Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation
International Accreditation Dept.

Academic Program and Course Description Guide

2024-2025

Introduction

The educational program is considered a coordinated and organized package of academic courses that includes procedures and experiences organized in the form of academic vocabulary, the main purpose of which is to build and refine the skills of graduates, making them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs such as the external examiner program.

The description of the academic program provides a brief summary of the main features of the program and its courses, indicating the skills that students are working to acquire based on the objectives of the academic program. The importance of this description is evident because it represents the cornerstone of obtaining program accreditation, and the teaching staff participates in writing it under the supervision of the scientific committees in the scientific departments.

This guide, in its second edition, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the latest developments in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, quarterly), in addition to adopting the description of the academic program circulated according to the book of the Department of Studies, 3/2906. On 5/3/2023 with regard to programs that adopt the Bologna Process as a basis for their work.

In this context, we can only emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth conduct of the educational process.

Concepts and Terminology:

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

Course Description: Provides a necessary summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be a developed, inspiring, motivating, realistic and applicable program.

The program's mission: It briefly explains the goals and activities necessary to achieve them, and also defines the program's development paths and directions.

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

Curriculum structure: All courses/study subjects included in the academic program according to the approved learning system (semester, annual, Bologna track), whether it is a requirement (ministry, university, college, or scientific department), along with the number of study units.

Learning outcomes: A consistent set of knowledge, skills, and values that the student has acquired after the successful completion of the academic program. The learning outcomes for each course must be determined in a way that achieves the program objectives.

Teaching and learning strategies: They are the strategies used by the faculty member to develop the student’s teaching and learning, and they are plans that are followed to reach the learning goals. That is, it describes all curricular and extracurricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: .....Mosul.....

Faculty/Institute: ..College of Education for Pure Science.....

Scientific Department: .....Computer Science.....

Academic or Professional Program Name: .....Bachelor.....

Final Certificate Name: .... Bachelor of Computer Science.....

Academic System: ...Anual.....

Description Preparation Date: 1/9/2024

File Completion Date: 1/9/2024

Signature:

Head of Department Name:

Assist. Prof. Dr.Alaa Y. Taqa

Date: 2025/1/19

Signature:

أ. د. ياسر يحيى قاسم

معاون العميد للشؤون العلمية

Scientific Associate Name:

Date: 2025/1/19

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 2025/1/19

Signature:

Approval of the Dean

أ. د. ياسر يحيى قاسم

معاون العميد للشؤون العلمية

٢٠٢٥/١/١٩

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1. Program Vision

The department's vision is to strive to achieve a distinguished position among relevant departments by keeping pace with the rapid development in information technology and its applications, and developing students' scientific and practical capabilities to provide society with graduates capable of teaching effectively in a way that qualifies them to advance and improve the educational process by using the latest computer technologies to support traditional, electronic and blended education.

2. Program Message

The department adopts its mission, which seeks to reach a leadership position in the educational, pedagogical, academic and research fields to be able to:

1. Providing educational institutions with highly qualified graduates to work as educational teachers and programmers, enabling them to contribute to building educational institutions and the rest of the various state institutions, as well as the private sector.
2. Cooperation with the colleges of the University of Mosul, other universities, the Ministry of Education, and other relevant ministries to contribute to serving society.

3. Program Objectives

In light of the department's vision and mission, the objectives are divided into:

- ❖ General objectives:

1. Preparing qualified teachers in accordance with modern educational trends to work in Iraqi schools (middle, preparatory, and secondary).
2. Preparing qualified specialists to work in various applied fields for various state institutions.
3. Spreading educational, scientific and humanitarian awareness among society by holding seminars and giving lectures through continuing education and community service.
4. Contributing to solving problems in the public and private sectors through joint research and studies, providing consultations, and coordination with other various institutions and ministries.
5. Strengthening scientific and research cooperation mechanisms with universities, ministries and other institutions.

- ❖ Special objectives:

1. Work on consistency and integration with the directives of the vision, mission, and goals of the University of Mosul.
2. Work to complete and implement files related to quality assurance and academic accreditation in order to achieve global progress for the college and university.
3. Striving to obtain institutional or programmatic academic accreditation for the

college globally or regionally.

