reference when needed.</li> <li>ii. Practical lectures in the laboratory in addition to electronic classes for practical mobile phone computing</li> <li>iii. Educational videos via the official YouTube channel</li> <li>iv. Recorded lectures for Google Mate that are uploaded to the electronic classroom, recorded from past years.</li> <li>v. Electronic books and lectures that can be consulted.</li> </ul>				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
First Week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect	GSM	Attending a theory lecture	Daily and monthly exam and homework

		and market requirements			
2 <sup>nd</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Frame	Attending a theory lecture	Daily and monthly exam and homework
3 <sup>rd</sup> week	2	Be prepared for the frequent exams	1 <sup>st</sup> exam	In-person examination	
4 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM Protocols	Attending a theory lecture	Daily and monthly exam and homework
5 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM - Radio Air Interface Fdd/FDMA	Attending a theory lecture	Daily and monthly exam and homework
6 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	GSM System Calling	Attending a theory lecture	Daily and monthly exam and homework
7 <sup>th</sup> week	2	Be prepared for the frequent exams	Second Exam	In-person examination	
8 <sup>th</sup>	2	Understanding the	Handover and	Attending a	Daily and



week		lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Security	theory lecture	monthly exam and homework
9 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	New Data Services	Attending a theory lecture	Daily and monthly exam and homework
10 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Motivation for a specialized MAC	Attending a theory lecture	Daily and monthly exam and homework
11 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Mobile IP	Attending a theory lecture	Daily and monthly exam and homework
12 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's	Mobile Transport Layer	Attending a theory lecture	Daily and monthly exam and homework

		professional aspect and market requirements			
13 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Database issues	Attending a theory lecture	Daily and monthly exam and homework
14 <sup>th</sup> week	2	Be prepared for the frequent exams	Third Exam	In-person examination	
15 <sup>th</sup> week	2	Understanding the lecture from a theoretical perspective, future and practical developments, and their impact on the student's professional aspect and market requirements	Data Dissemination	Attending a theory lecture	Daily and monthly exam and homework

#### 11. Course Evaluation

- Quarterly attendance exams (3 exams are conducted and the two highest grades are chosen)
- Daily exams out of 10 and the best ones are selected
- Take the practical exams more than twice and choose the highest grade among them
- An assignment that gives a class time to submit.

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Asoke K Talukder (Author), Roopa Yavagal, "Mobile Computing: Technology, Applications, and Service Creation" McGraw Hill; 1st edition (November 16, 2006).
Main references (sources)	Charles Harper, "Mobile Computing." (2022)
Recommended books and references (scientific journals, reports...)	Pattnaik, P.K. and Mall, R., 2015. Fundamentals of Mobile Computing. PHI Learning Pvt. Ltd.
Electronic References, Websites	<a href="http://www.geeksforgeeks.org">www.geeksforgeeks.org</a>

## Parallel programming Course Description Form

1. Course Name:

Parallel programming

2. Course Code:

CS9410

3. Semester / Year:

1<sup>st</sup> Semester/ 4<sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤

4. Description Preparation Date:

21-3-2024

5. Available Attendance Forms:

Attendance: theoretical + practical

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

4 hours per week / 3 units

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

**1- Name:** Assistant Professor Dr. Nada Hussein M. Ali

**Email:** nada.husn@sc.uobaghdad.edu.iq

**2- Name :** Assistant Professor Dr. Ammar Ibrahim

**Email:** ammar.i@sc.uobaghdad.edu.iq

8. Course Objectives

### Course Objectives

1. The course aims to enable the student to prepare programs using

Multiple CPU processors available in personal computers to obtain higher speeds in program execution.

2. The basic language for teaching students in this course is Visual C++, where there is a gradual shift from the structured programming method that was used in

writing programs within the courses of the

previous stages to preparing programs consisting of instructions that deal directly with the operating system in the personal computer using an API specific to the WINDOWS system and are implemented in parallel

**3. Obtaining high speeds in executing programs.**

#### 4. Teaching and Learning Strategies

##### **Strategy**

Training the student to rely on himself in writing programs, where part of the scheduled program is given before the practical laboratory time to be discussed, and the rest of the requirements are completed during laboratory hours.

