Academic Program Description Form

University Name: Al- Nahrain University
Faculty/Institute: College of Science
Scientific Department: Computer Science
Academic or Professional Program Name: Bachelor in Computer Science
Final Certificate Name: Bachelor in Computer Science
Academic System: Semester System
Description Preparation Date: 4/12/2023
File Completion Date: 4/12/2023

Signature:
Head of Department Name:
Assi. Prof. Dr. Khamael Al-Dulaimi
Date: 14/4/2024

Signature:
Scientific Associate Name:
Assist. Prof Dr. Manaf Adnan Saleh
Date: 14/4/2024

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Dr. Orooba Nadhim Harbi
Date: 14.4.2024
Signature:

Dean of Science College Approval
Prof. Dr. Asmaa Hadi Mohammed

1. Program Vision

Our vision is that the department with the College will be world-class "educational" "research" and "international" in its programs, curricula, and scientific research and will seek to achieve a prominent place among the relevant departments of Iraqi and international universities by providing and updating modern, distinct programs focusing on labor market requirements and development and that research and scientific activities will be supportive of technological development.

2. Program Mission

The department's mission is to prepare, qualify, and upgrade the labor market with distinguished graduates with the necessary knowledge and practical skills to build computer systems software, possess functional intelligence skills, and equip them to meet the needs of the National Development Plan and support the public and private sectors, and to be able to conduct scientific and applied research, provide advisory services and training in the fields of specialization and keeping pace with today's demands.

3. Program Objectives

The program aims to prepare the students professionally and scientifically to apply what they have learned in the following areas
(Artificial intelligence, database management systems, website development, application development for smartphones, software engineering, computer security, and data mining) in practice through:

1. Acquiring knowledge and skills in the field of computer science along with relevant knowledge and skills in all fields.

2. Possessing communication and learning skills that prepare them to acquire knowledge in the field of the labor market and/or admission to graduate programs.

3. Acquiring good analysis, design and implementation skills required to formulate and address computing problems with an understanding of the processes that support the delivery and management of secure computing-based solutions within a specific application environment.

Integrating an understanding of the general human context with the solutions offered by side-by-side computing as well as strong analytical and critical thinking skills. It will develop graduates' awareness and enable the use of their contributions in a social, business, technical, ethical and humanitarian context.

4. Program Accreditation

Not yet

5. Other external influences

Deans of Sciences Colleges Committee

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	5	7		
College Requirements	3	6		
Department Requirements	19	42		
Summer Training				

Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First Class	COMP1101	Programming Fundamentals I	3	4
First Class	COMP1102	Discrete Structure	3	-
First Class	URENG1	English	2	-
First Class	CREQ1110	Electronic physics	2	2
First Class	CREQ1101	Calculus I	2	-
First Class	URCOM	Computer	2	2
Second Class	COMP 252	Object-Oriented Programming	2	2
Second Class	COMP 213	Computation theory I	3	-
Second Class	MATH 244	Numerical Methods	2	2
Second Class	COMP 219	C –Language	2	2
Second Class	COMP 282	Computer Skills III	-	2
Second Class	COMP 251	Data Structure	2	2
Second Class	UREQ 201	Arabic I	1	-
Second Class	COMP 321	Computer Architecture	2	2
Third Class	COMP 315	Language Translators I	2	2
Third Class	COMP 340	Artificial Intelligence	2	2
Third Class	COMP 360	Digital Image Processing	2	2
Third Class	COMP 330	Database I	2	2
Third Class	COMP 383	Computer Skills IV	-	2

Third Class	UREQ 320	Human Rights	1	-
Fourth Class	COMP 435	Computing Security I	3	-
Fourth Class	COMP 461	Audio & Video Computing	2	2
Fourth Class	COMP 417	Operating System I	2	2
Fourth Class	COMP 437	Computer Networks	2	2
Fourth Class	COMP 441	Machine learning	2	2
Fourth Class	UREQ 425	General Management	1	-
Fourth Class	COMP 490	Project	-	2

8. Expected learning outcomes of the program

Knowledge	
1.Enabling students to obtain knowledge and understanding of computer basics 2. Enabling students to obtain knowledge and understanding of computer applications 3. Enabling students to obtain knowledge and understanding of computer programming 4. Enabling students to obtain knowledge and understanding of computer networks 5. Enabling students to obtain knowledge and understanding of multimedia 6. Enabling students to obtain knowledge and understanding of data science and mining	
Skills	
1-Scientific skills in writing project 2. Logical thinking and analysis skills 3. Skills by using modern applications 4. Practical application skills	
Ethics	
1. Teaching students the moral goals of the educational process 2. Teaching students the importance of educational guidance in university studies 3. Teaching students how to interact positively with other colleagues in order to reach a state of academic excellence	

9. Teaching and Learning Strategies

1. Providing students with the basics and additional topics related to the outcomes of logical thinking and analysis.
2. Creating discussion groups during lectures to discuss specialized topics that require thinking and analysis.
3. Asking students a set of thinking questions during lectures, such as what, how, when, and why for specific topics.
4. Giving students homework that requires self-explanation
5. Scientific visiting to work sites, companies and departments and learning how to use computer systems in reality

10. Evaluation methods

1-Quality standardsing
2. Daily exams with self-solved home-based questions.
3. Participation marks for competitive questions related to the academic subject.
4. Specific grades with homework assignments.
5. Small project
6. Monthly exams and quarterly exams

11. Faculty

Faculty Members

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

Ban Nadeem Dhannoon Younis	computer	AI and image processing			staff	
Mohammed Sahib Mahdi	physics	Multimedia and Robotics			staff	
AbdulKareem Merhej Radh	physics	AI			staff	
Jamal Mohammed Kadhim Ali	computer	Computer security			staff	
Sawsan Kamal Thamer Mohammed al-ani	computer	AI			staff	
Suhad Abdul-Rahman Yousif	computer	AI			staff	
Safaa Hussain Shwail	computer	AI \ Robot Path Planning			staff	
Zainab Namh Abdula Sultani	computer	Multimedia			staff	
Khameal Abbas Khudhair	computer	AI			staff	
Abeer Khalid Ahmed	computer	AI			staff	
Dalal Naeem Hmood	computer	Computer network			staff	
Nadia Fadhil Ibrahim	computer	AI			staff	
Azhar Mawlod Khathum Meyessar	computer	AI			staff	
Ghassan Abdulhakeem Mohmood	computer	Multimedia			staff	
Haider Majeed Jaber	computer	Computer network and security			staff	
Tiba Zaki Abdulhameed	computer	AI			staff	
Nagwan Abed Hasan	computer	Data security			staff	

Rasool Hisham Abd Al-Rasool	computer	Computer network and security			staff	
Ruaa Abdullah Jaber	computer	Image processing			staff	
Azahar Flaih Hassan zaho	computer	AI			staff	
Hanaa mohammed mushjil zinad	computer	AI			staff	
Assel Basim Sabri Yakoob	computer	AI			staff	
Khairiyah Saied Abd-algabbar Jasim	computer	Digital Image Processing			staff	
Zahraa Abdul hussienjaaz abed	computer	Computer network			staff	
Hasnaa imad abdulsalam	computer	Bioinformatics			staff	
Zainab Haider Ameen	computer	Computer network			staff	
Ehsan Qahtan Ahmed	computer	Computer network			staff	
Israa Husain Ali	computer	Digital Image processing			staff	
Farah Saad Ezz Al-dean	computer	Image processing			staff	
Asad Hussain Thary	computer	AI and Image Processing			staff	
Humam Khalid Jameel	computer	Computer			staff	
Wisam Rafid Dawood	Math	Math			staff	
Zeyad Mohammed Abed	Math	Graph Theory			staff	
Bahera Hani Nayef	physics	Information technology			staff	

Professional Development

Mentoring new faculty members

1- The department head schedules meeting with new faculty members and the rest of the faculty members and gives them information, awareness, and general background about the department and the department's academic program.

2- Workshops have been scheduled for faculty members to support knowledge and skills in teaching, scientific research, and quality assurance.

Professional development of faculty members

- Workshops have been scheduled to clarify the roles of university faculty members
- workshops and training have been scheduled on effective learning
- panel discussion have been scheduled to discuss the role of the academic staff and educational guidance
- conferences and seminars have been scheduled about academic research and how to participate in the professional development of faculty members.

12. Acceptance Criterion

System has been established by the Ministry of Higher Education and Scientific Research as a central admission mechanism to be considered

13. The most important sources of information about the program

For key sources of information about the academic program, please visit the Department of Computer Science website

https://sc.nahrainuniv.edu.iq/departments_ar.php?did=3

14. Program Development Plan

Program Skills Outline

Year/Level	Course Code	Course Name	Basic or optional	Required program Learning outcomes											
				Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second	COMP 252	Object-Oriented Programming	C	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	COMP 213	Computation theory I	C	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	MATH 244	Numerical Methods	O	✓	✓	✓		✓					✓		
	COMP 219	C –Language	C	✓	✓	✓		✓	✓				✓		
	COMP 282	Computer Skills III	C	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
	COMP 251	Data Structure	C	✓	✓	✓	✓	✓	✓				✓	✓	✓
THIRD	COMP 321	Computer Architecture	C	✓	✓	✓	✓	✓	✓				✓	✓	✓
	COMP 315	Language Translators I	C	✓	✓	✓	✓	✓	✓	✓			✓	✓	
	COMP 340	Artificial Intelligence	C	✓	✓	✓		✓	✓				✓	✓	✓
	COMP 360	Digital Image Processing	O	✓	✓	✓		✓	✓				✓	✓	

Course Description Form

1. Course Name:
C- language
2. Course Code:
3. Semester / Year:
1st Semester/ Year 2
4. Description Preparation Date:
22/3/2024
5. Available Attendance Forms:
Mandatory / on campus
6. Number of Credit Hours (Total) / Number of Units (Total):
(30 hour lecture + 30 hour lab) / 15 weeks
7. Course administrator's name (mention all, if more than one name)
Name: Ghassan Abdulhakeem Mahmood Email: Ghassan.alnuaimi@nahrainuniv.edu.iq Lab instructors: Lect. Assist. Ehsan Qahtan, Lect. Assist. Zainab Haider, Lect. Assist. Israa Hussain

8. Course Objectives	
Course Objectives	• Understand the fundamentals of C language and the basics of the structural programming • Discover new tools in C language that do not exist in other programming languages. • Design algorithms to solve “simple” problems

9. Teaching and Learning Strategies	
Strategy	• Lecture-based learning • Technology-based learning • Individual learning • Inquiry-based learning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understanding essential facts and concepts related to C language	Introduction, Fundamentals, Writing Your First C Program	Lecture-based learning. Weekly lectures, PowerPoint slides, group discussion, weekly programming tasks.	-
2	4		Variables, Data Types and Arithmetic Expressions	Lecture-based learning	
3	4		Program Loops: for, nested loops, while, do, break, continue	Lecture and Inquiry-based learning	Quiz
4	4	Improved the ability to use C programming language to solve elementary problems.	Conditional Statements: if, if-else, nested if, else if, switch, conditional operator	Lecture and Individual-based learning	
5	4	Understanding the programming logic of arrays	Arrays: The concept of array; Defining arrays; Initializing arrays; Multidimensional arrays; Variable length array	Lecture and Inquiry-based learning	
6	4		Mid 1 Exam		
7	4	Understanding the programming logic of functions	Functions: Defining a function; calling a function; Arguments; Local variables; Returning function results; Declaring a function prototype	Lecture and Individual-based learning	Quiz
8			Functions: Global variables. Automatic and Static local variables	Lecture, Technology and Individual-based learning	
9	4	Understanding the how can we organize data in a program	More on Data types: Structures	Lecture and Individual-based learning	
10	4		Character Strings: Character Arrays/ Character Strings; Initializing Character Strings	Lecture, Technology and Individual-based learning	Quiz
11	4	Understanding new data type and the relationship between memory	Pointers: Pointers and Addresses; Pointers and Function Arguments;	Lecture, Technology and Individual-based learning	Final report submission

		location and the value stored in			
12	4		Pointers and Arrays; Pointer Arithmetic; Pointers and strings Dynamic memory allocation	Lecture, Technology and Individual-based learning	
13	4		Mid 2 Exam		
14	4	Knowing how can we handle files in C	Working with Files, Part 1	Lecture and Technology-based learning	Quiz
15	4		Working with Files, Part 2	Lecture and Technology-based learning	

11. Course Evaluation

Mid exams: 10%
Quiz: 8 %
Lab exam: 15%
Report: 7%
Final Exam: 50%
Final Lab Exam: 10%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	H Schildt, "C the complete reference", Fourth Edition, 2000.
Main references (sources)	Stephen G. Kochan, Programming in C, Developer's Library, Third Edition, 2005, ISBN-13: 978-0-672-32666-0.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	http://debracollege.dspaces.org/bitstream/123456789/78/1/C%20The%20Complete%20Reference%20by%20Herbert%20Schildt.pdf

Course Description Form

1. Course Name:
Computation Theory I
2. Course Code:
3. Semester / Year:
First semester/ 2024
4. Description Preparation Date:
27/03/2024
5. Available Attendance Forms:
Full Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
45 hours per the semester/ 3 hours per a week
7. Course administrator's name (mention all, if more than one name)
Name: Msc. Bahera Hani Email: bahera.hani@nahrainuniv.edu.iq
8. Course Objectives

Course Objectives	**This course represents the mathematical basics of the computer structure and the Formal languages. In turn these languages represent:-** • **A very important base for the programming languages.** • **A base of building algorithms and complex computer computations.** • **Shows that these complex computation can be solved or not. If they can be solved then what is the algorithm used for solving them in a reasonable time.**

9. Teaching and Learning Strategies	
Strategy	Teaching strategy is in a form of: 1- Regular lectures using the whiteboard , the smart board, data show, and YouTube videos. 2- Solving examples in the class and discuss the student answers.

	3- Interactive teaching method. Listen to the student questions and discuss the input data to find the answers.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	To revise the mathematic rules	Necessary mathematical review	Regular lecture with solving excesses	Questions and answers , discuss ideas
2	3	Introduction to formal languages	Basic information and definitions of the formal languages and grammar	Regular lecture with solving excesses	Questions and answers , discuss ideas
3	3	Description of all formal languages	Chomsky's classification of typical languages	Regular lecture with solving excesses	Questions and answers , discuss ideas
4-9	6	Building regular languages and different models representation	regular languages rules	Regular lecture with solving excesses	Questions and answers , discuss ideas
	6		Regular expressions	Regular lecture with solving excesses	Questions and answers , discuss ideas
	6		Finite automata conversion	Regular lecture with solving excesses	Questions and answers , discuss ideas
10-11	6	Regular languages relationship	Decision algorithms for regular interlingua operations	Regular lecture with solving excesses	Questions and answers , discuss ideas
12-1٣	6	Converting models from one form to another (regular expressions, automation).	Method of converting from one model to another	Regular lecture with solving excesses	Questions and answers , discuss ideas
14-15	3	Application of a limited-process computer model	Output-limited automation	Regular lecture with solving excesses	Questions and answers , discuss ideas

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)	Introduction to the theory of computat second edition. By Michael Sipser
Main references (sources)	Any related resources
Recommended books and references (scientific journals, reports…)	Online lectures or pdf files from internet
Electronic References, Websites	

Course Description Form

1. Course Name:
Computer Skills III
2. Course Code:
COMP282
3. Semester / Year:
First / Second
4. Description Preparation Date:
22/3/2024
5. Available Attendance Forms:
Attendance Mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)
30 Hours (2 Hours * 15) / One Credit
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Dr. Zainab Namh Email: zainab.namhabdula@nahrainuuniv.edu.iq Assist. Lect. Israa Namh, Assist. Lect. Humam Khalid, Assist. Lect. Zey Mohammed, Assist. Lect. Wisam Rafid

8. Course Objectives	
Course Objectives	Enabling the student to deal smoothly with Microsoft Office programs (Word, Excel and PowerPoint) as they are among the basic programs that the student must know how to use professionally This course provides: • Advanced knowledge in the use of Word program to create reports in an organized and fast manner • Creating electronic tables, charts and performing various calculations using Excel. • PowerPoint provides students with the ability to create presentations in a professional and elegant manner

9. Teaching and Learning Strategies	
Strategy	Practical application in the laboratory includes the application of a group of different tasks by creating and coordinating documents, electronic tables, and

	presentations

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Know MS Word and introduce home ribbon	MS Word – Home Ribbon (Font, Paragraph, Editing)	LAB	Lab Evaluation
2	2	Deal with tables, equations, and symbols	MS Word – Insert Ribbon (Table, Symbols and Equations)	LAB	Lab Evaluation
3	2	Format the document layout	MS Word – Insert Ribbon (Pictures and Header/Footer) + Design / Layout	LAB	Lab Evaluation
4	2	Designing the document using Drop Cap, and other options.	MS Word – Design Ribbon (Cover Page, Drop Cap, Watermark, Page Border, Shapes, Smart Art)	LAB	Lab Evaluation
5	2	Students get to design the document layout	MS Word – Page Layout Ribbon (Page Setup, Columns Formatting, Break types)	LAB	Lab Evaluation
6	Mid 1				
7	2	Add captions and table of contents	MS Word – Reference Ribbon (Captions, Table of Content, Table of Figures, Table of Table Footnotes)	LAB	Lab Evaluation
8	2	Know MS Excel and format the cells	MS Excel – Formatting Cells (Font, Alignment, Conditional formatting)	LAB	Lab Evaluation
9	2	Students get to deal with functions	MS Excel Functions	LAB	Lab Evaluation