4. Programmatic Accreditation

Does the program have program accreditation? From which side? No

5. Other External Influences

Is there a sponsor for the program? Ministry of Higher Education and Scientific Research

6.Program Structure

Program Structure	Number of Courses	Study Unit	Percentage	Notes
Enterprise requirements	**6**	**12**	**7%**	
College requirements	**10**	**38**	**22%**	
Department requirements	**22**	**122**	**71%**	
summer training				
Other				

* Notes can include whether the course is essential or elective.

7. Program Description

Year / Level	Course or course name	Course or course code	Credit hours	
			Theory	Practical
First	**Logic Design**	EDCO24F101	2	2
First	**Structural Programming**	EDCO24F102	2	2
First	**Computer Organization**	EDCO24F103	2	2
First	**Mathematics and Statistic**	EDCO24F104	3	---
First	**Discrete Structure**	EDCO24F105	3	---
First	**Psychology**	EDCO24F106	2	---
First	**Education and Teaching principles**	EDCO24F107	2	---
First	**Arabic Language**	EDCO24F108	2	---
First	**Human rights**	EDCO24F109	1	---
First	**English Language**	EDCO24F110	1	---
Second	**Microprocessors**	EDCO24F201	2	2
Second	**Numerical analysis**	EDCO24F202	2	2
Second	**Data Structure**	EDCO24F203	2	2
Second	**Object Oriented**	EDCO24F204	2	2

	Programming			
Second	**Database**	EDCO24F205	2	2
Second	**Computational Theory**	EDCO24F206	3	**---**
Second	**Research Methodology**	EDCO24F207	2	---
Second	**Secondary Education**	EDCO24F208	2	---
Second	**Developmental Psychology**	EDCO24F209	2	---
Second	**English Language**	EDCO24F210	1	---
Second	**The crimes of the Ba'ath regime**	EDCO24F211		
Second	**Arabic Language**	EDCO24F212		
Third	**Artificial Intelligence**	EDCO24F301	2	2
Third	**Computer Graphics**	EDCO24F302	2	2
Third	**Compilers**	EDCO24F303	2	2
Third	**Visual Programming**	EDCO24F304	2	2
Third	**Software Engineering**	EDCO24F305	2	---
Third	**Computer Architecture**	EDCO24F306	2	---
Third	**Curriculum and teaching methods**	EDCO24F307	1	2
Third	**Educational guidance**	EDCO24F308	2	---
Fourth	**Website Design**	EDCO24F401	2	2
Fourth	**Operating System**	EDCO24F402	2	2
Fourth	**Computer Networks**	EDCO24F403	2	2
Fourth	**Computer Security**	EDCO24F404	2	2
Fourth	**Internet of Things**	EDCO24F405	2	---
Fourth	**Measurement and evaluation in Education**	EDCO24F406	2	---
Fourth	**Practical Education (Teaching)**	EDCO24F407	1	2
Fourth	**English Language**	EDCO24F409	1	---
Fourth	**Graduation Project**		2	---

8. Expected learning outcomes for the program	
Knowledge	
Preparing a teaching staff	Preparing teachers to teach computer subjects in educational institutions at a high-quality level
Prepared by a scientific researcher	Creating a generation that is proficient in computer use and applications in order to have the ability to invest the use of computers in the development of society
Promoting scientific cooperation	By holding courses, workshops or seminars within continuing education
Providing the opportunity to complete postgraduate studies	Through mastering scientific material and scientific research methods
Skills	
Teaching profession skills	The student must master basic and advanced programming skills, acquiring basic skills for the teaching profession in the fields of computer science
Scientific research skills	Developing scientific research skills in the field of computer science,

	to master the skills required to manage information systems and databases with high efficiency
Sustainable development skills	By preserving the state's resources and sources from depletion in all fields, especially with regard to the use of computers in the education process
Practical skills	Developing students' practical skills inside the laboratory and mastering the correct educational and psychological method of dealing within the laboratory
Values	
Developing beneficial values and trends	In harmony with the principles of tolerant divine religions, customs and traditions, and respect for the institution in which he studies and the institution in which he will work in the future.
Developing the attitude towards the teaching profession	To face current challenges and develop the educational system as a whole
Establishing teaching principles	To reduce the misuse of their responsibilities in the scientific and educational field and to promote basic scientific and ethical principles
Explaining the importance of science in serving society	The great role played by applications and uses of computer science in serving society