## Advanced computer Networks Course Description Form

1. Course Name:						
Advanced computer Networks						
2. Course Code:						
3. Semester / Year: First Semester						
1 <sup>st</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤						
4. Description Preparation Date: March/ 21/ 2024						
5. Available Attendance Forms:						
6. Number of Credit Hours (Total) / Number of Units (Total)						
7. Course administrator's name (mention all, if more than one name)						
Name: Asst. Prof. Dr. Husam Ali Email: <a href="mailto:husam.a@sc.uobaghdad.edu.iq">husam.a@sc.uobaghdad.edu.iq</a> Name: Suhad Faisal Email:						
8. Course Objectives						
<b>Course Objectives</b>				<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>		
9. Teaching and Learning Strategies						
<b>Strategy</b>						
10. Course Structure						
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method	
1	1		<b>Introduction to Networking Networks Advantages and Disadvantages Network Types</b>	Data show	quiz	
2	1		<b>The OSI and TCP/IP Networking Models TCP/IP Model</b>	Data show	quiz	
3	1		<b><i>Application Layer (Layer 7)</i></b> <b><i>Presentation Layer (Layer 6)</i></b> <b><i>Session Layer (Layer 5)</i></b> <b>Full-Duplex vs. Half-Duplex Communications</b>	Data show	quiz	

			<b>Transport Layer (Layer 4)</b>		
4	1		<b>Network Layer (Layer 3)</b> <b>Overview of IP Addresses</b> <b>Data Link Layer (Layer 2)</b> <b>What Is a MAC Address?</b> <b>Physical Layer (Layer 1)</b>	Data show	quiz
5	1		<b>Data Encapsulation Using the OSI Model</b> <b>Decapsulation process</b> <b>Client/Server Network</b> <b>Peer-to-Peer Network</b> <b>Application Layer Services and Protocols</b>	Data show	quiz
6	1		<b>Domain Name Service (DNS)</b> <b>Dynamic Host Configuration Protocol (DHCP)</b> <b>Simple Network Management Protocol (SNMP)</b> <b>File Transfer Protocol (FTP)</b>	Data show	quiz
7	1		<b>Trivial File Transfer Protocol (TFTP)</b> <b>Simple Mail Transfer Protocol (SMTP)</b> <b>Post Office Protocol (POP)</b> <b>Telnet</b> <b>Secure Shell (SSH)</b> <b>Hypertext Transfer Protocol (HTTP)</b> <b>Two HTTP Request Methods: GET and POST</b>	Data show	quiz
8	1		<b>Hypertext Transfer Protocol Secure (HTTPS)</b> <b>Transport layer protocols (TCP/UDP)</b> <b>Port Range Groups</b> <b>Commutation message types</b> <b>To configure TCP/IP settings</b> <b>Physical media</b>	Data show	quiz
9	1		<b>Types of Interfaces</b> <b>UTP Cables Connections types</b> <b>Data Communications Equipment and Data Terminal Equipment</b> <b>How to prepare a UTP cable</b> <b>Diagnosing Wire map Faults</b> <b>WIRESHARK Packet Sniffer</b>	Data show	quiz
10	1		<b>Network Devices &amp; Packet Tracer network interface card (NIC)</b>	Data show	quiz

			<b>Hub Bridge Switch The Wireless Access Point (WAP) Router</b>		
11	1		<b>Layer 3 Switches Gateways Modems Traditional (POTS) DSL CSU/DSUs Firewalls</b>	Data show	quiz
12	1		<b>Network Simulation Task 1 Observe the flow of data from PC0 to PC1 by creating network traffic Task 2 View ARP Tables on each PC Task 3 Adding routers and installing modules Task 4 Basic router configuration Task 5 Create a copy of the existing router complete with WIC modules already in place Task 6 Configuring the WAN link Task 7 Configure the routing protocol Task 8 Set the default gateway on the PCs Task 9 Test the connectivity of the network Task 10 Save the Packet Tracer file</b>	Data show	quiz

#### 11. Course Evaluation

60% (50% on the written final exam, 10% on the final lab exam), 40% on the course (5% on the attendance, 15% on the monthly exam, 5% on the quizzes, 15% on the lab.

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

Main references (sources)