			(Text, Lookup, Date/Time, Logical)		
10	2	Analyze Data	MS Excel Functions (Pivot, Filter, Database, Nested Functions)	LAB	Lab Evaluation
11+12	4	Design Charts	MS Excel Charts and Layout	LAB	Lab Evaluation
13	Mid 2				
14	2	Design presentation	MS PowerPoint Formatting Slides	LAB	Lab Evaluation
15	2	Formatting the slides	MS PowerPoint Slide Transition and Object Animation	LAB	Lab Evaluation

11. Course Evaluation

Assessment Type	Marks
Attendance and Evaluation	١٠
Lab Mid Exam	٣٠
Lab Final Exam	٦٠
Total	١٠٠

12. Learning and Teaching Resources

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

Course Description Form

1. Course Name: Data Structure

2. Course Code:

3. Semester / Year: first Semester/ Second Year

4. Description Preparation Date: 202٣-202٤

5. Available Attendance: Forms: Full time

6. Number of Credit Hours (Total) / Number of Units (Total): 30 Theory + 30 Practical \ 3 units

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

Name: Ass. Prof.Dr.Nadia Fadhil AL-Bakri
Email: nadia.f.al-bakri@nahrainuniv.edu.iq
Name: Lecturer. Azhar Mawlod Khadim
Email: azhar.mawlodkadim@nahrainuniv.edu.iq
Name: Ass. Lecturer Zainab Haider Ameen
Email: Zainab.h.ameen@nahrainuniv.edu.iq
Name: Ass. Lecturer Basheer Ameen
Email: basheer.ameen@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	• Preparing graduates who have experience in the basis of data structures, types, and optimal methods of storing them in the computer and transfe
	• Implementation of multiple algorithms, the purpose of which is to see these algorithms and show the best ones in terms of speed of implementation.
	• A student is also prepared with the ability to understand the problems to be solved and to find the desired goal represented by the solution to these problems through data collection and analysis.

9. Teaching and Learning Strategies

Strategy	• The ability to use Java language, and applying the theory fundamentals and its use in different algorithms. • Improve the student's analysis and conclusion capabilities.

10. Course Structure

Week	Hours		Unit or subject name	Learning method	Evaluation method
1	2 theory + 2 Library		Data structure definitions Primitive data types Expressions Type conversion	Formal Lectures	Class Activity
2	=		String Flowchart	Formal Lecture	Class Activity and Quiz
3	=		Recursion Function	Formal Lecture	Class Activity and Quiz
4	mid exam 1				
5	=		ADT (Bag, Queue, Stack)	Formal Lecture	Class Activity and Quiz
6	=		Circular Queue	Formal Lecture	
7	=		Stack applications	Formal Lecture	Class Activity and Quiz
8	=		Algorithm for converting infix form to postfix form	Formal Lecture	Class Activity
9,10	=		Linear List and Linked Allocation S.L.L.L operations	Formal Lecture	Class Activity
11	=		Double-Ended Lists	Formal Lecture	Class Activity
12	mid exam 2				
13	=		Double linked linear list (D.L.L.L.) Definition	Formal Lecture	Class Activity
14,15	=		D.L.L.L Operations D.L.L.L. as a queue	Formal Lecture	Class Activity and 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 (curricu books, if any)	Data Structures and Algorithms in Java™ Sixth Edition Michael T. Goodrich,Roberto Tamassia Michael H. Goldwasser 2014 Data Structures And Algorithms Made Easy In JAVA 2017 Narasimha Karumanchi
Main references (sources)	Data Structures and Algorithms in Java™ Sixth Edition Michael T. Goodrich Roberto Tamassia Michael H. Goldwasser 2014
Recommended books and references (scientific journals,	Dictionary of Algorithms and Data Structures

reports…)	
Electronic References, Websites	Data Structures and Abstractions with Java 2019 CRACKING *THE* CODING INTERVIEW 6TH EDITION GAYLE LAAKMANN MCDOWELL 2015

13. Course Structure (Practical)

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2 Lib		Primitive data types Expressions Type conversion	White Board, Data show	Assignment
2	=		String	White Board, Data show	Homework, Assignment
3			Recursion Function	White Board, Data show	Quiz, Homework, Assignment
4			mid exam 1		
5	=		ADT (Bag, Queue, Stack)	White Board, Data show	Assignment
6	=		Circular Queue	White Board, Data show	Homework, Assignment
7	=		Stack applications	White Board, Data show	Quiz, Assignment
8	=		Algorithm for converting infix form to postfix form	White Board, Data show	Quiz, Homework, Assignment
9,10	=		Linear List and Linked Allocation S.L.L.L operations	White Board, Data show	Quiz, Assignment
11	=		Double-Ended Lists	White Board, Data show	Homework, Assignment
12	=		Double linked linear list (D.L.L.L.)	White Board, Data show	Quiz, Homework, Assignment
13,14	=		D.L.L.L Operations D.L.L.L. as a queue	White Board, Data show	Quiz, Homework, Assignment
15			mid exam 2		

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

COURSE DESCRIPTION AND RATIONALE: The students in this course will study Numerical analysi with the following main topics:

- Error Analysis and precision values
- Solutions of Non-Linear equations
- Numerical Integrations
- Numerical Differentiation

1. Teaching Institution	Ministry of Higher Education and Scientific Research
2. University Department/Centre	Al-Nahrain University/Computer Science
3. Course title/code	Applied Numerical Methods
4. Programme(s) to which it contributes	Second Class
5. Modes of Attendance offered	Two hours Theoretical Each Week
6. Semester/Year	First Semester/ 2023-2024
7. Number of hours tuition (total)	2 Hours in each 15 weeks
8. Date of production/revision of this specification	16/10/2024
9. Aims of the Course	
• The course introduces the fundamentals of applied numerical methods, which is essential background for other courses, such as information security. • There is a practical sessions in this course, however, tutorial sessions will be held to gain some practice of solving mathematical problems and related applications.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

Completion this course will outcomes a student to be able to solve problems, which have discrete items, linear and non-linear equations-differentiation and integration.

B. Subject-specific skills

a) Math I.

b) Math II.

Teaching and Learning Methods

10. TEACHING METHODS

Lectures : 15 Weeks, Two Theoretical Hours for Each week with two hour practical for each Week

Assessment methods

1. ASSESSMENT METHODS and ASSESSMENT DETAILS will be shown in the following table

	Test	Date	Mark	Learning Outcome
1	Test I	Week 6	15 %	1,2
2	Quiz I	?	3 %	3
3	Test II	Week 12	15 %	3,4
4	Quiz II	?	3 %	4
5	Attendance	All	4 %	-
6	Final Exam	Week 17-18	60 %	1,2,3,4
	Total Marks		100 %	

C. Thinking Skills

C1.- Understanding discrete problems.

C2.- solving mathematical problems and related applications. .

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

D1. Mathematics

D2. Probability

Assessment Method	Teaching Method	Unit/Module or Topic Title	Hours	Week
	Power Point slides with Tut.	Introduction to numerical methods	2	١
Quiz	Power Point slides with Tut.	1. Solution of Equations with single Variable by Iterations 2. Fixed Point Method **3.** Newton-Raphson Method	2	٢
	Power Point slides with Tut.	Solution of Equations with single Variable by Iterations Bisectional Method	2	٣
Test	Power Point slides with Tut.	Numerical Integration Trapezoidal Rule Simpson's Rule	2	٤
	Power Point slides with Tut.	Applications of Numerical Integration	2	٥
Mid Exam.1	Power Point slides with Tut.	System of Linear Equations Gauss-Seidal Method Jaccobi Method	2	٦
	Power Point slides with Tut.	Some Applications for Systems having linear Equations	2	٧
Quize	Power Point slides with Tut.	First Order Differential Equation Euler Method Runge-Kutta Method	2	٨
	Power Point slides with Tut.	Applications for First Order Differential Equation	2	٩
	Power Point slides with Tut.	Numerical Differentiation Difference Formula Two-Point Evaluation	2	١٠
	Power Point slides with Tut.	Applications of Numerical Differentiation	2	١١
Mid Exam 2.	Power Point slides with Tut.	Numerical Solution of Nonlinear system	2	١٢

	Power Point slides with Tut.	Examples of Numerical Solution for Nonlinear systems	2	١٣

13. Admissions	
Pre-requisites	**a)Compulsory prerequisites: Math I, Math II** **b) Recommended prerequisites : Discrete Mathematics**
Minimum number of students	25
Maximum number of students	30

		Implementation of numerical methods with fixed resolution arithmetic		١٥

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	**Text book:** Numerical analysis for scientists and engineers **Author :**Joe Hoffman **Edition & Year public :** 2004
Special requirements (include for example workshops, periodicals, IT software, websites)	**Web Site** • http://www.mhhe.com/rosen
Community-based facilities (include for example, guest Lectures , internship , field studies)	

Course Description Form

1. Course Name:
Object Oriented Programming
2. Course Code:
3. Semester / Year:
first semester / 2023-2024
4. Description Preparation Date:
24/3/2023
5. Available Attendance Forms:
Attendance study
6. Number of Credit Hours (Total) / Number of Units (Total)
75
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Abeer Khalid Al-Mashhadany Email: aabeeeeraa@yahoo.com Lecturer Dr. Marwan Badran Assistant Lecturers: Zainab Haider, Asad Husain, Auday

8. Course Objectives	
Course Objectives	• **Give all principles of Object Oriented Programming** • **Train to use OOP principles to solve Real problems** • **Provides students high programming skills** • **Enable students to make design on paper** • **Enable student to trace the run operation**

9. Teaching and Learning Strategies	
Strategy	▪ Differences of object oriented programming from Structured Programming ▪ Why object oriented programming and its advantages ▪ Relate object oriented programming principles with its real l examples. ▪ Object oriented programming in Java programming language It helps student training to configure errors and imagine hov to correct it. ▪ Pre Info required ▪ Oral Lectures ▪ Presentation Lectures

	▪ Train on White Board ▪ Explain Lab Ass. Oral and on white board ▪ Train at Lab ▪ Home Work to a specific group ▪ Providing the HW solution for all

10. Course Structure

Week	H.s	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	**Pre-Info. Programming Fundamentals**	• **Introduction to Object Oriented Programming** • **Input & Output Statements.** • **Control Statements.** • **Methods & Methods Overloading** • **Loops** • **One Dimensional Array –Vector** • **Two Dimensional Array** • **Computer Organization Aided Programming**	▪ Oral Lectures ▪ Presentation Lectur ▪ Train on White Boar ▪ Explain Lab Ass. C and on white board ▪ Train at Lab	Quiz Train on W Board Oral Qu Questions Homework
2	5	**holiday**			
3	5	**Classes and Objec**	• **Designing a Class** • **Creating Objects from Classes** **Access Modifiers: Pu and Private**		
4	5	**Pointers and Packa**	• **Using Objects as Pointers** • **Using Packages** **Package Access**		
5	5	**Constructors, Us this keyword**	• **Constructors** • **Using this keyword**		
6	5	Composition	Composition		
7	First mid Exam				
8	5	**Finalize, Static, Final**	• **Garbage Collection** • **Static Variables & Static Methods** • **Static Import** **Final Instance Variabl**	▪ Oral Lectures ▪ Presentation Lectur ▪ Train on White Boar ▪ Explain Lab Ass. C and on white board	Quiz Train on Wh Board Oral qu Questions
9	5	**Enumerations**	**Using Enumerations**		

				▪ Train at Lab	Homework
10	5	**Inheritance Protected Access**	• **Introduction** • **Calling Superclass Constructors** • **Overriding Methods**		
11	Second Mid				
12	5	**Polymorphism**	• **Polymorphism Operator instanceof Downcasting**	▪ Oral Lectures ▪ Presentation Lectures ▪ Train on White Board ▪ Explain Lab Ass. Oral and on white board ▪ Train at Lab ▪	Quiz Train on Wh Board Oral qi Questions Homework
13	5	**Interfaces**	• **Interface**		
14	5	Work as Team			
15	5	Final Lab Exam			

11. Course Evaluation

preparation, Pre info quiz	02 marks
Weekly Lab ass. Mark	13 marks
5 Quiz per course, written exams	05 marks
Monthly, Two mids, written exams,	18 marks
HW, written examples	02 marks
daily oral, Special marks adding to course mark for active students	+ marks
Final Lab Exam	10 marks
Final Exam	50 marks

12.

Required textbooks (curricular books, if a	Textbook: Java Concepts, Cay Horstma San Jose State University.
Main references (sources)	Providing high-quality printed pap lectures that cover the entire subject w exercises
Recommended books and references (scientific journals, reports…)	Textbook: Java Concepts, Cay Horstma San Jose State University.
Electronic References, Websites	Providing high-quality printed pap lectures that cover the entire subject w exercises

Course Description Form

1. Course Name: Arabic Language

2. Course Code: URARA

3. Semester / Year: Phase II

4. Description Preparation Date: 2024/2/20

5. Available Attendance Forms: Integrated Education

6. Number of Credit Hours (Total) / Number of Units (Total) : 30hours per year

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

Name: D. Rana Majed Hameed
Email: Rana.Majid@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	**Acquiring knowledge skills about linguistic concepts.** **Keep the tongue from falling into the word's pronunciation error.** **Developing the student's expressive abilities.** **Teaching students to analyze the speech system.** **Teach students to distinguish between the origins of the word or increase and what it does in increasing meaning.** **Teaching students on methods and rules of control and drafting of vocabulary.** **Enabling the student to use the language vocabulary in the proper location.** **Provide training to strengthen the student's queen and develop his ability in language practice and influential rhetoric while benefiting from Experiences and trainings.**

9. Teaching and Learning Strategies

Strategy	1. POWERPOINT DISPLAY 2. Writing Reports- 3. Quarterly Tests- 4. Discussing and Solving Questions- 5. Homework

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Name, verb and differentiation	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Second	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Activation (effect with it, effect for the time being, effect with it)	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Third and Fourth	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Number	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Fifth and Sixth and Seventh	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Language Error Applications	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Eighth	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Meanings of prepositions	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Ninth	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	One Thousand Difference Base	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Tenth	1	The student acquires linguistic skills and	Noon and Topical Base	Lecture, class discussion and	Daily and quarterly examinations and

		improves the writing sketch in order to be able to write and express it eloquently.		training	examinations
Eleventh The Twelfth	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Formal aspects of administrative discourse	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Thirteenth and Fourteenth and Fifteen,	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Language of administrative discourse	Lecture, class discussion and training	Daily and quarterly examinations and examinations

1. Course Evaluation	
Daily preparation: (10) degrees Daily exams: (10) Degree Monthly exam: (20) Degree Reports: (20) Degree Seminar: (20) Degree Homework: (20) Degree	
2. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Expression, creation, written drawing and written dictation/a. d. Abdulrahman Matlak al-Jabouri
Main references (sources)	Clarify the trajectory of the millennium of the son of Malik/Ibn Hisham. Qatar al-Nada and Bel al-Echo of Hisham's son. as adequate as Abbas Hassan, is a shrewd custom in the art of drainage, polite in drainage.
Recommended books and references (scientific journals, reports…)	Adequate Grammar / Abbas Hassan.
Electronic References, Websites	https://maktabeti.com https://www.noor-book.com

Course Description Form

1. Course Name: Algorithm design and analysis

2. Course Code:

3. Semester / Year: Second Semester/ Second Year

4. Description Preparation Date:2023-2024

5. Available Attendance Forms: Full time

6. Number of Credit Hours (Total) / Number of Units (Total) 30 Theory + 30 Practical \3 units

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

Name: Ass. Prof.Dr.Nadia Fadhil AL-Bakri
Email: nadia.f.al-bakri@nahrainuniv.edu.iq
Email: Zainab.h.ameen@nahrainuniv.edu.iq
Name: Ass. Lecturer Basheer Ameen
Email: basheer.ameen@nahrainuniv.edu.iq
Name: Ass. Lecturer Khairiyah.S.Aldabas
Email: khairiyah.s.aldabas@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	• Preparing graduates who have experience in the basis of data structures, types, and optimal methods of storing them in the computer and transferring them. • Implementation of multiple algorithms, the purpose of which is to see these algorithms and show the best ones in terms of speed of implementation. • A student is also prepared with the ability to understand the problems to be solved and to find the desired goal represented by the solution to these problems through data collection and analysis.