9. Teaching and Learning Strategies

Theoretical lectures -
- Laboratory education to acquire practical skills
e-learning
Graduation project and field practice for teaching in schools

10. Evaluation methods

In the classroom
- Practical exams and reports
- Quarterly exams
- Daily oral and written exams
- Projects and field practice for teaching in schools

11. Teaching Staff

Faculty Members

Academic rank	**specialization**		**special requirements/skills (if any)**		**Numbers of teaching staff**	
	General	**Private**			**Lecturer**	**Staff**
Professor	**Mathematics** **Computer Science**	Algorithms Digital Image Processing				Staff
Assistance Professor	**Computer**	Intelligent				Staff

	Science **Computer Science** **Computer Science** **Computer Science** **Computer Science** **Mathematics**	technologies Computer Networks (2) Digital Image Processing (2) Operating System and Distribution programming Multimedia (2) Computational mathematics (2)				
Lecturer	**Computer Science** **Computer Science** **Computer Science** **Computer Science** **Computer Science** **Mathematics** **Mathematics** **Teaching Methods Mathematics** **Computer Science** **Computer Science** **Computer Science**	Computer Networks (2) Computer Science Computer vision (2) Signal processing (2) Artificial Intelligence (4) Digital Image Processing (2) Mathematical statistics Computational mathematics Teaching Methods Information security Information Technology Natural Language processing				Staff

Assistance Lecture	Computer Science Computer Science Computer Science Computer Science Computer Science Computer Science **Teaching Methods** **Teaching Methods**	Computer Science Software Engineering Computer Networks Database Security Computer Engineering **Teaching Methods Computer** **Teaching Methods Bio**				Staff

Professional development
Teaching new staff member
• Using modern scientific sources, educational films, courses and workshops • Training on the use of advanced and modern technologies and devices in the field of computer science or e-learning
Professional development for faculty members
• Providing the library with modern scientific resources and participating in specialized training courses • Enriching specialized laboratories with advanced computers and advanced equipment that support e-learning

13.Acceptance criterion
Central admission to the Ministry of Higher Education and Scientific Research

14.The most important sources of information for the program
Central admission guide, the department's website and the World Wide Web

15. Program development plan
The content has been updated based on modern sources from reputable universities

Program Skills Outline

Year / Level	Course code	Course name	Core / elective	Learning outcomes required from the program											
				Knowledge				Skills				Values			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First	EDCO23F101	Logic Design	Core	*	*			*		*	*				*
	EDCO23F102	Structural Programming	Core	*	*	*	*	*	*		*		*	*	*
	EDCO23F103	Computer Organization	Core			*	*	*			*	*	*	*	*
	EDCO23F104	Mathematics and Statistic	Core	*	*	*		*			*	*	*	*	*
	EDCO23F105	Discrete Structure	Core	*	*	*	*	*	*		*	*	*	*	*
	EDCO23F106	Psychology	Core					*	*	*	*	*	*	*	*
	EDCO23F107	Education and Teaching principles	Core					*	*	*	*	*	*	*	*
	EDCO23F108	Arabic Language	Core	*	*			*	*		*	*	*	*	*
	EDCO23F109	Human rights	Core	*		*		*		*	*	*	*	*	*