**Advanced Computer Networking:**

**Concepts and Applications, Oct 01, 2006,**

**Prof. Satish Jain.**

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

**Mastering Computer Networking:**

	<b>Essential Techniques Kindle Edition</b>
Electronic References, Websites	



## Advanced Computer Graphics Course Description Form

1. Course Name:	
Advanced Computer Graphics	
2. Course Code:	
3. Semester / Year:	
2 <sup>nd</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21-3-2024	
5. Available Attendance Forms:	
Class attendance system	
6. Number of Credit Hours (Total) / Number of Units (Total)	
٤/٣	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Suhaila Najim Mohammed Email: <a href="mailto:suhailan.mo@sc.uobaghdad.edu.iq">suhailan.mo@sc.uobaghdad.edu.iq</a>	
8. Course Objectives	
<b>Course Objectives</b>	The main objective of this course is to introduce students the fundamental concepts in computer graphics including a range of computer graphics techniques and algorithms covering 3D graphics, computer animation and virtual reality. It focuses on key algorithmic techniques, mathematical and programmatic foundations of computer graphics, including modeling, rendering, and animating 3D scenes. Topics include three-dimensional shape representations, geometrical transformations (e.g. rotations, scales, translations, reflection, shearing), the projection, the rasterization pipeline, ray tracing, illumination and shading models, texturing, blending and light & visual perception.
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ol style="list-style-type: none"> <li>1. Delivering lectures to introduce and explain essential concepts, principles, and theories related to computer graphics. This helps students build a strong foundation of knowledge.</li> <li>2. Giving hands-on programming exercises helps them to apply the learned concepts and implement 3D graphics. This helps their understanding and enhances their programming skills.</li> <li>3. Providing code walkthroughs and examples demonstrating the modeling and rendering 3D scenes.</li> <li>4. Conducting problem-solving sessions, both in class and through assignments to allows students to use graphics primitives and transformations for objects modeling and rendering.</li> <li>5. Encouraging group projects and activities among students. This promotes teamwork and enhances understanding.</li> <li>6. Regular evaluations and examinations help gauge students' understanding and progress. These can include quizzes, assignments, and exams that assess theoretical knowledge and practical application of computer graphics.</li> <li>7. Recommending textbooks, internet resources, and supplementary</li> </ol>

references might help students study more effectively.

#### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduction to 3D graphics	Introduction to the C# programming language environment, the OpenGL API, and the tools it provides for dealing with computer graphics	Data show	quiz
2	4	Introducing the rendering process and its main stages	Working with geometric shapes (point, line, and rectangle) in OpenGL	Data show	quiz
3	4	Learn about three-dimensional coordinates systems	Modeling some graphic shapes in OpenGL	Data show	quiz
4	4	Introduction to the Projection process and its types	Programming the different types of Projection and studying their effect and the difference between them	Data show	quiz
5	4	Dealing with conversions between Coordinate Systems in 3D graphics programs	Performing conversions between coordinates systems such as Model View and Viewport transform	Data show	quiz
6	4	Dealing with basic 3D transformations (translate, scale, and shearing)	Performing basic and combined transformations on some geometric shapes	Data show	quiz
7	4	Understanding basic 3D transformations (reflection, rotation, composition, and inverse transformations)	Modeling a 3D shape (such as a cube)	Data show	quiz
8	4	Identify the effects of lighting and its types	Programming the lighting effect and its types	Data show	quiz
9	4	Dealing with the mechanism of shading and its different types	Modeling some three-dimensional shapes and studying the effect of light and shadow on them	Data show	quiz

10	4	Understanding Texture Mapping and its different types	Performing Texture Mapping and wrapping 2D images inside 3D faces	Data show	quiz
11	4	Introduction to Reflection and Blending methods	Modeling shapes with different transparency and study the interactions between them	Data show	quiz
12	4	Introduction to animation and its various mechanisms	Modeling integrated 3D scenes	Data show	quiz
13	4	Dealing with some advance topics in computer graphics (virtual reality and augmented reality)	Adding animation effects between 3D scenes	Data show	quiz
14	4	Understanding some advance topics in computer graphics (games)	Simulating some effects of virtual reality and augmented reality	Data show	quiz
15	4	Mid-Exam	Mid-Exam + display of projects completed by students	Data show	quiz

#### 11. Course Evaluation

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

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<p>1) "Fundamentals of Computer Graphics", S. Marschner, and P. Shirley, CRC Press (A K Peters), 2021.</p> <p>2) "Computer Graphics: Principles and Practice", J. F. Hughes, A. V. Dam, M. McGuire, D. F. Sklar, J. D. Foley, S. K. Feiner, and K. Akeley, Addison-Wesley (Pearson Education), 2014.</p>
Main references (sources)	<p>1. Steve Marschner and Pete Shirley. Fundamentals of Computer Graphics. A K Peters, 2021.</p> <p>2. John F. Hughes, Andries van Dam, Morgan McGuire, David F. Sklar, James D. Foley, Steven K. Feiner, and Kurt Akeley. Computer Graphics: Principles and Practice. 2014.</p>
Recommended books and references (scientific journals, reports...)	<p>1) "Introduction to Computer Graphics". F. Klawonn, Springer-Verlag London, 2<sup>nd</sup> Edition, 2012.</p> <p>2) "OpenGL Programming Guide", Addison-Wes (Pearson Education), D. Shreiner, G. Sellers, Kessenich, B. Licea-Kane, 8<sup>th</sup> Edition, 2013.</p>

Electronic References, Websites

1) <https://www.coursera.org/learn/interactive-computer-graphics>

2)

<https://www.sciencedirect.com/journal/computers-and-graphics>

3)