9. Teaching and Learning Strategies

Strategy	The ability to use Java language, and applying the theory fundamentals and its use in different algorithms. Improve the student's analysis and conclusion capabilities

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theory + 4 Library		Algorithm fundamental Properties	Formal Lectures	Class Activity
2	=		Analysis of an Algorithm Algorithm Complexity	Formal Lectures	Class Activity a Quiz
3	=		How to Determine Complexities Searching methods	Formal Lectures	Class Activity a Quiz
4	Mid1				
5	=		Binary Tree	Formal Lectures	Class Activity
6	=		Tree Traversals	Formal Lectures	Class Activity
7	=		Deletion in a Binary Tree	Formal Lectures	Class Activity a Quiz
8	=		Sorting methods	Formal Lectures	
9,10	=		Bubble sort,selection ,insertion sort	Formal Lectures	Class Activity
11	Mid2				
12,13	=		Shell sort,merge sort	Formal Lectures	Class Activity and Quiz
14,15	=		Quick sort	Formal Lectures	Class Activity a 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)	Algorithms, **Fourth Edition** / Robert SedgewickandKevin Wayne, Princeton University, Addison-Wesley 2011 **Supporting Books** - Data Structures andAlgorithms in Jav Sixth Edition, Michael T. Goodrich,Robe Tamassia, and Michael H. Goldwas Wiley, 2014
Main references (sources)	Algorithms, **Fourth Edition** / Robert SedgewickandKevin Wayne, Princeton University, Addison-Wesley 2011
Recommended books and references (scientific journals, reports…)	

Electronic References, Websites	

13. Course Structure (Practical)

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4 Lib		Algorithm fundamental & Properties	White Board, Data show	Assignment
2	=		Analysis of an Algorithm Algorithm Complexity	White Board, Data show	Homework, Assignment
3	=		How to Determine Complexities Searching methods	White Board, Data show	Quiz, Homework, Assignment
4	Mid1				
5	=		Binary Tree	White Board, Data show	Assignment
6	=		Tree Traversals	White Board, Data show	Homework, Assignment
7	=		Deletion in a Binary Tree	White Board, Data show	Quiz, Assignment
8	=		Sorting methods	White Board, Data show	Quiz, Homework, Assignment
9,10	=		Bubble sort,selection s ,insertion sort	White Board, Data show	Quiz, Assignment
11	Mid2				
12,13	=		Shell sort,merge sort	White Board, Data show	Quiz,Homework, Assignment
14,15	=		Quick sort	White Board, Data show	Quiz,Homework, Assignment

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

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

1. Teaching Institution	Al-NAHRAIN UNIVERSITY/COLLEGE of SCIENCE
2. University Department/Centre	Department of Computer Science
3. Course title/code	Computation Theory 2
4. Programme(s) to which it contributes	B.sc Computer Science
5. Modes of Attendance offered	Full Time
6. Semester/Year	Second Semester/ Second Year
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	**2023-2022**
9. Aims of the Course **To introduce the Mathematical foundation in computation theory, formal languages and the theoretical background in algorithm design and problem solving.**	

10· Learning Outcomes, Teaching ,Learning and Assessment Method
A- Knowledge and Understanding A1. Understand the Formal language theory as the base for all computer programming languages A2. Understand that automata theory is a base for compiler design

A3. Understand that the automata theory is a base of many computer science model A4. Understand that automata theory especially Turing machine give the basic understanding of computers and computer algorithm
B. Subject-specific skills B1. Understand the relation between formal grammars and automata B2. A clear understanding of the theory concepts such as regular expression deterministic and non-deterministic , push down automata etc. and the relation between them. B3. Have clear understanding of minimizing grammars and automata
C. Thinking Skills C1. Think how to minimize grammars and automata in procedural form C2. Think how to remove the ambiguity from the program statement he/ she design or wrote. C3. Think how to move and across difficulty in solving problem
D. General and Transferable Skills (other skills relevant to employability and personal development) D1. Understand how to transfer theoretical models from form to another D2. Understand how to transfer problem from its theoretical origin into model for computing application. D3. Understand how to analyses and simplifying a problem to be solvable and easy to be solved.
Teaching and Learning Methods
Online classroom, videos, homework assignment and self-reading.
Assessment methods
60% for the formal final writing exam 15% for mid-term formal written exam 5% Quizzes and class discussion and oral answering questions 5% for homework exercises 15% Attendance and Active participation

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1.	3	What is coming and why	Why we need to do parsing to communicate with machines		
2.	3	Chomeskey taxonomy	Introduce Chomeskey, Understand how to write a grammar.	Self reading and discussion.	Interactive participation
3.	3	Parsing CFG	Understand Context free Grammars and the derivation tree		
4.	3	**Designing CFG**	**Convert from FSA to CFG**	**=**	**=**
5.	3	**Designing CFG**	Produce CFG for recursive languages	**=**	**=**
6.	3	**Designing CFG**	Design CFG from simpler ones.	**=**	**=**
7.	3	**Learn how to use the pushdown automata as**	The push down , formal and informal definition	**=**	**=**

		language accepter for CFL			
8.		**Mid exam 1**			
9.	3	**Push down Automata**		**=**	**=**
10.	3	**Push down Automata**		=	=
11.	3	**Push down Automata**		=	=
12.	3	**Mid exam 2**		=	=
13.		**Understand Turing machine as a simple computer model**	Turing machine, definition and as a language accepter		
14.		**Turing machine**	Exc.		
15.		**Turing machine**	Exc.		

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Well-chosen text book only, videos, links to internet pages
Special requirements (include for example workshops, periodicals, IT software, websites)	No special requirement need
Community-based facilities (include for example, guest Lectures , internship , field studies)	No special requirement need

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

COURSE DESCRIPTION AND RATIONALE: The students in this course will study Computer Graphics with the following topics:

- Line and circle drawing in 2 and 3 dimensions.
- Projection
- Reflection
- Animation
- Mapping

1. Teaching Institution	Ministry of Higher Education and Scientific Research
2. University Department/Centre	Al-Nahrain University/Computer Science
3. Course title/code	Applied Numerical Methods
4. Programme(s) to which it contributes	Second Class
5. Modes of Attendance offered	Two hours Theoretical Each Week
6. Semester/Year	First Semester/ 2022-2023
7. Number of hours tuition (total)	2 Hours in each 15 weeks
8. Date of production/revision of this specification	20/3/2023
9. Aims of the Course	
• The course introduces the fundamentals of computer graphics, which is essential background for other courses, such as image processing. • There is a practical sessions in this course, however, tutorial sessions will be held to gain some practice of solving mathematical algorithms and related applications.	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

Completion this course will outcomes a student to be able to solve problems, which have image processing.

B. Subject-specific skills

Mathematics

Teaching and Learning Methods

10. TEACHING METHODS

Lectures : 15 Weeks, Two Theoretical Hours for Each week with two hour practical for each Week

Assessment methods

1. ASSESSMENT METHODS and ASSESSMENT DETAILS will be shown in the following table

	Test	Date	Mark	Learning Outcome
1	Test I	Week 6	15 %	1,2
2	Quiz I	?	3 %	3
3	Test II	Week 12	15 %	3,4
4	Quiz II	?	3 %	4
5	Attendance	All	4 %	-
6	Final Exam	Week 17-18	60 %	1,2,3,4
	Total Marks		100 %	

C. Thinking Skills

C1.- Understanding image representation.

C2.- solving mathematical problems of processing images in 2 D and 3 D.

Assessment Method	Teaching Method	Unit/Module or Topic Title	Hours	Week
	Power Point slides with Tut.	Introduction to Computer Graphics	2	1
Quiz	Power Point slides with Tut.	Introduction to graphics (software and hardware; applications)	2	2
	Power Point slides with Tut.	One dimensional plotting: Line, Circle	2	3
Test	Power Point slides with Tut.	polygon plotting	2	4
	Power Point slides with Tut.	Shades and color	2	5
Mid Exam.1	Power Point slides with Tut.	Curves, plotting using mathematical function representation	2	6
	Power Point slides with Tut.	Mapping	2	7
Quize	Power Point slides with Tut.	Clipping	2	8
	Power Point slides with Tut.	Reflection	2	9
	Power Point slides with Tut.	Rotation	2	10
	Power Point slides with Tut.	Projection	2	11
Mid Exam 2.	Power Point slides with Tut.	3 D graphics	2	12
	Power Point slides with Tut.	Projection in 3 Dimension	2	13
	Power Point slides with Tut.	animation	2	14
	Power Point slides with Tut.	Projection on specific point	2	15

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	**Textbook:** **1. Computer Graphics, Prentice Hall, 2000, D. Hearn and M. Baker** **2. Procedural Elements for Computer Graphics, McGraw Hill, 1995, David F. Roger**
Special requirements (include for example workshops, periodicals, IT software, websites)	**Web Site** • **http://www.mhhe.com/rosen**
Community-based facilities (include for example, guest Lectures , internship , field studies)	

13. Admissions	
Pre-requisites	**a)Compulsory prerequisites: Math I, Math II** **b) Recommended prerequisites : Discrete Mathematics**
Minimum number of students	25
Maximum number of students	30

Course Description Form

1. Course Name:
Computer Skills IV – Introducing Linux
2. Course Code:
3. Semester / Year:
2nd / Second Year
4. Description Preparation Date:
23-03-2024
5. Available Attendance Forms:
Compulsory
6. Number of Credit Hours (Total) / Number of Units (Total)
15 Hours (Practical) / 1 Unit
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Jamal M. Kadhim Email: jamal.mohammedkadhim@nahrainuniv.edu.iq
8. Course Objectives

Course Objectives	To make a student familiar with Linux (kubuntu Distro.)

9. Teaching and Learning Strategies	
Strategy	Lab Assignment, quizes

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		What is Linux? What is Linux Disro.? Installing Virtual Box Installing Linux	b Assignments	Lab Activity
2	=		- Exploring Dolphin (File Manager) Dealing with Files and	=	Lab Activity

			folders (i.e., creating, editing, copying, and deleting) - Exploring Add/Remove Software through Discover (general view), and how to launch it. - How to add a keyboard shortcut to an installed software.		
3	=		Exploring adding software to main panel, in addition to creating keyboard shortcut. - How to add a new user account. - How to understand user's and administrator's privileges, and how to modify these privileges. - Logout from and login into these accounts.	=	Lab Activity
4	=		- System Monitor - Libreoffice - Konsole - Introducing BASH date command cal command pwd command ls command relative and absolute path names cd command using TAB in editing	=	Lab Activity
5	=		- More on ls ls -Shat - file command - less command - Exploring system directories	=	Lab Activity
6	=		Manipulating Files and Directories cp, mkdir, mv, rm,	=	Lab Activity
7	=		Mid Exam #1	=	
8	=		Redirection	=	Lab Activity

9	=		Permissions	=	Lab Activity
10	=		Package Management	=	Lab Activity
11	=		Mid Exam#2	=	Lab Activity
12	=		Searching for Files	=	Lab Activity
13	=		Archiving and backups	=	Lab Activity
14	=			=	Lab Activity

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)	- The Linux Command Line, Fifth Internet Edition, by William Shotts. - Some additional Useful Web Sites.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: Probability and Statistics

2. Course Code: MATH217

3. Semester / Year: The Second Semester / 2024

4. Description Preparation Date: 18/3/2024

5. Available Attendance Forms: Official working hours

6. Number of Credit Hours (Total) / Number of Units (Total) :45 hours / 45 units

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

Name: Lamyaa Khalid Hussein Email: lamyaa.khalid@nahrainuniv.edu.iq
Name: Wisam Rafid Dawood Email: wisam.rafid@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	• Methods of describing, collecting, and displaying data, applying some statistical measures to it, and calculating various probability values. • Understanding probability and its application areas. • Statistical distributions and their properties.

9. Teaching and Learning Strategies

Strategy	Course outcomes and teaching, learning and evaluation methods A- Cognitive objectives • Enabling students to understand the foundations, theories and knowledge of statistics. • Enabling students to understand the language of statistics, including symbols, terms, figures, and tables And its interpretation. • Enabling students to acquire and understand strategies, methods and techniques for teaching statistics. • Enabling students to understand statistics as an integrated system of knowledge and its Interpretation of some natural phenomena. • Enable students to tabulate statistical data and calculate statistical standards Various experiments and conducting random experiments, as well as calculating probability values for different experiments. B- The skills objectives of the course. • Choosing the appropriate distribution of data in the case of applied studies. • Enabling students to have the ability to collect data (quantitative and numerical) and tabulate it And its representation. • Enabling students to employ the laws and rules of statistics in other sciences. • Enabling students to acquire the skills of presenting and discussing statistical

theories and reaching the proof stage.
• Enable students to acquire the skills of understanding and reading figures and tables Statistical symbols and terminology

Teaching and learning methods
• Oratory method (lectures).
• Method of dialogue and discussion.
• Reports and projects.
• Oral discussions

Evaluation methods
• Written or objective tests, quarterly or monthly.
• Grades for research and reports related to the lecture topic.
• Class assignments.

Emotional and value goals
• Understand the basic concepts of probability and statistics.
• Developing students' sense of responsibility during the study period.
• Forming positive inclinations and trends among students towards studying statistics.
• Introducing students to the importance of statistics and its effective role in cultural progress and development Scientific.

Transferable general and qualifying skills (other skills related to employability and personal development).
• Students acquire statistical skills to solve some real-life problems.
• Enabling the student to manage time and invest it in achieving the best goals.
• Work quality and efficiency within the team.
• Facing professional pressures positively.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understand the foundations Statistics	• Introduction to Statistical Terms • Populations and Samples	Lectures Dialogue and and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
2	3	Understand he foundations Statistics	• Statistical Description of Data	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the

					topic of the lecture
3	3	Understand he foundations Statistics	• Graphical Representation of data including frequency tables and charts	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
4	3	Understand the foundations Statistics	• Measures of Central Tendency Arithmetic Mean, Weighted Mean, The Harmonic Mean, The Quadratic Mean, The Geometric Mean	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
5	3	Understand the foundations Statistics	• The Median, The Mode	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
6	3	Understand the foundations Statistics	• Measures of Dispersion , The Range, Variance and Standard Deviation	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
7	3	Understand the foundations Statistics	• Introduction of Probability Theory • General Rule of Probability	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture

8	3	Understand the foundations Statistics	• Counting Rule	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
9	3	Understand the foundations Statistics	• Bayes Theorem	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
10	3	Understand the foundations Statistics	• The Normal Distribution • Applications of the standard Normal Distribution	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
11	3	Understand the foundations Statistics	• Binomial Distribution • Poisson Distribution	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
12	3	Understand the foundations Statistics	• Correlation • Pearson's Correlation	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
13	3	Understand the foundations Statistics	• Simple Linear Regression	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for

					reports associated On the topic of the lecture
14	3	Understand the foundations Statistics	• Chi Square Distribution • Chi Square test of goodness fit	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture
15	3	Understand he foundations Statistics	• Introduction to Hypothesis Testing • Writing hypotheses for Statistical tests	Lectures Dialogue and discussion and oral discussions and reports	Monthly tests Class assignments Grades for reports associated On the topic of the lecture

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

Second Semester				**The Final Exam**
the first exam	the second exam	Reports	Assignments	
15	15	5	5	60

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Modern Mathematical Statistics with Applications, Jay L. Devore, Kenneth N. Berk, Springer, 2012. • Mathematical Statistics with Applications, Dennis D. Wackerly, William Mendenhall III, Richard L. Scheaffer, Thomson Brooks, 2008.
Main references (sources)	• Introduction to statistics, by Ronald E. Walpole. • Introduction to statistics, by Ronald E. Walpole. • Recommended Resources: Introduction to the theory of statistic, by Alxander Mood and

	Franclin Garyb1ill. • Introduction to probability theory", by P.G Heol.
Recommended books and references (scientific journals, reports...)	• Mathematical Statistics with Applications", 7th edition, by Wackerly,Mendenhall & Scheaffer
Electronic References, Websites	• Mathematical Statistics", by A.H.hirmez

Course Description Form

1. Course Name:

System Programming

2. Course Code:

COMP210

3. Semester / Year:

Second Semester/ 2023-2024

4. Description Preparation Date:

2024/3/21

5. Available Attendance Forms:

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

45 Theory + 30 Practical / 4 units

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

Name: Dr.Sawsan Kamal Thamer, Hayder Majeed, Ruaa AbdulAllah
Email: sawsan.kamal@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	• Study the types of system software • Understand the way that each system program works • The connection among system software that complete the computer work

9. Teaching and Learning Strategies

Strategy	Lectures, and solving assignments in Lab

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 & 2	3 theory		Introduction to Software, Application Software, System Software , System Software Examples	Formal Lectures	Class Activity

3	=		Operating System, Shell, BIOS	=	Class Activity and Quiz
4	=		Hupervisors	=	Class Activity and Quiz
5	=		Interrupts (Hardware & Software) Executing Software Interrupts	=	Class Activity
6 & 7	=		Language processors	=	Class Activity and Quiz
8	=		Addressing modes	=	Class Activity
9 & 10	=		Assembler (with all its details)	=	Class Activity
11	=		Macros and Subprograms	=	Class Activity and Quiz
12	=		Linkers (Static & Dynamic Linkers), Loaders	=	Class Activity
13& 14	=		Text editor	=	Class Activity
15	=		Debugger	=	Class Activity

11. Course Evaluation

The course evaluation from 100, 25 for mid exams and quizzes, 15 for lab assignments, 10 for final Practical exam, 50 for final exam.

12. Learning and Teaching Resources

Required textbooks (curricular books any)	Computer Systems: Programmer's Perspective, 2nd ed. by Bryant, O'Hallaron.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Windows System Programming, 3rd edition by Johnson M. Hart

13. Lab tasks description	
Week No.	Lab Assignments
1 & 2	Read a string char by char then display it
3 & 4	Separate the sentence into distinct words
5	Store the words in different lines
6	recognize the desired word from set of keywords
7	Execute the recognized command
8	Mid Exam 1
9	Check syntax error in the input line command
10 & 11	Call the suitable function for each command
12	Read an input from keyboard using interrupts
13	Print a string on the screen using interrupt
14	Mid exam 2
15	Review about all the course work

Course Description Form

1. Course Name: Arabic Language

2. Course Code: URARA

3. Semester / Year: Phase II

4. Description Preparation Date: 2024/2/20

5. Available Attendance Forms: Integrated Education

6. Number of Credit Hours (Total) / Number of Units (Total) : 30hours per year

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

Name: D. Rana Majed Hameed
Email: Rana.Majid@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	**Acquiring knowledge skills about linguistic concepts.** **Keep the tongue from falling into the word's pronunciation error.** **Developing the student's expressive abilities.** **Teaching students to analyze the speech system.** **Teach students to distinguish between the origins of the word or increase and what it does in increasing meaning.** **Teaching students on methods and rules of control and drafting of vocabulary.** **Enabling the student to use the language vocabulary in the proper location.** **Provide training to strengthen the student's queen and develop his ability in language practice and influential rhetoric while benefiting from Experiences and trainings.**

9. Teaching and Learning Strategies

Strategy	1. POWERPOINT DISPLAY 2. Writing Reports- 3. Quarterly Tests- 4. Discussing and Solving Questions 5. Homework

10. Course Structure

Week	Hours	Required Learning Outcomes			Unit or subject name
First	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Concept of language errors	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Second and Third	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Tie-in and Tip-Out Rules	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Fourth and Fifth	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	A thousand outstretched and cabin	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Sixth	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Solar and lunar letters	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Seventh and Eighth	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Aldad and Lightness	Lecture, class discussion and training	Daily and quarterly examinations and examinations
Ninth and Tenth and Eleventh	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Writing whispering (connecting and cutting, intermediate whispering, extreme whispering)	Lecture, class discussion and training	Daily and quarterly examinations and examinations
The Twelfth and Thirteenth	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and	Punctuation marks	Lecture, class discussion and training	Daily and quarterly examinations and examinations

		express it eloquently.			
Fourteenth And Fifteen,	1	The student acquires linguistic skills and improves the writing sketch in order to be able to write and express it eloquently.	Name, verb and differentiation	Lecture, class discussion and training	Daily and quarterly examinations and examinations

1. Course Evaluation

Daily preparation: (10) degrees
Daily exams: (10) Degree
Monthly exam: (20) Degree
Reports: (20) Degree
Seminar: (20) Degree
Homework: (20) Degree

2. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Expression, creation, written drawing and written dictation/a. d. Abdulrahman Matlak al-Jabouri
Main references (sources)	Clarify the trajectory of the millennium of the son of Malik/Ibn Hisham. Qatar al-Nada and Bel al-Echo of Hisham's son. as adequate as Abbas Hassan, is a shrewd custom in the art of drainage, polite in drainage.
Recommended books and references (scientific journals, reports…)	Adequate Grammar / Abbas Hassan.
Electronic References, Websites	https://maktabeti.com https://www.noor-book.com

Course Description Form

1. Course Name:

Artificial intelligence

2. Course Code:

COMP340

3. Semester / Year:

First Semester/ 2023-2024

4. Description Preparation Date:

21/3/2024

5. Available Attendance Forms:

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

30 Theory + 30 Practical / 3 units

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

Name: Dr.Sawsan Kamal Thamer, Ruaa AbdulAllah Jabir, Bahera Hani Nayef
Email: sawsan.kamal@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	• **Learning the principles of A.I** • **Learning the principles of Agents** • **Learning search techniques**

9. Teaching and Learning Strategies

Strategy	Lectures, and solving assignments in Lab

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theory 2 Lab		Introduction of Artificial intelligence	Formal Lectures	Class Activity
2	=		AI as Study and Design of Intelligent Agents	=	Class Activity and Quiz
3	=		AGENTS AND ENVIRONMENTS	=	Class Activity and Quiz

4	=		THE CONCEPT OF RATIONALITY	=	Class Activity and Quiz
5	=		THE NATURE OF ENVIRONMENTS	=	Class Activity
6	=		Mid1 Exam	=	
7	=		THE STRUCTURE OF AGENTS -Simple reflex agents -Model based Reflex Agents	=	Class Activity
8	=		-Goal-based Agents - Utility-based Agents	=	Class Activity
9	=		- Learning Agents	=	Class Activity
10	=		PROBLEM SOLVING AGENTS	=	Class Activity and Quiz
11	=		EXAMPLE PROBLEMS	=	Class Activity
12	=		SEARCHING FOR SOLUTIONS	=	Class Activity
13	=		UNINFORMED SEARCH STRATEGIES(Breadth first search)	=	Class Activity and Quiz
14	=		Mid2 Exam		
15	=		-Depth-first search - A* algorithm	=	Class Activity

11. Course Evaluation

The course evaluation from 100, 25 for mid exams and quizzes, 15 for lab assignments, 10 for final Practical exam, 50 for final exam.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Artificial Intelligence: A Modern Approach, 4th ed. by Stuart Russell and Peter Norvig
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Artificial Intelligence: Foundations Computational Agents, 3rd edition by David Poole and Alan K. Mackworth

13. Lab tasks description	
Week No.	Lab Assignments
1	General introduction for agent
2	Create Customer Class
3	Create Server Class
4	Create Agent Class
5	Connect all of the above classes in one program
6	Make a menu to manage the orders
7	Mid Exam 1
8	Explain how robots work
9	Create the ground floor array
10	Create the vaccum class
11	Methods for the vaccum moves: right, left, up, and down
12	Method to Suck the dirt
13	create different modes for the vaccum work
14	Mid exam 2
15	Review about all the course work

Course Description Form

1. Course Name:

Computer Architecture

2. Course Code:

COMP221

3. Semester / Year:

First Semester/ Third Year

4. Description Preparation Date:

26/3/2024

5. Available Attendance Forms:

- Theory Lectures
- Practical Lab

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. Safaa Hussein Shwail
Email: safaa.husseinshwail@nahrainuniv.edu.iq

8. Practical Teaching

Dr. Safaa H. Shwail
Ass. Lec. Hanaa Mohammed
Ass. Lec. Zaineb Haider

9. Course Objectives

Course Objectives	• Give a complete knowledge about how to represents data inside the computer system, floating point representation, and error detection method. • How the data transfer between the processor's registers and main memory and how to implement the arithmetic and logic micro-operations. • How to design and organization a basic computer, micro-programmed control, central processing unit, I/O organization, pipeline and vector processing, and multiprocessors.

10. Teaching and Learning Strategies

Strategy	The main strategy that will be adopted in delivering this module is by explaining lectures in an interactive way by letting the students to participate in the presenting through questions and answers while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and labs.

11. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Fixed-Point Representation Floating-Point Representation Other Binary Codes Error Detection Codes	Data Representation	Theoretical Lectures	quiz
2	2	Register Transfer Bus and Memory Transfers Arithmetic Microoperations Binary Adder Binary Adder-Subtractor	Register Transfer and Microoperations	Theoretical Lectures	quiz
3	2	Binary Incrementor Arithmetic Circuit Logic Microoperations Some Applications Shift Microoperations	Register Transfer and Microoperations	Theoretical Lectures	quiz
4	2	Instruction Codes Stored Program Organization Indirect Address Computer Registers Common Bus System Computer Instructions Instruction Set Completeness	Basic Computer Organization and Design	Theoretical Lectures	quiz
5	2	Timing and Control Instruction Cycle Determine the Type of Instruction Register-Reference Instructions Memory-Reference Instructions Input-Output and Interrupt Complete Computer Description	Basic Computer Organization and Design	Theoretical Lectures	quiz
6	2	Control Memory Address Sequencing	Micro-programmed Control	Theoretical Lectures	quiz
7	2	Conditional Branching Mapping of Instruction Subroutines	Micro-programmed Control	Theoretical Lectures	quiz
8	2		Mid-Course Exam 1		
9	2	General Register Organization Control Word Examples of Microoperations	Central Processing Unit	Theoretical Lectures	quiz
10	2	Stack Organization Reverse Polish Notation	Central Processing Unit	Theoretical Lectures	quiz
11	2	Input-Output Interface I/O Bus and Interface Modules *I/O* versus Memory Bus	Input-Output Organization	Theoretical Lectures	quiz

		Isolated versus Memory-Mapped I/O			
12	2	Example of I/O Interface Asynchronous Data Transfer Asynchronous Serial Transfer Modes of Transfer	Input-Output Organization	Theoretical Lectures	quiz
13	2	Parallel Processing	Pipeline and Vector Processing	Theoretical Lectures	quiz
14	2	Pipelining	Pipeline and Vector Processing	Theoretical Lectures	quiz
15	2		Mid-Course Exam 2		

12.Lab Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	what is assembly language? inside the cpu general purpose registers	what is assembly language? inside the cpu general purpose registers	Examples in Emulator program	Assignment
2	2	segment registers special purpose registers Memory Access	segment registers special purpose registers Memory Access	Examples in Emulator program	Assignment
3	2	MOV instruction Variables	MOV instruction Variables	Examples in Emulator program	Assignment
4	2	Arithmetic instructions	Arithmetic instructions	Examples in Emulator program	Assignment
5	2	logic instructions	logic instructions	Examples in Emulator program	Assignment
6	2		Mid1 Exam		
7	2	Lables,control flow program	Lables,control flow program	Examples in Emulator program	Assignment
8	2	conditional and non conditional jump	conditional and non conditional jump	Examples in Emulator program	Assignment
9	2	Loop instruction	Loop instruction	Examples in Emulator program	Assignment
10	2	Factorial,Power,Summation	Factorial,Power,Summation	Examples in Emulator program	Assignment
11	2	Arrays	Arrays	Examples in Emulator program	Assignment

12	2	Library of common functions - emu8086.inc	Library of common functions - emu8086.inc	Examples in Emulator program	Assignment
13	2	Array exercises	Array exercises	Examples in Emulator program	Assignment
14	2		Mid2_Exam		
15	2		Final Exam		

13. Course Evaluation

10 Quizzes
5 Assignments
15 Lab
10 Report
10 Midterm Exam
50 Final Exam

14. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer System Architecture, 3rd edition, by M. Morris Mano
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Computer Skills IV
2. Course Code:
3. Semester / Year:
First semester/ third year
4. Description Preparation Date:
27-3-2024
5. Available Attendance Forms:
Full Time
6. Number of Credit Hours (Total) / Number of Units (Total)
30 h/2 units
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Prof. Dr. Dalal N. Hamood Email: dalal.naeem@nahrainuniv.edu.iq Asst. Prof. Nadia Fadhel nadia.f.al-bakri@nahrainuniv.edu.iq Asst.Lec. Assel Basim Asst. Lec. Ruaa Abdullah
8. Course Objectives

Course Objectives	*Learn how to prepare and install Windows Operating System and devices.* *- Learn how to Maintain Computer Software.* *- Learn how to secure computer and the types of viruses and data compression.*

9. Teaching and Learning Strategies	
Strategy	Labs, Reports, and Discussions

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		BIOS	Practical	
2	2		Installing Windows and Device Drivers	Practical	Quiz

3	2		Back up and data Compression	Practical	Quiz
4	2		Installing Device Drivers	Practical	Report +Quiz
5	2		Windows Booting	Practical	
6	2		Windows Security a Viruses	Practical	Quiz
7	2		Virtual Machines	Practical	Quiz
8	2		Exam (mid1)	Practical	Exam
9	2		Cloud computing definitions	Practical	Questions and answers
10	2		Cloud services and its benefits	Practical	Quiz
11	2		Registration to AWS	Practical	Questions and answers
12	2		Ec2	Practical	Quiz
13	2		Exam (mid2)	Practical	
14	2		Building virtual machine with EC2	Practical	Quiz
15	2		EC2 applications	Practical	Quiz

11. Course Evaluation

Mid 10
Quizzes 10
HW 10
Activities (or report) 10
Final exam 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	▪ Complete CompTIA A+ Guide to IT Hardware and Software 7th Edition By CHERYL A. SCHMIDT
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Database I
2. Course Code:
COMP 330
3. Semester / Year:
First Semester/ Third year
4. Description Preparation Date:
1/10/2023
5. Available Attendance Forms:
Fulltime/Attendance Mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)
60 Hours (30 Theoretical Hours + 30 Practical Hours) / 3 Units
7. Course administrator's name (mention all, if more than one name)
Name: Lecturer Dr.Rasool Hisham Al-Saadi Email: rasool.hisham@nahrainuniv.edu.iq Lab instructors: - Lecturer Zahraa Abdulhussien - Lecturer Ehsan Qahtan Ahmed - Assistant Lecturer Azhar Flaih - Assistant Lecturer Zeyad Mohammed Abed

8. Course Objectives	
Course Objectives	• Understanding database management systems principles and it main components • The ability to design and implement databases correctly • Understanding the relational algebra for optimized retrieving data from database • Writing simple to moderate SQL queries

9. Teaching and Learning Strategies	
Strategy	• Theoretical lectures with interactive activities such as brainstorming, asking questions and discussing answers to improve students' analysis and inference strategies. Addition, direct instruction, active learning and problem-based learning are used throughout the course • Practical labs complemented with technology integration and collaborative learning focus on problem solving

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	Understanding the meaning of database and its objectives	•Information, Database, Database Management System. •Objectives of DBMS. •File-Based System •Drawbacks of File-Based System	Describe, Discuss, and practice	Class Activity
2	2	Understanding the DBMS approach and ANSI data model	•DBMS Approach Advantages of DBMS (Centralized Data Management, Data Independence, Data Consistency) •ANSI/Spark Data Model, Abstraction, Data Independence, Levels of Abstraction, Database Instances, Database Schema	=	Class Activity and Quiz
3	2	Understanding the basic components of DBMS	•Components and Interfaces of Database Management System (Hardware, Software, Data, Procedure, People Interacting with Database, Data Dictionary)		Class Activity and Quiz
4	2	Understanding Functional Components DBMS and Database Architecture	•Functional Components of Database System Structure •Storage Manager • Database Architecture		Class Activity and Quiz
5	2	The students will be able to design simple databases using ER diagrams	• Overview of Database Design • Data Modeling Using the Entity-Relationship Model • ER Diagram • Classification of Entity Sets • Attribute Classification • Relationship Degree		Class Activity and Quiz

			•Relationship Classification		
6	2		Written exam 1		Written exam
7	2	Understanding the relational model and concepts. The students will be able to design simple relational database	•Relational Model •CODD'S Rules •Relational Model Properties •Relation Schema and Relation Instance •Concept of Key •Relational Integrity and Constraints		Class Activity and Quiz
8	2	The students will be able to write basic relational algebraic expressions	•Relational Algebra •Role of Relational Algebra in DBMS •Relational Algebra Operations •Selection, Projection, Union, Intersection, Difference		Class Activity and Quiz
9	2	The students will be able to write and analyze more advanced relational algebraic expressions	•Cartesian Product Operation • Join Operations • Types of Join Operation • Natural Join • Equi Join • Theta Join • Outer Join Examples of Relational Algebra Queries		Class Activity and Quiz
10	2	The students will be able to write basic DML statement	•Structured Query Language •Introduction •Commands in SQL •Data Manipulation Language •Inserting New Data		Class Activity and Quiz
11	2	The students will be able to write basic DML statement	•Updating Data •The WHERE Clause •The Logical Operators AND and OR •Deleting Data		Class Activity and Quiz
12	2		Written exam 2		Written exam
13	2	Writing basic queries to retrieve data from the	•Extracting Information Using the SELECT Statement •Returning Only Distinct Rows		Class Activity and Quiz

		database and filter the results	•Using Aliases •Filtering Results with the WHERE Clause •Logical Operators •NOT Operator •BETWEEN Operator •LIKE Operator •IN Operator •Ordering Results		
14	2	Understanding data grouping and aggregating using SQL	•INSERT INTO with the SELECT Statement •Grouping and Aggregating Data •Using the HAVING Clause with GROUP BY Statements •Selecting Data from Different Tables (inner join, outer join, union)		Class Activity and Quiz
15	2		Solving more questions and review of semester learning outcome		Class Activity and Quiz