<https://www.frontiersin.org/journals/computer-science/sections/computer-graphics-and-visualization>

## English Language Course Description Form

<b>1. Course Name:</b>					
English Language					
<b>2. Course Code:</b>					
<b>3. Semester / Year:</b>					
2023/2024					
<b>4. Description Preparation Date:</b>					
22/3/2024					
<b>5. Available Attendance Forms:</b>					
In person					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
2 credit hours / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr Haneen Ahmed Email: haneen.a@sc.uobaghdad.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>			<p><b>Reviewing the English language skills the student learned and adding new vocabulary and skills to serve the student in his field of academic study and developing his linguistic capabilities.</b></p>		
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		<ul style="list-style-type: none"> <li>- Providing the student with the basics of the topics</li> <li>- Discussions and problem solving during the lecture</li> <li>- Asking intellectual questions, such as why and how</li> <li>- Giving assignments</li> </ul>			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2 theoretical	Unit 1		lectures	Midterm exam Daily evaluations
2	2 theoretical	Unit 2		lectures	Midterm exam Daily evaluations
3	2 theoretical	Unit3		lectures	Midterm exam Daily evaluations
4	2 theoretical	Unit 4		lectures	Midterm exam Daily evaluations
5	2 theoretical	Unit 5		lectures	Midterm exam Daily evaluations
6	2 theoretical	Unit 6		lectures	Midterm exam Daily evaluations

7		1 <sup>st</sup> written exam		lectures	Midterm exam Daily evaluations
8	2 theoretical	Unit 7		lectures	Midterm exam Daily evaluations
9	2 theoretical	Unit 8		lectures	Midterm exam Daily evaluations
10	2 theoretical	Unit 9		lectures	Midterm exam Daily evaluations
11		2 <sup>nd</sup> written exam		lectures	Midterm exam Daily evaluations
12	2 theoretical	Unit 10		lectures	Midterm exam Daily evaluations
13	2 theoretical	Unit 11		lectures	Midterm exam Daily evaluations
14	2 theoretical	Unit 12		lectures	Midterm exam Daily evaluations
15	2 theoretical	Review		lectures	Midterm exam Daily evaluations

#### 11. Course Evaluation

- Monthly exams
- daily evaluation
- homework

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	New Headway Plus Upper Intermediate, John & Liz Soars, Oxford University Press, 2014
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Online dictionaries such as: Meriam-Webster: <a href="https://www.merriam-webster.com/">https://www.merriam-webster.com/</a> Cambridge: <a href="https://dictionary.cambridge.org">https://dictionary.cambridge.org</a>

## Computer security Course Description Form

<b>1. Course Name:</b>					
Computer security					
<b>2. Course Code:</b>					
CS9420					
<b>3. Semester / Year:</b>					
Semester					
<b>4. Description Preparation Date:</b>					
2 <sup>nd</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>5. Available Attendance Forms:</b>					
21-3-2024					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
2 hours –week / 2 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Assistant Professor Dr. Nada Hussein M. Ali Email: <a href="mailto:nada.husn@sc.uobaghdad.edu.iq">nada.husn@sc.uobaghdad.edu.iq</a>					
Name: Assistant Professor Mays M. Hoobi Email: <a href="mailto:Mays.m@sc.uobaghdad.edu.iq">Mays.m@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li><b>a.</b> Identify the basic concepts of computer security</li> <li><b>b.</b> Learn how to take advantage of these concepts to protect computers from external threat sources</li> <li><b>c.</b> A detailed understanding of the nature of the work of protection software</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		Training students on scientific research through seminars and brainstorming during and after the lecture			
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1	2	Introduction to computer security.		Data show	quiz
2	2	Access Control -1		Data show	quiz + seminars
3	2	Access Control -2		Data show	quiz + seminars
4	2	Identification and Authentication		Data show	quiz + seminars
5	2	Malicious software		Data show	quiz + seminars

		(Malware)-1			
6	2	Malicious software (malware)-2		Data show	quiz + seminars
7	2	<b>Mid Term Exam</b>		Data show	quiz + seminars
8	2	Virus		Data show	quiz + seminars
9	2	Introduction to Firewalls -1		Data show	quiz + seminars
10	2	Introduction to Firewalls -2		Data show	quiz + seminars
11	2	Intrusion detection system		Data show	quiz + seminars
12	2	Intrusion prevention system		Data show	quiz + seminars
13	2	security protocols1		Data show	quiz + seminars
14	2	security protocols1		Data show	quiz + seminars
15	2	<b>Final Exam</b>		Data show	quiz + seminars

#### 11. Course Evaluation

Conducting daily and monthly exams and daily evaluation, in addition to giving seminars during the lecture. The pursuit grade is 40% and the final exam grade is 60%.

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Security in Computing, Fourth Edition, By Charles P. Pfleeger - Pfleeger Consulting Group, Shari Lawrence Pfleeger , 2010
Main references (sources)	Stallings W., 2017, " <i>Network Security Essentials, Applications and Standards</i> ", Fourth edition, Pearson Education, Inc.,
Recommended books and references (scientific journals, reports...)	Various scientific research on the Internet
Electronic References, Websites	Various research websites in internet



## Software Development Tools Course Description Form

1. Course Name:	
Software Development Tools	
2. Course Code:	
CSC24023	
3. Semester / Year:	
2 <sup>nd</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
21-3-2024	
5. Available Attendance Forms:	
Attendance: theoretical + practical	
6. Number of Credit Hours (Total) / Number of Units (Total)	
3 hours per week / 2 units	
7. Course administrator's name (mention all, if more than one name)	
<p><b>3- Name:</b> Assistant Professor Dr. Ammar I. Shihab</p> <p style="padding-left: 40px;"><b>Email:</b> <a href="mailto:ammar.i@sc.uobaghdad.edu.iq">ammar.i@sc.uobaghdad.edu.iq</a></p> <p><b>4- Name :</b> Lecturer Bilal S. Albayati</p> <p style="padding-left: 40px;"><b>Email:</b> <a href="mailto:bilal.s@sc.uobaghdad.edu.iq">bilal.s@sc.uobaghdad.edu.iq</a></p>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li><b>Foundational Knowledge:</b> Gain a comprehensive understanding of the different categories of software development tools and their roles within the Software Development Lifecycle (SDLC).</li> <li><b>Tool Proficiency:</b> Develop practical skills in using various software development tools, including IDEs, version control systems, debuggers, testing frameworks, and project management tools.</li> <li><b>Workflow Integration:</b> Learn how to integrate different development tools into a cohesive workflow, streamlining development processes and maximizing efficiency.</li> <li><b>Effective Tool Selection:</b> Develop the ability to select the most appropriate tool for a specific task based on project requirements, programming languages, and team preferences.</li> <li><b>Best Practices:</b> Master best practices for using software development tools effectively, including configuration management, automation techniques, and collaboration strategies.</li> <li><b>Troubleshooting and Problem-Solving:</b> Gain the ability to identify and resolve issues that may arise while using development tools, including debugging errors and optimizing tool performance.</li> <li><b>Staying Updated:</b> Develop strategies for staying current with advancements in the software development tool landscape. This includes learning about new tools, updates to existing tools, and emerging trends in development methodologies.</li> </ul>
5. Teaching and Learning Strategies	
<b>Strategy</b>	<b>Course Strategy for Software Development Tools</b>

**Target Audience:**

- Define your target audience clearly. Are they beginners, experienced developers, or individuals transitioning to a new toolset? Knowing your audience helps tailor the course content and delivery methods.

**Learning Objectives:**

- Establish clear and measurable learning objectives based on the target audience and chosen tools. Refer to the course objectives section we discussed earlier for a foundation, and customize them further for your specific course.

**Content Selection and Structure:**

- **Content Scope:** Choose the software development tools you'll cover based on your audience and course goals. Consider including a mix of essential and advanced tools for well-rounded learning.
- **Structure and Flow:** Organize the course content logically, progressing from foundational concepts to more advanced topics.
  - Start with an introduction to various software development tool categories and their functionalities within the SDLC.
  - Gradually delve deeper into each chosen tool, focusing on core functionalities, practical applications, and best practices.

**Instructional Methods:**

- **Variety is Key:** Employ a diverse range of instructional methods to cater to different learning styles and keep students engaged.
  - Include instructor-led lectures for core concepts, interactive workshops for hands-on practice, video tutorials for visual learners, and group discussions to encourage knowledge sharing.
- **Balance Theory and Practice:**
  - Provide a strong foundation in theoretical knowledge, but ensure a significant portion of the course involves practical exercises and hands-on activities.
  - Students learn best by doing, so allow them to experiment with the tools and apply their newfound knowledge to real-world scenarios.

**Assessment and Evaluation:**

- Integrate formative and summative assessments throughout the course.
  - Formative assessments like quizzes, short assignments, and code reviews provide feedback opportunities and help students gauge their understanding.
  - Summative assessments like final exams or projects demonstrate mastery of the learning objectives.

**Additional Considerations:**

- **Real-World Case Studies:** Showcase how professional developers leverage the covered tools in real-world projects. This provides context and demonstrates the practical applications of the learned skills.
- **Industry Trends:** Incorporate discussions on emerging trends in software development methodologies and how these trends influence the use of development tools.
- **Continuous Learning:** Encourage students to develop strategies for staying updated with the ever-evolving landscape of software development tools.
  - Recommend resources like online tutorials, industry publications, and developer communities.