11. Course Evaluation

Weekly quizzes + assignments: 5
Mid written exams: 20
Weekly practical assignments: 15
Final practical exam: 10
Final theoretical exam: 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management Systems", Springer, 2007.
Main references (sources)	Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of Database Systems", 4th Edition, Addison Wesley, 2003.
Recommended books and references (scientific journals, reports...)	• Raghu Ramakrishnan , Johannes Gehrke, "Database Management Systems", 3rd Edition, McGraw Hill, 2003. • Paul Wilton, John W. Colby, "Beginning SQL", Wiley Publishing, Inc. 2005.
Electronic References, Websites	

13. Practical Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		•Lab introduction •How to use Microsoft Access	Describe, Discuss,	Lab Activity

				and practice	
2	2		Tables, objects data types, and properties	=	=
3	2		Quires	=	=
4	2		Forms		
5	2		Reports	=	=
6	2		Exam	=	=
7	2		•Introduction to MySQL DBMS and MySQL workbench tool	=	=
8	2		•Creating diagrams, schemas and establishing relationships between tables.	=	=
9	2		Introduction to DML. •Practicing basic commands	=	=
10	2		•Inserting, updating and deleting data	=	=
11	2		•Extracting information using the SELECT statement •Returning Only Distinct Rows •Using Aliases •Filtering Results with the WHERE Clause	=	=
12	2		Exam		
13	2		•Logical Operators •NOT Operator •BETWEEN Operator •LIKE Operator •IN Operator •Ordering Results •Selecting Data from more than one table	=	=
14	2		•INSERT INTO with the SELECT Statement •Grouping and Aggregating Data •Using the HAVING Clause with GROUP BY Statements •Selecting Data from Different Tables (inner join, outer join, union)	=	=
15	2		Examples and review	=	=

Course Description Form

1. Course Name:
Digital Image Processing
2. Course Code:
COMP 60
3. Semester / Year:
Third year/ Semester-1/ 2023
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
30 Hours (theoretical) + 30 Hours (Practical)
7. Course administrator's name (mention all, if more than one name)
Name: Khamael Al-Dulaimi Email: khamail.abbass@nahrainuniv.edu.iq
8. Course Objectives

Course Objectives	• This unit delivers an understanding the concepts in theoretical and practical aspects of digital images and th skills required to manipulate images to enhance features and extract quantitative and qualitative information. • We focus on specific areas of study include the structur of digital images; applications of image processing in medical, astronomy and remote sensing; image display techniques; image processing analysis, enhancement an restoration; grey scale, colour perception, colour models, image formats, Fourier transforms; convolutions; spatial filtering; Fourier space filtering; methods of image reconstruction. • Examples and exercises demonstrate the use visual stuc and functionality

9. Teaching and Learning Strategies	
Strategy	**Lecture—Showing** **Worked Examples** **Socratic Questioning** **Discussion-Based Learning** **Project-Based Learning**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
W1	2		Introduction	Lecture—Showing	
W2	2		Image representation	Lecture—Showing	
W3	2		Aspects of image processing	Socratic Questioning And Discussion-Based Learning	Oral Questions
W4	2		Image converting	Worked Examples	Paper Quiz
W5	2		Image enhancement	Worked Examples	
W6	2		Image filtering	Worked Examples	Online test
W7	2		Mid Exam 1		
W8	2		Image arithmetic	Socratic Questioning Discussion-Based Learning	Oral Questions
W9	2		Image arithmetic	Worked Examples	Paper Quiz
W10	2		Transformation	Worked Examples	Online test
W11	2		Mid exam 2		
W12	2		Edge Detection	Worked Examples	Oral Questions
W13	2		Image zoom	Worked Examples	Paper Quiz
W14	2		Create editor and convert GIF	Project-Based Learning	assignment
W15	2		Fourier Transform		

11. Course Evaluation

First Mid-Term Exam 8%
Second Mid-Term Exam 7%
Quizzes 5%
Assignments 5%
Laboratory (15% for Evaluation) Total: 40%
Final Lab exam 10%
Final Exam 50%

12. Learning and Teaching Resources

Required textbo (curricular books, if ar	Digital Image Processing, 3rd edition by Rafael C. Gonzalez a
Main referen (sources)	
Recommended books and	https://dl.ebooksworld.ir/motoman/Digital.Image.Processing.3rd.Edition ;www.EBooksWorld.ir.pdf

references (scientific journals, reports…)	
Electronic References, Websites	https://www.ssla.co.uk/digital-image-processing https://www.simplilearn.com/image-processing https://www.sanfoundry.com/1000-digital-image-processing-questions-answers/

13. Practical Staff

- Lec. Najwan Abd Hassan
- Asst. Lec. Israa Hussien
- Asst. Lec. Farah Saad

14. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
W1	2		How to organize our (GUI) i.e. the form of the project: Drag and drop from tools	Worked Examples	Oral Questions
W2	2		FILE inside the file type the followings: a. LOAD1 b. LOAD2 c. SAVE d. EXIT	Worked Examples	computer Quiz
W3 W4 W5 W6	2		OPERATIONS inside this tab type the followings: a. RED b. GREEN c. BLUE d. GRAY e. BINARY f. Brightness g. Contrast h. Negative i. And operation	Worked Examples	Oral Questions
W7	2		Mid Exam		computer Quiz
W8	2		Image arithmetic operation	Worked Examples	computer Quiz
W9	2		Image arithmetic	Worked Examples	computer Quiz
W10	2		Transformation Scale	Worked Examples	
W11	2		Transformation reflection		Oral Questions

W12	2		Edge Detection Sobel, Prewitt	Worked Examples	computer Quiz
W13	2		Image zoom in and out	Worked Examples	
W14	2		Project	Project-Based Learning	Finishing project
W15	2		Fourier Transform	Worked Examples	

Course Description Form

1. Course Name:
Language Translator I
2. Course Code:
3. Semester / Year:
First semester / Third year
4. Description Preparation Date:
2023− 2024
5. Available Attendance Forms:
On campus/ Full time
6. Number of Credit Hours (Total) / Number of Units (Total)
5 hours (2 Lec.+2 Lab+1 tutorial) *15= 60
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Tiba Zaki Abdulhameed, tiba.zaki@nahrainuniv.edu.iq Lab Khairiyah S.Aldabas , khairiyah.s.aldabas@nahrainuniv.edu.iq Ruaa Abdullah ruaa.abdullah@nahrainuniv.edu.iq Dr. Hasnaa Imad Abdulsalam hasna.imad@nahrainuniv.edu.iq
8. Course Objectives

Course Objectives The main objective of this course is to familiarize students with the fundamental principles of compiler operation. It focuses on virtual programming and emphasizes the mechanism of compilers, which is divided into two stages (analysis and synthesis). The emphasis is on the first stage, where the student becomes acquainted with the concept of symbol table and error table, and how to deal with them during linguistic translator operation.	A.Cognitive goals . A1-The student will be familiar with the terminology of programming language translators. A2-Capable of distinguishing between the available types of translators and identifying their strengths and weaknesses. A3-The student will understand the stages of translating programs from high-level languages to machine language. A4-Understanding sentence structure using language rules. A5-The student will be able to deduce the reasons for linguistic errors encountered during programming. A6-Capable of learning new programming language rules easily. A7-The student will connect the subject of translators with other courses. A8-Bringing about a change in the student's thought process to enable them to critique available translators and propose improvements. B. The skills goals special to the course. B1- Enhancing the student's scientific language proficiency.

	B2- Improving the student's ability to solve problems using programming methods. B3- The capability to search for information and find it easily. B4- The ability to read references in English and comprehend them.

9. Teaching and Learning Strategies

Strategy	Interactive theoretical lectures that rely on student participation, (such as Jigsaw, think pair share, and Brainstorming through asking questions that aid students in analysis and inference strategies.) In addition to laboratory work and discussions

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Understanding Learning Outcomes and Evaluation: The student will comprehend the expected outputs of the lesson and the assessment methods. Introduction to Programming Language Classification: Students will be introduced to the classification of programming languages. Analyzing Thought Process for Language Acceptance: The student will analyze their thought process to determine acceptable words in a language. Identifying Basic Sentence Elements: Students will be capable of identifying the basic elements of a sentence. Distinguishing Between Translator Program Designer	This lesson plan aims to provide students with a foundational understanding of programming languages, including theoretical concepts and practical applications. Theoretical elements include language components and classification, while the practical exercise involves file manipulation using Java. **Theoretical Topics:** • Elements of language. • Classification of programming languages. **Practical Exercise:** • Opening and reading a file using the Java language.	Interactive lectures	Participation and daily tests + Daily lab assessment

		and Programmer: The student will differentiate between a program designer using a translator and a programmer.			
2	5	1.The student distinguishes between the work of the two main types of translators. The student deduces the advantages of each type, as well as strengths and weaknesses. They can predict the type of translator suitable for the languages they use.	Compiler and interpreter Practical:- Read from text file and eliminating spaces and comments	Interactive lectures	Participation and daily tests Daily lab assessment
3	5	The student lists the stages of a translator, understands the function of each stage, recalls the sequence of stages through drawing and examples, distinguishes the role of the lexical analyzer, and identifies errors that appear for the programmer in this stage.	Compiler stages Practical: Start building token table.	Interactive lectures	Participation and daily tes Daily lab assessment
4	5	The student knows the symbol table, specifies its tasks and types, and applies the concept to one of the programs.	Symbol Table Management Practical :- Complete the token table	Interactive lectures	Participation and daily tes Daily lab assessment
5	5	The student identifies errors that occur at this stage and the differences.	Semantic analyzer Practical :- Complete the token table	Interactive lectures	Participation and daily tes Daily lab assessment
6	5	The student can generate intermediate code, determine its features, know three types of intermediate code, define its function, learn methods to improve and optimize intermediate code for execution speed,	Intermediate code generation Intermediate code Optimization Practical :- Complete the token table	Interactive lectures	Participation and daily tes Daily lab assessment

		enumerate some points used for code improvement, compare storage and speed for a number of optimized and non-optimized codes performing the same function, and apply optimization with examples.			
7	5	The student lists types of errors, suggests methods for error presentation, critiques the translators they use, compares ways to divide the work of translators, lists language classifications, distinguishes types of programming languages they currently use, compares different languages and their uses.	Theoretical: Error Handling Practical: Completion of creating the word table The grouping of phases into passes Building a table for error messages	Interactive lectures	Participation and daily tes Daily lab assessment
8		Mid exam 1			
9	5	The student links computational theory, data structures, and programming, reaching a method for programming Deterministic Finite Automata (DFA).	Theoretical: Study of the Lexical Stage Simulating DFA Practical: Initiating the construction of the symbol table	Interactive lectures	Participation and daily tes Daily lab assessment
10	5	The student infers the advantages of DFA in programming and suggests ways to programmatically convert NFA to DFA.	Theoretical: NFA to DFA Practical: Completion of the symbol table.	Interactive lectures	Participation and daily tes Daily lab assessment
11	5	The student applies the DFA minimization method, is able to analyze an NFA program,	- Minimizing DFA - Simulating NFA - Algorithm complexity comparison of simulating NFA and DFA - Regular Expression to DFA (review from computation theory) Practical: - Completion of the symbol table.	Interactive lectures	Participation and daily tes Daily lab assessment

12	5	Can draw a syntax tree, applies word derivation rules to examples, distinguishes Context-Free Grammar (CFG), differentiates ambiguous from non-ambiguous rules, analyzes the risk of designing ambiguous rules, defines the type of parsing with Recursive Descent, and understands the requirements for rule form, such as eliminating left recursion and left factoring.	The Role of Syntax Analysis CFG (Context-Free Grammar) Top-Down Parsing Recursive Descent Parsing Ambiguous Grammar Left Factoring Eliminating Left Recursion Practical:- Building DFA (Deterministic Finite Automaton) for decimal numbers and floating points.	Interactive lectures	Participation and daily tes Daily lab assessment
13	5	The student becomes familiar with new languages, acquires presentation skills, and the ability to ask questions and critique presentations	Students presentations for the new languages that they searched for.	Students Presents	Assessing the presentations
14	5	Mid exam 2			
15	5	Review and lab final exam			

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student as following:
Theoretical daily preparation 5% Practical lab daily preparation 5%
daily oral 2%,
written exams Theoretical monthly15% monthly Practical lab 10%,
Presentations 3%
Final Theoretical 50% practical lab 10%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Compiler (principles, techniques, and tools)** second edition Alfred V.Aho Columbia University Monica S.Lam Stanford University
Main references (sources)	Cooper, Keith D., and Linda Torczon. *Engineering a Compiler / Keith D. Cooper, Linda Torczon.* Third edition.., Morgan Kaufhann Publishers, 2022.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Eliminating left recursion https://www.gatevidyalay.com/left-recursion-left-recursion-elimination/ Left Factoring https://www.gatevidyalay.com/left-factoring-examples-compiler-design/ Ambiguous Grammar https://www.gatevidyalay.com/left-recursion-left-factoring-ambiguity-of-grammar/ syntax analyzer https://www.tutorialspoint.com/compiler_design/compiler_design_syntax_analysis.htm

	NFA to DFA https://www.javatpoint.com/automata-conversion-from-nfa-to-dfa

Course Description Form

1. Course Name: Human Rights And Democracy

2. Course Code:

3. Semester / Year: First/ 2023-2024

4. Description Preparation Date: 6/12/2023

5. Available Attendance Forms: In Presence

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

2 Hours weekly

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

Name: Ahmed Neama Jouda
Email: ahmedjuda68@gmail.com

8. Coarse Objectives

The aim of human rights and democracy lectures is to simplify the principles of human right and to assure democracy disciplines applying by equally and properly distribution among people in the society .

9. Teaching and Learning Strategies

Strategy	This is done through a booklet that was prepared by me using external sources such as books, newspapers, and the information network, through in-person lectures, and supporting this with illustrative means in Word or PDF format. It is carried out through weekly lectures and through observations made by the teacher and measuring the extent of . students' knowledge

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	One	The concept	Concepts about	Theoretical	

	Hour	of human rights	human rights and fundamental freedoms	lecture	
2			Categories and Features of Human Rights	Theoretical lecture	
3			Characteristics and advantages of human rights in Islam.	Theoretical lecture	
4			The difference between human rights and public freedoms.	Theoretical lecture	
5			Freedom, its concept and types.	Theoretical lecture	
6			Human rights In ancient civilizations (Mesopotamia civilization).	Theoretical lecture	
7			Human rights in ancient civilizations (Chinese,Hindu, Pharaonic and Greek Egypt).	Theoretical lecture	
8			Human rights in the heavenly religions (Christianity and Islam).	Theoretical lecture	
9			Human rights in the Middle Ages.	Theoretical lecture	
10			Human rights in the modern era and the international organizations responsible for implementing them.	Theoretical lecture	
11		Written Exam			
12			The concept of	Theoretical	

			democracy and it's characteristics .	lecture	
13			Types of democracy.	Theoretical lecture	
14			Pictures democratic systems.	Theoretical lecture	
15			Democratic political rights.	Theoretical lecture	

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.Universal Declaration of Human Rights (Drafting Committee of the Universal Declaration of Human Rights). 2. Human Rights (Thomas Paine). 3.Human rights in Islam (Ali Abdul Wahid).
Main references (sources)	3. Human Rights in the Divine Religions (Abdul Razzaq Rahim Salal) .
Recommended books and references (scientific journals, reports…)	Human rights in the Arab world (Hussein Jameel)
Electronic References, Websites	

Course Description Form

1. Course Name:
Data Coding and Data Compression
2. Course Code:
3. Semester / Year:
Second Semester/ 2023-2024
4. Description Preparation Date:
24 march 2024
5. Available Attendance Forms:
Attendance Study
6. Number of Credit Hours (Total) / Number of Units (Total)
60
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Abeer Khalid Al-Mashhadany Assistant Lecturers: Zainab Haider, Humam, and Isra Ali Email:
8. Course Objectives

Course Objectives	• **The aims of this course are to introduce the principles and applications of information theory. The course will study how information is measured in terms of probability and entropy, and the relationships among conditional and joint entropies; how these are used to calculate the capacity of a communication channel, with and without noise; coding methods.** • **The course will study how information is measured in terms of probability and entropy, and the relationships among conditional and joint entropies; how these are used to calculate the capacity of a communication channel, with and without noise; coding methods.** • **Ability to design coding for a file with minimum space.** • **Ability to design and implement java programming that manipulating coding problems.**
9. Teaching and Learning Strategies	
Strategy	• **Books, theoretical lectures and references to helpful websites** • **Providing the electronic presentation of the lecture…as an aid to clarification during the explanation of the lecture**

	• **Explanation on the board and solving examples with integrated details** • **Design and implementation of practical programs for programming algorithms** • **Solve multiple examples and engage the student by providing quick exercises, the opportunity to solve on the board, and motivating students to follow up and correct each other.** • **Homework examples from the article** • **In addition to homework that focuses on strengthening the student's programming skills within this subject**

10. Course Structure

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

Week No.	Date	Title	Sub-Titles	Reference	LAB.
1		**idle**			
2		"Information Theory-Data Coding and Data Compression"	• Data Coding Theory • What is Data Compression? • Why This Course? • Early Examples of Data Compression.	Your TextBook: Introduction [p1..p3]	String Methods
3		Compression Techniques	• Compression and reconstruction • Lossy & lossless Compression	Your Textbook: Compression techniques, lossless, lossy, measures, [p3-p6]	• String Quiz • Morse Code Table
4		**Idle**			
5		Compression Techniques	• Measures of Performance • Modeling and Coding	Your Textbook: modeling & coding [p6-p10]	• Morse Code
6		**Mid 1**			• Third Way of Modelling
7		Statistical Methods for Coding Integer Numbers	• Unary Code • Code 1 • Code 2 • Code 3 • Code 4	Reference 2	• Statistical methods

8		Introduction to Information Theory (IT)	• Information Theory • Self-Information • Probability • Entropy • Rate of the code • Uniquely Decodable Codes	Your Textbook: A Brief Introduction to Information Theory, [p13-p18] Coding, [p27-]	• Statistical methods
9		Huffman Coding	• Encoding • Decoding	Your Textbook: Chapter 3 p41	• Heavy quiz
10		عيد العمّال عطلة رسمية **idle**			
11		Huffman Coding	• Golomb code • Applications	Textbook: Chapter 3 p65 Textbook: Chapter 3 p72	• Huffman coding
12		**Mid 2**			• Huffman coding
13		Dictionary Techniques	• LZ77 • LZW	Textbook: Chapter 5 p117	•
14		Lossless Image Compression	• Run-Length Coding • Relative Encoding • BRL Coding	Textbook: Chapter 7: Run-length coding p179-180	• RL Coding • BRL Coding
15		**Final Lab Examination**			

11. Course Evaluation

preparation, Pre info quiz	02 marks
Weekly Lab ass. Mark	13 marks
5 Quiz per course, written exams	05 marks
Monthly, Two mids, written exams,	18 marks
HW, written examples	02 marks
daily oral, Special marks adding to course mark for active students	+ marks
Final Lab Exam	10 marks
Final Exam	50 marks

12. Learning and Teaching Resources

Required textbo (curricular books, if an	Khalid Sayooo , “Introduction to Data Compression”, Elsev Inc., 2006. References:
Main references (sourc	Guy E. Blelloch, "Introduction to Data Compressio Computer Science Department/ Carnegie Mell University, blellochcs.cmu.edu, 2013.
Recommended books and references (scientific journals, reports…)	Guy E. Blelloch, "Introduction to Data Compressio Computer Science Department/ Carnegie Mell University, blellochcs.cmu.edu, 2013.
Electronic Referenc Websites	Data Compression Techniques: Integer Codes I.

Course Description Form

1. Course Name:
Database II
2. Course Code:
COMP 331
3. Semester / Year:
Second Semester/ Third year
4. Description Preparation Date:
1/10/2023
5. Available Attendance Forms:
Fulltime/Attendance Mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)
60 Hours (30 Theoretical Hours + 30 Practical Hours) / 3 Units
7. Course administrator's name (mention all, if more than one name)
Name: Lecturer Dr.Rasool Hisham Al-Saadi Email: rasool.hisham@nahrainuniv.edu.iq Lab instructors: - Lecturer Zahraa Abdulhussien - Assistant Lecturer Esraa Hussain Ali - Assistant Lecturer Azhar Flaih - Maryam Adnan Hasan
8. Course Objectives

Course Objectives	• Understanding and writing complex SQL queries and DDL statements • Understanding data integrity enforcement techniques of the database management systems including transaction managements • Improving database designing ability by eliminating data anomies using database normalization • Understanding database scalability and distribution
9. Teaching and Learning Strategies	
Strategy	• Theoretical lectures with interactive activities such as brainstorming, asking questions and discussing answers to improve students' analysis and inference strategies. Addition, direct instruction, active learning and problem-based learning are used throughout the course • Practical labs complemented with technology integration and collaborative learning focus on problem solving

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	Writing advanced SQL queries	•Advanced Data Manipulation Language (Queries within Queries) •Subquery Terminology, Subqueries in a SELECT List, Subqueries in the WHERE Clause	Describe, Discuss, and practice	Class Activity
2	2	Writing advanced SQL queries	•Operators in Subqueries, Revisiting the IN Operator, Using the ANY, SOME, and ALL Operators, Using the EXISTS Operator	=	Class Activity and Quiz
3	2	Understating and writing DDL statements	•Data Definition Language, creating a Database, Data types in SQL, Creating, Altering, and Deleting Tables, Ensuring Data Validity with Constraints, NOT NULL Constraint, UNIQUE Constraint •CHECK Constraint, Primary Key and PRIMARY KEY Constraint, Foreign Key, Speeding Up Results with Indexes		Class Activity and Quiz
4	2	Understating database design objectives and the tools that can help in database design	•Database Design, Objectives of Database Design •Database Design Tools, Need for Database Design Tool, Desired Features of Database Design Tools •Advantages of Database Design Tools, Disadvantages of Database Design Tools		Class Activity and Quiz
5	2	The students will be able to identify the potential problems that might occur due to data redundancy	•Redundancy and Data Anomaly •Problems of Redundancy, Insertion, Deletion, and Updating Anomaly, Repeating Group		Class Activity and Quiz
6	2		Written exam 1		Written exam

7	2	Understating and analyzing the function dependencies between the attributes	•Functional Dependency, Functional Dependency Inference Rules (Armstrong's Axioms) •Reflexivity, Augmentation, Transitivity, Pseudotransitivity, Union, Decomposition		Class Activity and Quiz
8	2	Understating the normalization process and normalizing the relations to 1NF	•Normalization, Purpose of Normalization, Steps in Normalization •Unnormal Form to First Normal Form		Class Activity and Quiz
9	2	Normalizing the relations to 2NF and 3NF	•First Normal Form to Second Normal Form •Second Normal Form to Third Normal Form • Exercises and practicing for a complete normalization process		Class Activity and Quiz
10	2	Understating the transaction processing and the ACID properties of DBMS	•Transaction Processing, Key Notations in Transaction Management, Concept of Transaction Management •ACID Properties of DBMS, Atomicity and Durability, Consistency and Isolation		Class Activity and Quiz
11	2	Understating the anomalies due to interleaved transactions and how this problem can be solved	•Serial Scheduling, Anomalies due to Interleaved Transactions •WR Conflicts, RW Conflicts, WW Conflicts •Lock-Based Concurrency Control, Need for Concurrency Control		Class Activity and Quiz
12	2	Understating the lock-based concurrency control and the problems that could happen while using it	•Lock-Based Concurrency Control, Key Terms in Lock-Based Concurrency Control, Locking Protocol, Strict Two-Phase Locking (Strict 2PL), Deadlock •Methods to Overcome Deadlock, Recovery Mechanism		Class Activity and Quiz
13	2		Written exam 2		Written exam

14	2	Understating the DDBMS and its types	•Distributed Database, Architectural Models for Distributed DBMS •Types of Distributed DBMS Architecture, Client/Server Systems, Peer-to-Peer Distributed Systems •Distributed Data Storage, Data Replication, Data Fragmentation		Class Activity and Quiz
15	2	The students will be familiar with different questions and solutions related to what the learned during this course	Solving more questions and review of semester learning outcome		Class Activity and Quiz

11. Course Evaluation

Weekly quizzes + assignments: 5
Mid written exams: 20
Weekly practical assignments: 15
Final practical exam: 10
Final theoretical exam: 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management Systems", Springer, 2007.
Main references (sources)	Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of Database Systems", 4th Edition, Addison Wesley, 2003.
Recommended books and references (scientific journals, reports...)	• Raghu Ramakrishnan , Johannes Gehrke, "Database Management Systems", 3rd Edition, McGraw Hill, 2003. • Paul Wilton, John W. Colby, "Beginning SQL", Wiley Publishing, Inc. 2005.
Electronic References, Websites	

13. Practical Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		•Revisiting basic SQL clauses and practicing them	Describe, Discuss, and practice	Lab Activity

2	2		•Writing advanced queries using MySQL	=	=
3	2		•Creating a database and tables using DDL	=	=
4	2		•Introduction to C# programming language		
5	2		•Installing Visual Studio MySQL dependencies (required .NET Framework, MySQL .NET connecter) •Creating Windows Form application and establishing MySQL database connection	=	=
6	2		Exam 1	=	=
7	2		•Retrieving data from database using data reader object • Inserting and deleting data from database through MySQL .NET connecter	=	=
8	2		Working with Command object and passing parameter to SQL	=	=
9	2		GUI integration in database systems (binding GUI controls)	=	=
10	2		Developing a simple library management database project using Windows Form application	=	=
11	2		Adding user authentication to the project	=	=
12	2		Exam 2		
13	2		Working with transactions	=	=
14	2		Finalizing the project	=	=
15	2		Examples and review	=	=

Course Description Form

1. Course Name:

Language Translator II

2. Course Code:

3. Semester / Year:

Second Semester/ Third Year

4. Description Preparation Date:

2023-2024

5. Available Attendance Forms:

On Campus Full Time

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

5 hours (2 Lec.+2 Lab+1 tutorial) *15= 60

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

Name: Dr. Tiba Zaki Abdulhameed, tiba.zaki@nahrainuniv.edu.iq

Lab Khairiyah S.Aldabas , khairiyah.s.aldabas@nahrainuniv.edu.iq
Ruaa Abdullah ruaa.abdullah@nahrainuniv.edu.iq
Dr. Hasnaa Imad Abdulsalam hasna.imad@nahrainuniv.edu.iq
Esraa Husain Ali esraa.hussien@nahrainuniv.edu.iq
Hanaa Mohamed hanaa.mohammed@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives In this semester, the student continues buildi the language translator they started in the fir semester. Then, they study different types of parsers.	A. Cognitive goals A1- Understanding the fundamental differences between types of parsers. A2- Reading various algorithms related to language processing and understanding them based on the student's self-capabilities. A3- Continuing work on building a translator for a simple language. B. The skills goals special to the course. B1- Enhancing the student's scientific language proficiency. B2- Improving the student's ability to solve problems using programming methods. B3- The capability to search for information and find it easily. B4- The ability to read references in English and comprehend them.

9. Teaching and Learning Strategies

Strategy	

	Interactive theoretical lectures that rely on student participation, (such as Jigsaw, think pair share, and Brainstorming through asking questions that aid students in analysis and inference strategies.) In addition to laboratory work and discussions

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student realizes the importance of the topic and its connection to previous knowledge.	They review and warm up by introducing the upcoming curriculum. • Compiler phases • Recursive descent parser • Left recursion elimination • Left Factoring • NFA DFA Optimization	Then, they tackle questions on a sheet from the previous material. The students solve them and engage in discussions	The teacher assesses the level of participation and understanding
2	5	Student evaluate having various resources that explore same algorithms but in different writing style. Student have general understandin g of First and Follow sets	First, and Follow sets	The text of First and Follow set extraction algorithms from 2 books is distributed so that students are divided into small groups, with each group assigned a portion of the text containing First and Follow algorithms. Group members	The teacher evaluates the level of participation and so on. Contributions and overall understanding of the material are observed and evaluated by the teacher through assessing the level of interaction and problem-solving.

				collaborate to understand the algorithms and apply them to the given question. The Jigsaw strategy is used where each individual in the group is assigned to understand a specific part of the text, then returns to the original group to provide an explanation to everyone. The question is solved with the participation of all group members, exchanging ideas and conclusions.	
3	5	Student can produce First and Follow set with and without having an algorithm	Continue to illustrate First and Follow while linking it sentential form Lab: continue programming the Recursive descent parser	Active learning	Evaluate discussions and Quiz
4	5	Student is able to build predictive table and trace LL1 parser	LL1 parser, Building LL1 predictive table	Active learning	Evaluate oral discussions
5	5	Student can identify the difference between	Bottom Up Vs. Top Down Left most derivation Vs. Rightmost derivation	Active learning	Evaluate oral discussions

		solving a problem in Top-down or bottom-up strategy			
6	5	Student can trace bottom-up shift reduce parser, and able to compare with top-down LL1 parser	Bottom-up parser, Shift reduce parser, Shift-reduce conflict, reduce-reduce conflict	Active learning	Evaluate oral discussions
7	5		Mie Exam 1		
8		Student remember LR parsing structure.	LR parsing	Active learning	Evaluate oral discussions
9	5	Student Links the parsing with automaton	LR(0) canonical items, DFA, and table	Active learning (read alone pare, and share)	Evaluate discussions and Quize
10	5	Can produce and read SLR table in various books formats.	SLR table	Active learning	Evaluate oral discussions
11	5	Able to identify LR(1) and compare complexity with SLR	LR(1)	Active learning	Evaluate oral discussions
12	5	Able to trace LALR. And be able to identify reasons for preferring this algorithm over others.	LALR	Active learning	Evaluate discussions and Quiz
13	5	Conclude various ready to use parsers generating tools and compare between them.	Students presentations of selected parsing Auto-generating tools	Active learning	

		Improve presentation skills. Exposed to open ideas. Think outside the box			
14	5		Mid Exam 2		
15	5		Review		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student as following:
Theoretical daily preparation 5% Practical lab daily preparation 5%
daily oral 2%,
written exams Theoretical monthly15% monthly Practical lab 10%,
Presentations 3%
Final Theoretical 50% practical lab 10%

12. Learning and Teaching Resources

Required textbooks (curricular boc if any)	**Compiler (principles, techniques, and tools)** second edition Alfred V.Aho Columbia University Monica S.Lam Stanford University
Main references (sources)	Cooper, Keith D., and Linda Torczon. *Engineering a Compiler / Keith D. Cooper, Linda Torczon.* Third edition.., Morgan Kaufhann Publishers, 2022.
Recommended books and references (scientific journals, reports…)	Torben Ægidius Mogensen. *Introduction to Comp Design,* British Library Cataloguing
Electronic References, Websites	https://www.jntua.ac.in/gate-online-classes/registration/downloads/material/a159280508451.pdf https://www.cs.princeton.edu/courses/archive/spring20/cos320/LR0/ https://techblogmu.blogspot.com/2017/12/difference-between-ll-parser-vs-lr.html **https://www.gatevidyalay.com/tag/first-and-follow-**

	examples-in-compiler-design-ppt/

Course Description Form

1. Course Name:	
Research Methodology	
2. Course Code:	
3. Semester / Year:	
Second/2024	
4. Description Preparation Date:	
25/3/2024	
5. Available Attendance Forms:	
Full Time	
6. Number of Credit Hours (Total) / Number of Units (Total)	
15/1	
7. Course administrator's name (mention all, if more than one name)	
Name: Suhad Abdulrahman Yousif Email: suhad.a.yousif@nahrainuniv.edu.iq	
8. Course Objectives	
Course Objectives	This course introduces the student to the concepts of research methodology. Topics in such lectures include Proposal writing, problem determination, the aim of research, motivation of the research, contribution of research, and abstract writing. The theoretical concepts are given to reinforce the research documentation. Then the methodology writing technique is given to make the ability for marketing the adopted idea in a simplified way to audients. Later, an introductory about simple results demonstration and discussion is given to show the research weight. The validity of the results is proven with the evaluation part that uses common types of evaluation measures. Then, a training practical project is carried out to gain skills in project writing.
9. Teaching and Learning Strategies	
Strategy	1. Course Introduction and Objectives: Introduction to Research Methodology: Definition, importance, and application in various fields. 2. Understanding Research Design: Types of Research: Qualitative, quantitative, and mixed methods. Choosing a Research Design: Factors to consider based on the research question, objectives, and available resources.