**Course Delivery Options:**

- **Traditional Classroom:** Offer in-person lectures, workshops, and hands-on labs to create a collaborative learning environment.
- **Online Learning:** Develop an online course with video lectures, interactive modules, and online assessments for flexible learning.
- **Blended Learning:** Combine elements of in-person and online learning, offering a hybrid approach that caters to various learning preferences and schedules.

6. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3 hours/ In weeks	Overview of different UML diagrams and their purposes.	<b>Introduction Software Development Tools</b>	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
2	3 hours/ In weeks	Modeling objects and types of UML  Representing class relationships (inheritance, association, aggregation, composition) using UML notation.	Understanding Fundamentals of UML	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams
3	3 hours/ In weeks	use case view structural view Behavioral view Implementation view Environment view How do use scenario  Understanding use cases and their role in capturing user interactions with a system.	<b>Use Case Diagrams</b>	Theoretical and practical lectures	Theoretical exams + practical assessment + practical exams

		<p>Creating use case diagrams to represent actors, use cases, and relationships.</p> <p>Specifying use case details with preconditions, postconditions, and flow of events.</p>			
4	3 hours/ In weeks	<p>Flow of events</p> <p>Example of use case part1</p> <p>Important use case</p>	Use case part-1	Theoretical and practical lectures	Theoretical exams + practical assessment practical exams
5	3 hours/ In weeks	<p>Understanding &lt;&lt;include relationship</p> <p>Understanding &lt;&lt;extend relationship</p> <p>System boundary diagram</p>	Use case Part 2	Theoretical and practical lectures	Theoretical exams + practical assessment practical exams
6	3 hours/ In weeks	<p>-UML activity diagram</p> <p>-Example: processing order</p> <p>-Parallel activities</p>	Activity diagrams part	Theoretical and practical lectures	Theoretical exams + practical assessment practical exams
7	3 hours/ In weeks	<p>-Example: enrollment university</p> <p>- swimlane Guideline</p> <p>- advantage and disadvantage of activity diagram</p>	Activity diagram part	Theoretical and practical lectures	Theoretical exams + practical assessment practical exams
8	3 hours/ In weeks	<p>-Understanding class diagram</p> <p>-Static relationships</p> <p>-Aggregation and Composition class diagram</p> <p>-attributes and operations</p> <p>- multiplicity diagram</p>	Class Diagram	Theoretical and practical lectures	Theoretical exams + practical assessment practical exams
9	3 hours/ In weeks	Exam#1(Chapters 1, 2, 3)	Exam mid_1	Theoretical and practical lectures	Theoretical exams + practical assessment practical exams
10	3 hours/ In weeks	Relationships of class diagram	Class diagram examples	Theoretical and practical lectures	Theoretical exams + practical assessment practical exams

11	3 hours/ In weeks	UML example 2: flight booking using class diagram	Class diagram additional examples	Theoretical and practical lectures	Theoretical exams + practical assessments practical exams
12	3 hours/ In weeks	-Uses state diagram -Basic components - fork and Join	State diagram	Theoretical and practical lectures	Theoretical exams + practical assessments practical exams
13	4 hours/ In weeks	-Self-transition -steps for developing state diagram -examples	State diagram	Theoretical and practical lectures	Theoretical exams + practical assessments practical exams
14	4 hours/ In weeks	Exam2	Exam Mid_2	Theoretical and practical lectures	Theoretical exams + practical assessments practical exams
15	4 hours/ In weeks	Final Exam	Final Exam	Theoretical and practical lectures	Theoretical exams + practical assessments practical exams

#### 7. Course Evaluation

Conducting daily, monthly exams and daily evaluation in addition to the practical part in the laboratory. The pursuit grade is 40% and the final exam grade is 60%.

#### 8. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<p><b>1. "The Unified Modeling Language Reference Manual" by Grady Booch, James Rumbaugh, and Ivar Jacobson</b></p> <p><b>2. "Using UML: Practical Object-Oriented Design with UML" by Robert B. France and David Harel</b></p>
Main references (sources)	<p>1-Object-Oriented Systems Analysis and Design Using UML 4<sup>th</sup> edition By Simon Bennett, Ray Farmer, Steve McRobb , 2010</p> <p>2- Learning UML 2.0, by Russ Miles, Kim Hamilton, 2006</p> <p>3- The Elements of UML 2.0 Style by Scott W. Amb 2005.</p>
Recommended books and references (scientific journals, reports...)	Various research works in internet
Electronic References, Websites	<a href="http://www.uml.org">www.uml.org</a>

## Data Compression Course Description Form

<b>1. Course Name:</b>					
Data Compression					
<b>2. Course Code:</b>					
452 CDCOM					
<b>3. Semester / Year:</b>					
2 <sup>nd</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤					
<b>4. Description Preparation Date:</b>					
<b>20/3/2024</b>					
<b>5. Available Attendance Forms:</b>					
20/3/2024					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
(BY 2 ٢ ٤) <sup>3</sup> / <sub>4</sub>					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Pro. Dr. Ghadah K. Al-Khafaji Email: <a href="mailto:ghada.toma@sc.uobaghdad.edu.iq">ghada.toma@sc.uobaghdad.edu.iq</a>  Name: Dr. Huda M. Radha Email: <a href="mailto:huda.rada@sc.uobaghdad.edu.iq">huda.rada@sc.uobaghdad.edu.iq</a>					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		1- Understand how to reduce data by exploiting redundancy(s). 2- Using with different compression methods and techniques. 3- Understanding the compression mechanism for different types of data. 4- The student's knowledge encountered the data compression process. 5- Understanding and be familiar with standard compression techniques. 6- Learn about standard data compression applications for Biome applications.			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>					
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
			1- Introduction to data compression of lossless and lossy base, the need, how to solved the problem in image audio, video and text, Application of compression and models of data compression. 2- Redundancy Types of all data, Human Visual System and Fidelity Criteria. 3- Image Compression Structure with Transform Coding & Spatial coding		

		<p>Mapper/de-mapper.</p> <p>4- Image Compression Structure with Scalar (uniform/non-uniform) &amp; Vector Quantizer.</p> <p>5- Image Compression Structure with Statistical Lossless coding Techniques of Entropy Based: Huffman Coding and Dictionary Lossless coding Techniques LZW (LZW77, LZW78) along Information Theory</p> <p>6- First Exam</p> <p>7- Modeling and coding (Autoregressive model Standard and non-standard techniques/lossy &amp; Lossless methods for natural images Compression Applications: Block truncation coding, bit plane slicing, and JPEG)</p> <p>8- Color image compression: Introduction to color images, redundancy and color system structure.</p> <p>9- Video compression Techniques: Introduction, types and compression structure.</p> <p>10-Motion Estimation Techniques (frame replenishment) GOP structure, spectral prediction</p> <p>11- Second Exam</p> <p>12- Text Compression</p> <p>13- Audio Compression</p> <p>14- Real world applications for medical &amp; bioinformatics Wavelet based Compression &amp; JPEG2000</p> <p>15- Mobile multimedia computing</p>		
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#### 11. Course Evaluation

Daily and monthly exams and Quizzes, class participation and attendance, in addition to preparing practical reports and projects, so that the endeavor is 50% and the final exam is 50%.

#### 12. Learning and Teaching Resources

Required textbooks (curricular book if any)	<p>1- Gerardus, B. 2020. Data Compression A Complete Guide - 2020 Edition. 5STARCOOKS</p> <p>2- Gonzalez, R. C. and Woods, R. E. 2017. Digital Image Processing Using MATLAB. 3rd edn. Gatesmark</p> <p>3- Sayood, K. 2018. Introduction to Data Compression. 3rd5th edn. Elsevier Publication</p> <p>4- Gonzalez, R. C. and Woods, R. E. 2017. Digital Image Processing 4th edn. Pearson</p> <p>5-Shih, F. Y. 2010. Image Processing and Pattern Recognition Fundamental and Techniques</p> <p>6-Chapman, N. and Chapman, J. 2009. Digital Multimedia, 3rd edn</p>
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	7- David Salomon, "Data Compression – The Complete Reference," 4th Edi. Springer, 2006
Main references (sources)	
Recommended books and references (scientific journals, reports...)	<ul style="list-style-type: none"> <li>• Pearlman, William A., and Amir Said, " Digital Signal Compression: Principles and Practice", Cambridge University Press, 2011.</li> <li>• Salomon, David, and Giovanni Motta, " Handbook of data compression" Springer Science and Business Media, Fifth Edition, 2010.</li> <li>• Hoffman, Roy, "Data compression in digital systems", Springer Science and Business Media, 2012</li> </ul>
Electronic References, Websites	