	3. Research Questions and Hypotheses Formulating Research Questions: Guidance on how to develop clear, concise, and feasible research questions. Developing Hypotheses: For quantitative studies, how to formulate testable hypotheses.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2	2	1. Understand th basis of research methodology. 2. Know about writing the abstr of the report or research. 3. Collect the interesting literature, and write a literature review. 4. Represents th methodology of t research in block diagram, and denote it. 5. Demonstrate t results and how results are discussed. 6. Extract conclusions fr the discussion a proposed suggestions future work.	1. Introduction, Types of Research, Main Components of Research Work 2 Create an Automatic table of contents, and figures table using Microsoft Word		
3,4	2		1 Introduction, Problem Identification, Criteria for Selecting a Research Topic, Scales for Rating Research Topic, Exercise		
5	1		1. Endnote for Automatic References writing		
6	1		1. Introduction, 2. Analyzing the Problem 3. Formulating the Problem Statement.		
7	1		1. Literature Review 2. Introduction, Use of Literature Review. 3. Sources of Information,		
8	1		1. Research Methodology 2. Introduction, Types of Study Design, Methods of Data Collection		

			3. Plan for Data Processing and Analysis, 6		
9,10	2		1. Research Writing 2. Introduction, Scientific Research Writing.		
11,12,13	2		Research Writing using Overleaf		
14	1		Mid Exam		
15	2		Course Review		

11. Course Evaluation

Assignments (5%)
Group Project and Presentation (15%)
Midterm Exam (20%)
Final Exam (60%)

12.

Required textbooks (curricular books, if any)	Getu Degu Tegbar Yigzaw , "Research Methodology: LECTURE NOTES ", University of Gondar, 2006. 2. Kothari
Main references (sources)	1. C.R., "Research Methodology, Methods and Techniques, Second edition, (2008), New Age International Publication. 2. Ranjit Kumar : Research Methodology, A step by step guide for beginners, Pearson Education, Sixth Edition 2009.
Recommended books and references (scientific journals, reports…)	1. Ram Ahuja, "Research Methods", (2001), Rawat Publications, New Delhi. 2. Cooper D., Schindler P., Business research methods", (2003) Tata Mc-Graw Hill, New Delhi
Electronic References, Websites	

Course Description Form

1. Course Name:
Software Engineering
2. Course Code:
3. Semester / Year:
Third stage – 2nd semester / 2023–2024
4. Description Preparation Date:
2024\3\10
5. Available Attendance Forms:
Attendance is mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)
45 H - 4 H (2 theoretical, 2 practical) / 3
7. Course administrator's name (mention all, if more than one name)
Name: Zahraa A. Jaaz Email: zahraa.jaaz@nahrainuniv.edu.iq Practical staff (lec. Zahraa a. jaaz , lec.Dr. Marwan Badran, lec. Ass Hussien , Asst. Lec. Farah saad)
8. Course Objectives

Course Objectives	➢ Preparing graduates with experience in the ma concepts of software engineering. ➢ Introducing the student to the models used in softwa engineering and the ethics of software work. ➢ Introducing the student to the Visual Ba programming language
9. Teaching and Learning Strategies	
Strategy	1-Knowledge of the basics of software engineering and t principles related to how to deal with it 2-Focusing education on the visual basic programming langua through software related to the subject 3- Develop and design high-quality software that meets us customizations and requirements at all levels. 4- Paying attention to configuring the program from its early stag while analyzing the problem, then designing and writing t program until piloting it, testing it, installing it on devices, a carrying out its maintenance process.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1+2	2+2	Introduction to software engineeri	'software crisis'& introduction to software	Methodical book + theoretical lectures	Class discussion
4+3	2+2	Software operation	Software Processe	Methodical book + theoretical lectures	Daily testing
6+5	2+2	Engineering requirements	Requirements Engineering	Methodical book + theoretical lectures	Daily testing
7	2+2	First month exam			
9+8	2+2	Modeling system	System Modeling	Methodical book + theoretical lectures	Homework
11+10	2+2	Architectural Desig	Architectural Desi	Methodical book + theoretical lectures	Daily testing
12	2+2	Design and implementation	Design and Implementation	Methodical book + theoretical lectures	Daily testing
14+13	2+2	Software testing	Software Testing	Methodical book + theoretical lectures	
15					

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

- Monthly exams + daily surprise tests + homework
- Class contributions and discussions
- Daily evaluation of practical performance in the laboratory
- Determine a grade for daily attendance

➢ Creating software packages for projects

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	SOFTWARE ENGINEERINGNinth Edition b (Ian Sommerville)
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Making small practical projects
Electronic References, Websites	Everything related to VB.Net programs

Lab course description

Hours	Week	Subject
1+2	2+2	Introduction to VB.Net
4+3	2+2	Explanation and examples of loop types in VB.Net
6+5	2+2	Create a database within VB and link it to the User and Password window
7	2+2	Connect an Access database with VB.Net
		Mid-term exam
9+8	2+2	Create code to save, modify, delete, and search
11+10	2+2	Performing mathematical operations on the database
12	2+2	Connecting MySQl to VB.Net
14+13	2+2	Create code to save, modify, delete, and search
15	2+2	Simner Enterprises

Course Description Form

1. Course Name:
Web Design and Programming
2. Course Code:
3. Semester / Year:
٢/ 2023-2024
4. Description Preparation Date:
202٤-٠٣-١٧
5. Available Attendance Forms:
Full Time
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: Lect.Assist. Haider Majeed Jaber Email: haider.m.jabe@narainuniv.edu.iq
8. Course Objectives

Course Objectives	• **Basic knowledge about web programming.** • **Website Design concepts.** • **Focus on learning web technologies (HTML, CSS, Javascript, and PHP).** • **Learning how website ranked in results of a search engine.** • **Teamwork when building website.**

9. Teaching and Learning Strategies

Strategy	- Explaining the subjects and relating it to real-life scenarios by providing practical examples. - Practicing through basic and complex web pages. - Group Project

10. Course Structure

Week	Hours (Theo+Lab)	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		- Introduction to Internet technology and how it works	Describe, Discuss, and practice	
2	4		- Introduction to the Internet services	Describe, Discuss, and practice	Assignments, Quizes, and Exam
3	4		- Web design	Describe, Discuss, and practice	Assignments, Quizes, and Exam
4-5	8		- HTML	Describe, Discuss, and practice	Assignments, Quizes, and Exam
			- Mid1 Test	Exam	Mid
7-8	8		- CSS Basics	Describe, Discuss, and practice	Assignments, Quizes, and Exam
9-10	8		- Javascript Basics	Describe, Discuss, and practice	Assignments, Quizes, and Exam
11-13	8		- PHP Basics	Describe, Discuss, and practice	Assignments, Quizes, and Exam
14-15			- Projects submission and presentation	Self-Learining and Discuss	

11. Course Evaluation

Assignments: 5
Quizzes: 5
Exam: 15
Project: 15
Final Exam: 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	http://www.tutorialspoint.com http://www.w3schools.com

Course Description Form

1. Course Name:
Audio and Video Computing
2. Course Code:
Comp*61
3. Semester / Year:
First Semester/ Fourth year
4. Description Preparation Date:
26/3/2024
5. Available Attendance Forms:
Mandatory attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
45 Theoretical hours per week
7. Course administrator's name (mention all, if more than one name)
Name: Prof.Dr. Mohammed Sahib Mahdi Altaei Email: mohammed.sahibmahdi@nahrainuniv.edu.iq
8. Course Objectives

Course Objectives	▪ Introduction- Basics in audio and video ▪ Programming the audio and video. ▪ computing the audio and video.
9. Teaching and Learning Strategies	
Strategy	▪ Lectures ▪ Problem classes ▪ Home work ▪ And, different contributions.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Theory and Examples.	Introduction to multimed	Formal Lectures	Class Activity Quiz
2	3	Theory and Examples.	Sound terminology	Formal Lectures	Class Activity Quiz
3	3	Theory and Examples.	Digital audio	Formal Lectures	Class Activity Quiz

4	3	Theory and Examples.	Digital speech	Formal Lectures	Class Activity Quiz
5	3	Theory and Examples.	Introduction speech/speaker recogniti	Formal Lectures	Class Activity Quiz
6	3	Theory and Examples.	Analog and Digital vi transmission.	Formal Lectures	Class Activity Quiz
7	3	Theory and Examples.	Transmission stan systems (NTSC, PAL, SECAM).	Formal Lectures	Class Activity Quiz
8	3	Theory and Examples.	Composite and compon video.	Formal Lectures	Class Activity Quiz
9	3	Theory and Examples.	High-Definition (HD) vi	Formal Lectures	Class Activity Quiz
10	3	Theory and Examples.	Video compression.	Formal Lectures	Class Activity Quiz
11	3	Theory and Examples.	Motion compensation.	Formal Lectures	Class Activity Quiz
12	3	Theory and Examples.	Optimal search Meth Distance-diluted Method	Formal Lectures	Class Activity Quiz
13	3	Theory and Examples.	One-at-time method	Formal Lectures	Class Activity Quiz
14	3	Theory and Examples.	Logarithmic search Meth	Formal Lectures	Class Activity Quiz
15	3	Theory and Examples.	MPEG. And H261	Formal Lectures	Class Activity 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)	Salamon D., "Data Comperession", edition, Prentice Hall,2000.
Main references (sources)	Halverson G. “Video Processing, T Master Reference”, Welly Printice C 2007.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Computer Networks
2. Course Code:
3. Semester / Year:
1st / Fourth Year
4. Description Preparation Date:
23-03-2024
5. Available Attendance Forms:
Compulsory
6. Number of Credit Hours (Total) / Number of Units (Total)
30 Hours (Theory) + 30 Hours (Practical) / 3 Units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Jamal M. Kadhim Email: jamal.mohammedkadhim@nahrainuniv.edu.iq
8. Course Objectives

Course Objectives	• Understanding Computer networks. • Understanding 7-model layers. • Understanding protocols of each layer and packet journey from source to destination. • Understanding host addressing through IPv4.0 and IPv6.0.

9. Teaching and Learning Strategies	
Strategy	Lectures, problem classes

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2+2		Introduction to computer Networking.	Formal Lectures	Class Activity
2	=		Application Layer.	=	Class Activity

3	=		Application Layer.	=	Class Activity
4	=		Transport Layer.	=	Class Activity
5	=		Transport Layer.	=	Class Activity
6	=		Client-server and wireshark program	=	Class Activity
7	=		First Mid-Exam	=	
8	=		Network Layer	=	Class Activity
9	=		Network Layer	=	Class Activity
10	=		Data Link Layer	=	Class Activity
11	=		Data Link Layer	=	Class Activity
12	=		Second mid-exam	=	Class Activity
13	=		Physical layer	=	Class Activity
14	=		Networking Tools	=	Class Activity

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)	Computer networking : a top-down approach / James F. Kurose, Keith W. Ross.—6th ed.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Computing Security I
2. Course Code:
COMP300
3. Semester / Year:
Second semester/ four year
4. Description Preparation Date:
27-3-2024
5. Available Attendance Forms:
Full Time
6. Number of Credit Hours (Total) / Number of Units (Total)
45 h/3 units
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Prof. Dr. Dalal N. Hamood Email: dalal.naeem@nahrainuniv.edu.iq
8. Course Objectives

Course Objectives	The main aim of the course is to introduce the students to the principles of computing security. It focuses on explain the abbreviations of the computing security, also explain the using techniques for achieving the best data security. In this semester, focuses on the common techniques for authentication, and Encryption, the types of the hackers and the techniques that used by the hackers.

9. Teaching and Learning Strategies	
Strategy	Book, Lectures, Quizzes, Exam & homework's.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		* **1.**Data Security Principles 1. Security 2. Confidentiality 3. Integrity 4. Availability	* Lecturer	Quiz & activity

			5. Authentication 6. Accountability (Non-Repudiation)		
2	3		Security Attack 1. Passive Attacks 2. Active Attacks	* Lecturer	Quiz & activity
3	3		**1-**Basic Terminology 1-Basic Cryptographic Algorithms	* Lecturer	Quiz & activity
4	3		* Mathematics • Greatest Common Divisor(GCD) • (LCM) Least Common Multiple • Modular • Euler Function : • Inverse Algorithm (inv)	* Lecturer	Quiz & activity
5	3		* Block cipher Historically Symmetric Cipher Model Feistel Mode	* Lecturer	Quiz & activity
6	3		Confusion and Diffusion Substitution (S-boxes) Permutation (P-boxes) Substitution-Permutation Network	* Lecturer	Quiz & activity
7	3		EXAM1	* Lecturer	Quiz & activity
8	3		Block Cipher Mode	* Lecturer	Quiz & activity

			• ECB Operation Mode • CBC Operation Mode • Cipher FeedBack (CFB) • Output Feedback Mode (OFM)		
9	3		Stream cipher • Stream Cipher Structure • Important element for design a stream cipher • Types of stream ciphers ▪ Synchronous stream ciphers ▪ Self-synchronizing stream ciphers	* Lecturer	Quiz & activity
10	3		* Public-Key Cryptography Public-Key Characteristics Public-Key Applications Security of Public Key Schemes RSA description and algorithm Key Generation Algorithm Examples VIRUSES and OTHER MALICIOUS CONTENT Introduction Trapdoor Logic Bomb Trojan Horse Zombie	* Lecturer	Quiz & activity

			Bacteria Viruses Virus Operation.		
11	3		* Types of Viruses Boot Sector Viruses Executable Viruses Macro Viruses E-Mail Viruses Anti-Virus Software • first-generation • second-generation • third-generation fourth-generation Chapter Seven : Firewall Firewall Definition: Firewall Concept, Conditions, • *Firewall Concept.* • *Firewall Conditions.*	* Lecturer	Quiz & activity
12	3		* Data Hiding Steganography and Watermarking The Need for Data Hiding Issues in Data Hiding Steganography	* Lecturer	Quiz & activity
13	3		* Steganography types: 1- Pure Steganography: 2- Secret Key Steganography. 3 Public Key Steganography. Least significant bit (LSB) insert Watermarks	* Lecturer	Quiz & activity
14	3		EXAM 2	* Lecturer	Quiz & activity

11. Course Evaluation

Mid 10
Quizzes 10
HW 10
Activities (or report) 10
Final exam 50

Final Lab 10	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	**Cryptography And Network Security Principles And Practice** Fifth Edition William Stallings 2015
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Machine Learning	
2. Course Code:	
COMP441	
3. Semester / Year:	
Fourth / First	
4. Description Preparation Date:	
22/3/2024	
5. Available Attendance Forms:	
Attendance Mandatory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 Hours (2 Hours Theoretical + 2 Hours Practical)*15/ 3 Credit	
7. Course administrator's name (mention all, if more than one name)	
Name: Assistant Professor Dr. Zainab Namh Abdula Email: zainab.namhabdula@nahrainuuniv.edu.iq	
8. Course Objectives	
Course Objectives	• Introduce the students to the concept of machine learning • Introduce the students to the reasons that make us resort to machine learning • Give a brief and adequate explanation of the main types of machine learning • Giving a brief and adequate explanation of most of the main headings within machine learning • Draw the student's attention to the applications of machine learning and its relationship to human activities • Strengthening the student's programming skills by designing and implementing machine learning algorithms
9. Teaching and Learning Strategies	
Strategy	Books, theoretical lectures, discussions, and asking questions that help the student to analyze and conclude. Active learning and practical projects by creating groups of students to solve practical problems during the lecture. Develop programming skills using Python, which is widely used in the field of machine learning. Use data analysis tools such as Pandas and NumPy to understand and explore data

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	Identify and understand the term machine learning and its various applications	What is Machine Learning?	Lectures	Questions during the lecture
2	2	A review of the most important topics in linear algebra	Basic Concepts of Linear Algebra – **Readings Linear Algebra Review and Reference by Zico Kolter (updated by Chuong Do)**	Lectures	Questions during the lecture
3+4	4	Identify the different types of supervised machine learning and explain in detail the method of finding continuous outputs for one or several variables and then measuring the quality of the linear equation.	Supervised Learning Linear Regression (one and multiple variables) + Correlation Coefficient and Coefficient of Determination	Lectures + Examples	Questions during the lecture+ Quiz
5	2	Students know how to classify the data outputs using a supervised machine learning algorithm	Supervised Learning K-Nearest Neighbor	Lectures + Examples	Questions during the lecture
6	2	Mid 1			

7	2	Students know how to classify outputs using a supervised machine-learning algorithm	Supervised Learning Naïve Bayes	Lectures + Examples+ Group Work	Questions during the lecture
8+9	4	Students Learn ways to solve various machine learning problems and apply cross-validation methods data in an effective way	Regularization and Model Selection (Overfitting + Underfitting)	Lectures + Examples+ Group Work	Quiz
10	2	Students Learn ways to measure model quality using different units	Model Evaluation (Confusion Matrix, Precision and Recall)	Lectures + Examples + Group work	Questions during the lecture
11+12	4	Students Learn ANN term and its applications	Artificial Neural Network Architecture	Lectures + Example	Questions during the lecture
13	2	Mid 2			
14+15	4	Learn to update the ANN weights and produce output	Backpropagation algorithm	Lectures + Examples+ Group Work	Quiz

11. Course Evaluation

Assessment Type	Marks
Quizzes	5
HomeWorks	5
Attendance	5
Mid Exam	10
Lab Mid Exam	10
Lab Attendance and Assessment	5
Lab Final Exam	10
Final Exam	50
Total	١٠٠

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Stanford University Machine Learning CS229 Lecture notes by Andrew Ng Machine Learning Yearning, by Andrew Ng, 2018
Main references (sources)	Hands-On Machine Learning with Scikit-Learn and TensorFlow Concepts, Tools, and Techniques to Build Intelligent Systems, Orielly, 2017
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Youtube –Andrew Ng

Lab Structure

Instructors: Assist. Prof. Dr. Zainab Name, Dr. Sawsan Kamal, Lecturer Azhar Mawlood and Assistant Lecturer Aseel Basim

Week	Subject Name
1	Python Introduction
2	Python Introduction
3 +4	Supervised Learning - Linear Regression
5+6	Supervised Learning - K-Nearest Neighbor Classification
٧	Supervised Learning - K-Nearest Neighbor Regression
٨	Mid 1
9	Supervised Learning - Naïve Bayes
١٠+١١	Artificial Neural Network Architecture
١٢+١٣	Project
14	Review
15	Final Lab

Course Description Form

1. Course Name:
Operating Systems I
2. Course Code:
3. Semester / Year:
1/ 2023−2024
4. Description Preparation Date:
2023−11−25
5. Available Attendance Forms:
Full Time
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: Lect.Assist. Haider Majeed Jaber Email: haider.m.jabe@narainuniv.edu.iq

8. Course Objectives	
Course Objectives	• **Introduce OS functions to the student.** • **learn the importance of the OS to a developer, administrator, and end user.** • **Learn basic interaction with OS services by programming.**

9. Teaching and Learning Strategies	
Strategy	- Explaining the subjects and relating it to real-life scenarios by providing practical examples. - Discussion about the scenarios and alternatives of solutions provided by Operating Systems. - Presentations by students about subjects not covered by the syllabus or more details on subjects already, to motivate students for self-learning, in addition to practicing how to present their knowledge to an audience.

10. Course Structure

Week	Hours (Theo+Lab)	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Introduction to OS	Describe, Discuss, and practice	
2	4		Operating System Operations	Describe, Discuss, and practice	Assignments, Quizes, and Exam
3-4	8		OS Components	Describe, Discuss, and practice	Assignments, Quizes, and Exam
5	4		Operating-System Services	Describe, Discuss, and practice	Assignments, Quizes, and Exam
				Exam	Mid
7-10	16		-Processes and Scheduling Algorithms	Describe, Discuss, and practice	Assignments, Quizes, and Exam
12-13	8		Interprocess Communication	Describe, Discuss, and practice	Assignments, Quizes, and Exam
14-15			Presentation	Self-Learining and Discuss	

11. Course Evaluation

Quizzes: 10
Exam: 15
Presentation: 15
Final Exam: 60

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Operating Systems Concepts, 10th Edition, Abraham Silberschatz
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Computing Security II
2. Course Code:
COMP300
3. Semester / Year:
First semester/ four year
4. Description Preparation Date:
27−3−2024
5. Available Attendance Forms:
Full Time
6. Number of Credit Hours (Total) / Number of Units (Total)
60 h/4 units
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Prof. Dr. Dalal N. Hamood Email: dalal.naeem@nahrainuniv.edu.iq Asst. Lec. Bahira Hani Lec. Assed Hussain Asst. Lec. Humam
8. Course Objectives

Course Objectives	The main aim of the course is to introduce the students to the principles of computing security. It focuses on explain the abbreviations of the computing security and Encryption algorithms.

9. Teaching and Learning Strategies	
Strategy	Book, Lectures, Exam, Quizzes & homework's.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		* **1.**Data Security Principles 1. Security 2. Confidentiality 3. Integrity	* Lecturer	*Quiz & activity

			4. Availability 5. Authentication 6. Accountability (Non-Repudiation)		
2	2		Ceaser Algorithm Atbash Algorithm	* Lecturer	*Quiz & activity
3	2		**1-**Keyword Cipher Polybious cipher	* Lecturer	*Quiz & activity
4	2		Additive Cipher Multiplicative Ciphers Affine Ciphers	* Lecturer	*Quiz & activity
5	2		Pigpen / Masonic Cipher Polyalphabetic Ciphers	* Lecturer	*Quiz & activity
6	2		Vigenère Cipher Gronsfeld cipher	* Lecturer	*Quiz & activity
7	2		EXAM1	* Lecturer	*Quiz & activity
8	2		Beaufort Cipher Autokey Cipher	* Lecturer	*Quiz & activity
9	2		Running Key Cipher Polygraphic Ciphers	* Lecturer	*Quiz & activity
10	2		Playfair Cipher Hill Cipher	* Lecturer	*Quiz & activity
11	2		Bifid Cipher Trifid Cipher	* Lecturer	*Quiz & activity
12	2		* Keyed Transposition Ciphers Double Column Transposition	* Lecturer	*Quiz & activity
13	2		Data Encryption Standard (DES) Simplified DES	* Lecturer	*Quiz & activity
14	2		EXAM 2	* Lecturer	*Quiz & activity

11. Course Evaluation

Mid 10
Quizzes 10
HW 10
Activities 10
Final exam 50
Final Lab 10

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	**Cryptography And Network Security Principles And Practice** Fifth Edition William Stallings 2015
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Computer Lab + Java Language

Course Description Form

1. Course Name:
Data Mining
2. Course Code:
COMP446
3. Semester / Year:
Fourth / Second
4. Description Preparation Date:
22/3/2024
5. Available Attendance Forms:
Attendance Mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)
60 Hours (2 Hours Theoretical + 2 Hours Practical)*15/ 3 Credit
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Dr. Zainab Namh Abdula Email: zainab.namhabdula@nahrainuuniv.edu.iq
8. Course Objectives

Course Objectives	The course aims to introduce the students to the methods used in data mining and to describe its needs. The course also aims to process data, prepare the data, and understand the relationships between the inputs to make a specific decision. In addition to introducing the students to the concept of data science and its methodology followed by real examples

9. Teaching and Learning Strategies	
Strategy	Theoretical books and lectures, in addition to laboratory work, discussion, and asking questions help the student to analyze and make conclusions. Active learning and practical projects by creating groups of students to solve practical problems during the lecture, in addition to providing workshops on modern topics in data mining.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	Recognize and understand the term data mining and the data used	Introduction to Data Mining, Data for Data Mining	Lectures	Questions during the lecture
2+3	4	Understand data science methodology	Data Science Methodology	Lectures	Questions during the lecture
4+5	4	Recognizing the different types of data and understanding the difference between them, in addition to measuring the central tendency and measure of dispersion.	Getting to Know Your Data – Chapter 2 Data, Attribute Types, Central Tendency, Measure of Dispersion, Proximity and Distance Measurements	Lectures + Examples	Questions during the lecture
6	2	The student knows how to cluster the data sets using an unsupervised machine-learning algorithm	K-Means Clustering	Lectures + Examples	Questions during the lecture
7	2	Mid 1			
8	2	The student knows how to classify the data outputs using a supervised machine learning algorithm	Decision Trees ID3	Lectures + Examples+ Group Work	Questions during the lecture

9+10	4	The student's knowledge of the various data processing methods before entering the machine learning algorithm stage	Pre-Processing Techniques – Feature Selection	Lectures + Examples+ Group Work	Quiz
11+12	4	The student's knowledge of the association rules by finding the frequent itemsets	Frequent Itemset Mining and Association Rules	Lectures + Examples + Group work	Questions during the lecture
13	2	Mid 2			
14	2	The student's knowledge of text analysis and how to extract useful information and then classify them	Text Analysis	Lectures + Examples	Quiz
15	2	Practical			

11. Course Evaluation

Assessment Type	Marks
Quizzes	5
Seminar	5
Attendance	5
Mid Exam	10
Lab Mid Exam	7
Lab Attendance and Assessment	8
Lab Final Exam	10
Final Exam	50
Total	١٠٠

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Data Mining, Concepts and Techniques,** Jiawei Han, Micheline Kamber and Jian Pei, **Elsevier, 2023**
Main references (sources)	

Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Youtube –Andrew Ng

Lab Structure

Instructors: Assist. Prof. Dr. Zainab Namh, Lecturer Azhar Mawlood, Assistant Lecturer Aseel Basim, and Assistant Lecturer Israa Hussein

Week	Subject Name
1.	Preprocessing Numeric Data
2.	Preprocessing on Numeric Data and Exploration
3.	Text Analysis
4.	Text Analysis and Feature Extraction
5.	K-Means Clustering
6.	Mid Lab Exam
7.	Central Tendency and Similarity Measure
8.	Supervised Learning: Decision Tree (Classification)
9.	Supervised Learning: Decision Tree (Regression)
10.	Association Rules
11.	Association Rules and Apriori Algorithm
12.	Dimension Reduction
13.	Project
14.	Project
15.	Final Exam

Course Description Form

1. Course Name:
Distributed Systems
2. Course Code:
3. Semester / Year:
2nd / Fourth Year
4. Description Preparation Date:
23-03-2024
5. Available Attendance Forms:
Compulsory
6. Number of Credit Hours (Total) / Number of Units (Total)
45 Hours (Theory) / 3 Units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Jamal M. Kadhim Email: jamal.mohammedkadhim@nahrainuniv.edu.iq
8. Course Objectives

Course Objectives	*Understanding Computer distributed systems (e.g., Internet).* *- Understanding how to write distributed applications and how they work.*

9. Teaching and Learning Strategies	
Strategy	Lectures, problem classes

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Introduction	Formal Lectures	Class Activity
2	=		Systems Models	=	Class Activity
3	=		System Models	=	Class Activity
4	=		Networking Review	=	Class Activity

5	=		Interprocess Comm.	=	Class Activity
6	=		Interprocess Comm.	=	Class Activity
7	=		First Mid-Exam	=	
8	=		Remote Invocation	=	Class Activity
9	=		Remote Invocation	=	Class Activity
10	=		Distributed Objects components	=	Class Activity
11	=		Web Services	=	Class Activity
12	=		Second mid-exam	=	Class Activity
13	=		Peer-to-peer systems	=	Class Activity
14	=		Distributed File Syste and Name Services	=	Class Activity

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)	(Distributed.Systems.Concepts.and.Design,.5ed).Coulouris,.Dollimore,.Kindberg,.Blair
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Game Design and Programming	
2. Course Code:	
3. Semester / Year:	
Second Semester/ Fourth Year	
4. Description Preparation Date:	
26/3/2024	
5. Available Attendance Forms:	
- Theory Lectures - Practical Lab	
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. Safaa Hussein Shwail Email: safaa.husseinshwail@nahrainuniv.edu.iq	
8. Practical Teaching	
Dr. Safaa Hussein Shwail Lect. Azhar Mawlood Ass. Lec. Aseel Basim	
9. Course Objectives	
Course Objectives	• Give a complete knowledge about what the player want and expect in the game, also the skills needed in a game designer. • Explain the development concept that should be included in any game. • Show the main steps that should be follow in the project life cycle with the pre and post design concept. • Explain the genre-specific game design and level design. • Explain the including of the math and logic in the game design.
10. Teaching and Learning Strategies	
Strategy	The main strategy that will be adopted in delivering this module is by explaining lectures in an interactive way by letting the students to participate in the presenting through questions and answers while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and labs.
11. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	A Brief History of Computer Games Chronology	Introduction	Theoretical Lectures	Quiz
2	2	What players want What Do Players Expect What Skills Does a Game Designer Need	What players want and expect-designer skills	Theoretical Lectures	Quiz
3	2	Concept Development Genres	Concept Development and Genres	Theoretical Lectures	Quiz
4	2	The Game Proposal Document	Concept Development and Genres	Theoretical Lectures	Quiz
5	2	Preproduction The Game Design Document The Art Production Plan The Technical Design Document The Project Plan	Project Lifecycle	Theoretical Lectures	Quiz
6	2	Development Alpha, Beta, Code Freeze, Patches Upgrades	Project Lifecycle	Theoretical Lectures	Quiz
7	2		Mid-Course Exam 1		
8	2	Action Games Role–playing games	Genre-Specific Game Design Issues I	Theoretical Lectures	Quiz
9	2	Adventure Games Strategy Games	Genre-Specific Game Design Issues I	Theoretical Lectures	Quiz

10	2	Simulations Sports Games Fighting Games	Genre-Specific Game Design Issues II	Theoretical Lectures	Quiz
11	2	Casual Games God Games Educational Games Puzzle Games	Genre-Specific Game Design Issues II	Theoretical Lectures	Quiz
12	2	Building the Level Gameplay	Level Design	Theoretical Lectures	Quiz
13	2	Structure and Progression Flow Control Degree of Difficulty Balance Puzzles	Level Design	Theoretical Lectures	Quiz
14	2	Probability and Statistics Randomization in Games Random Number Generators Percentages	Math and Logic in Games	Theoretical Lectures	Quiz
15	2		Mid-Course Exam 2	Theoretical Lectures	Quiz

12.Practical Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Painting the main craft	Board Drawing	Programming in java	Program complete
2	2	Drawing the main board	Board Drawing	Programming in java	Program complete
3	2	Showing the craft inside the board	Board Drawing	Programming in java	Program complete
4	2	Moving the main craft inside the board by keyboard arrows	Craft Moving	Programming in java	Program complete
5	2		Craft Moving	Programming in java	Program complete

6	2		Craft Moving	Programming in java	Program complete
7	2	Painting the missiles Make the craft shooting missiles using keyboard key	Shooting Missiles	Programming in java	Program complete
8	2		Shooting Missiles	Programming in java	Program complete
9	2		Shooting Missiles	Programming in java	Program complete
10	2	Painting the Aliens craft Drawing a specified number of Aliens crafts inside the board	Drawing Aliens	Programming in java	Program complete
11	2		Drawing Aliens	Programming in java	Program complete
12	2		Drawing Aliens	Programming in java	Program complete
13	2	Make the missiles destroy the Alien crafts by collision detection	Collision	Programming in java	Program complete
14	2		Collision	Programming in java	Program complete
15	2		Mid term Exam		

13. Course Evaluation

10 Quizzes
5 Assignments
15 Lab
10 Report
10 Midterm Exam
50 Final Exam

14. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Fundamentals Of Game Design, 3rd edition, by Ernest Adams**
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Operation Systems II
2. Course Code:
3. Semester / Year:
2nd Semester/ Year 4
4. Description Preparation Date:
22/3/2024
5. Available Attendance Forms:
Mandatory / on campus
6. Number of Credit Hours (Total) / Number of Units (Total):
(30 hour lecture + 30 hour lab) / 15 weeks
7. Course administrator's name (mention all, if more than one name)
Name: Ghassan Abdulhakeem Mahmood Email: Ghassan.alnuaimi@nahrainuniv.edu.iq Lab instructors: Lect.Assist. Farah Saad, Lect. Assist Ruaa Abdullah Lect. Assad Hussain

8. Course Objectives

Course Objectives	• Understand the main mechanisms like process management and process synchronization, • Explore the main and virtual memory management strategies • Understand the file system and how it is implemented.

9. Teaching and Learning Strategies

Strategy	• Lecture-based learning • Technology-based learning • Individual learning • Inquiry-based learning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understanding essential facts, concepts, and theories relating to process scheduling	Process scheduling, Part 1	Lecture and Inquiry-based learning	-

2	4		Process scheduling, Part 2	Lecture and Inquiry-based learning	
3	4		Process scheduling, Part 3	Lecture and Inquiry-based learning	Quiz
4	4	Understanding Tools and methodologies used in synchronization	Synchronization, Part 1	Lecture and Individual-based learning	
5	4		Synchronization, Part 2	Lecture and Inquiry-based learning	
6	4		Mid 1 exam		
7	4	Knowing the problem and plan strategies for their solution	Deadlocks	Lecture and Individual-based learning	Quiz
8	4	Understanding essential facts, concepts, and theories relating to memory management	Memory Management, Part 1	Lecture and Individual-based learning	
9	4		Memory Management, Part 2	Lecture and Individual-based learning	
10	4		Memory Management, Part 3	Lecture and Individual-based learning	Quiz
11	4	Knowing essential facts, concepts, and theories relating to file system interface	File System Interface, Part 1	Lecture, Technology and Individual-based learning	Final report submission
12	4		Mid 2 exam		
13	4		File System Interface, Part 2	Lecture, Technology and Individual-based learning	
14	4	Understanding the modeling and design of file systems.	File System implementation	Lecture, Technology and Individual-based learning	Quiz
15	4	Understanding the basic facts about I/O systems	I/O Systems	Lecture, Technology and Individual-based learning	

11. Course Evaluation

Mid exams: 10%
Quiz: 8 %
Lab exam: 15%
Report: 7%
Final Exam: 50%
Final Lab Exam: 10%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Operating Systems Concepts, 10th Edition, Abraham Silberschatz
Main references (sources)	Operating Systems Concepts, 10th Edition, Abraham Silberschatz
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://www.youtube.com/watch?v=LU_3Frt2kM0&list=PLBpMYKycVdGb3tlVlmR9Rmx47p6UOVp7W&index=4