## Course Description Form

1. Course Name: data mining						
2. Course Code:						
3. Semester / Year: 4 <sup>th</sup> year 2 <sup>nd</sup> semester						
2 <sup>nd</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤						
4. Description Preparation Date:						
5. Available Attendance Forms:						
6. Number of Credit Hours (Total) / Number of Units (Total) 60						
7. Course administrator's name (mention all, if more than one name)						
Name: Tareef kamil mustafa Email: tareef.mustafa@sc.baghdad.edu.iq						
8. Course Objectives						
<b>Course Objectives</b>			<ul style="list-style-type: none"> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>			
9. Teaching and Learning Strategies						
<b>Strategy</b>						
10. Course Structure						
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method	
1		1-Introduction to the cou				
2		2-Data analysis and				
3		normalization				
4		3-Data Warehouse				
5		4-Data mining concepts 1				
6		5-Data mining concepts 2				
7		6-Association rule				
8		7-Apriori algorithm				
9		8-Naïve Bayesian 1				
10		9-Naïve Bayesian 2				
11		10-Linear regression				
12		11-Text mining				
		12-Text mining algorithm				

11. Course Evaluation		
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc		
12. Learning and Teaching Resources		
Required textbooks (curricular books, if any)	Data mining text book	
Main references (sources)	lectures	
Recommended books and references (scientific journals, reports...)	Jiawei Han & Micheline Kamt (2013),3rd edition Data Mining: Concepts and Techniques”,	
Electronic References, Websites		

## Robotics Control Course Description Form

1. Course Name:	
Robotics Control	
2. Course Code:	
3. Semester / Year:	
2 <sup>nd</sup> Semester/ 4 <sup>th</sup> Grade/ Academic Year 2023 -٢٠٢٤	
4. Description Preparation Date:	
01-09- 2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
٢/2	
7. Course administrator's name (mention all, if more than one name)	
Name: Assistant Prof. Dr. Rawaa Dawoud Al-Dabbagh Email: rawaa.hassan@sc.uobaghdad.edu.iq	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>To develop skills in robot design, construction, and prototyping.</li> <li>Understand robot planning and path optimization algorithms for autonomous navigation.</li> <li>To understand the fundamental principles of robotics, including robot components, sensors, actuators, and control systems.</li> <li>To develop problem-solving and critical thinking skills through hands-on robot projects and challenges.</li> <li>To gain an awareness of current trends and advancements in robotics, such as machine learning, swarm robotics, and humanoids.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>Lectures: Traditional lectures can be used to deliver theoretical concepts, principles, and frameworks related to robotics. Lectures can be supplemented with visual aids, demonstrations, and examples to enhance understanding.</li> <li>Hands-on Lab Work: Practical lab sessions allow students to apply theoretical knowledge by working with robots and programming languages. These hands-on activities provide opportunities for experimentation, troubleshooting, and skill development.</li> <li>Group Projects: Assigning group projects encourages collaboration, problem-solving, and teamwork. Students can work together to design, build, and program robots to accomplish specific tasks or challenges. This fosters practical application, critical thinking, and project management skills.</li> </ul>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction - What are Robots?, What are Robotic Paradigms?		
2	2		Planning in Robotics – Definition of Path Planning and Path planning algorithms, node relaxation		
3	2		Dijkstra's algorithm, Dijkstra's algorithm and the multiple start points		
4	2		The A* algorithm in path planning		
5	2		Variants of A* algorithm (Beam search, Iterative Deepening A*, Dynamic weighted A*)		
6	2		Analysis of heuristic functions (admissible, consistent, and dominance)		
7	2		Incremental heuristic search - D* Lite algorithm		
8	2		<b>Mid-term Exam</b>		
9	2		Planning: Problem decomposition, An example domain: The blocks world		
10	2		The component of planning system and applying the rules, Planning methods (Planning with state-space search, Goal stack planning)		
11	2		Planning and machine learning, Types of machine learning		
12	2		Robot Learning and Adaptation - Reinforcement learning (Q learning) for robot behavior		
13	2		Emerging Trends and Future of Robotics - Cutting-edge research topics in robotics, Emerging technologies in robotics (e.g., soft robotics, bio-inspired robotics), Implications of robotics in healthcare, transportation, and other industries		

١٤	٢		Robot Design and Construction - How does a robot sense its environment? Types of sensors, Build a simple circuit for object detection sensor using Arduino		
١٥	٢		Robot Design and Construction - How does a robot act in its environment? Types of motors, Build a simple circuit for servo motor control using Arduino		
١٦	٢		<b>Preparatory week before the final Exam</b>		

#### 11. Course Evaluation

Distributing the score out of ٤٠ according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

#### 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Russell, Stuart and Norvig, Peter. Artificial Intelligence: A Modern Approach. 3: Prentice Hall, 2010.
Recommended books and references (scientific journals, reports...)	Spong, Mark W., Hutchinson, Seth, and Vidyasagar, M. Robot Modeling and Control. 2nd Edition: Wiley, 2020.
Electronic References, Websites	<a href="https://www.edx.org/learn/robotics">https://www.edx.org/learn/robotics</a>