	EDCO23F110	**English Language**	**Core**	*	*			*	*		*		*		*
Second	**EDCO23F201**	**Microprocessors**	**Core**			*	*				*	*			*
	EDCO23F202	**Numerical analysis**	**Core**	*	*		*	*	*		*		*	*	*
	EDCO23F203	**Data Structure**	**Core**	*			*	*	*	*	*		*	*	*
	EDCO23F204	**Object Oriented Programming**	**Core**	*	*		*			*	*	*		*	*
	EDCO23F205	**Database**	**Core**	*	*		*	*	*	*	*	*		*	
	EDCO23F206	**Computational Theory**	**Core**	*		*	*	*	*	*		*			*
	EDCO23F207	**Research Methodology**	**Core**		*	*	*		*		*	*	*	*	*
	EDCO23F208	**Secondary Education**	**Core**	*		*		*	*			*	*	*	*
	EDCO23F209	**Developmental Psychology**	**Core**	*			*	*	*		*	*	*		*
	EDCO23F210	**English Language**	**Core**	*	*			*	*		*		*		*
	EDCO23F211	**The crimes of the Ba'atl regime**	**Core**	*		*		*	*			*	*	*	*
	EDCO23F212	**Arabic Language**	**Core**	*	*			*	*		*		*		*

Third	**EDCO23F301**	**Artificial Intelligence**	**Core**	*	*	*	*	*	*	*	*	*	*	*	*	*
	EDCO23F302	**Computer Graphic**	**Core**	*	*	*	*	*			*	*	*		*
	EDCO23F303	**Compilers**	**Core**	*	*		*	*	*	*	*		*	*	
	EDCO23F304	**Visual Programming (Visual Basic)**	**Core**	*	*	*	*		*	*	*		*		*
	EDCO23F305	**Software Engineering**	**Core**	*	*	*	*		*	*	*	*	*	*	
	EDCO23F306	**Architecture**	**Core**	*	*		*	*	*		*	*	*		*
	EDCO23F307	**Curriculum and teaching methods**	**Core**	*		*		*		*		*	*	*	*
	EDCO23F308	**Educational guidance**	**Core**	*				*	*		*		*	*	*
Fourth	**EDCO23F401**	**Website pages Design**	**Elective**	*	*	*	*	*	*		*	*		*	
	EDCO23F402	**Operating System**	**Core**	*	*	*	*	*	*		*		*	*	
	EDCO23F403	**Computer Network**	**Core**	*	*	*		*	*		*	*	*	*	*
	EDCO23F404	**Computer Security**	**Core**	*	*		*	*	*		*		*	*	*
	EDCO23F405	**Internet of Things**	**Elective**	*	*		*	*	*		*	*	*	*	*

	EDCO23F406	**Measurement and evaluation in Education**	**Core**	*				*	*			*	*		*
	EDCO23F407	**Practical Education**	**Core**	*			*		*		*	*	*		*
	---	**Graduation Project**	**Core**	*	*	*	*	*	*	*	*	*	*	*	*

• Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Logic Design	
2. Course code	
EDCO24F101	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory and Practical lectures + electronic	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours + 2 practical hours	
7. Name of the course tutors	
Name: Eman Fathi Ahmed E-mail: emanrafee6076@uomosul.edu.iq	
8. Course objectives	
1- Enabling the student to know the foundations of digital systems design. 2- Knowledge of counting systems, codes, and conversion between different systems 3- Knowledge of the foundations and laws of Boolean algebra. 4- Reducing rational functions using Karnoff's map. 5- Understanding Flip-flops, Encoder, and Decorder 6- Understanding Demuliplexer and Multiplexer 7- Knowledge and understanding of displacement recorders	**Objectives of the study subject**
9. Teaching and learning strategies	
Definition of the course: It is a science that helps to know and understand the foundations of digital systems design: counting systems, ciphers, conversion between different systems, foundations and laws of Boolean algebra, abbreviation of logical functions using the Karnoff map. Understanding Flip-flops, Encoder, and Decorder, Demuliplexer and Multiplexer	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Numbers SYSTEMS decimal Number Binary Number Octal Number Hexadecimal Number		4	1
Daily test	use of resources	Conversions between system decimal to Binary Conversion Binary to decimal Conversion decimal to Octal Conversion Octal to decimal Conversion		4	2
Reports	Training them on electronic research	decimal to Hexadecimal Conversion Hexadecimal to decimal Conversion Binary to Octal Conversion Octal d to Binary Conversion		4	3
Questions	Discussions in the lecture	Binary to Hexadecimal Conversion Hexadecimal to Binary Conversion Octal d to Hexadecimal Conversion Hexadecimal to Octal Conversion		4	4
Daily test	use of resources	Arithmetic Operations Addition Addition in Binary		4	5
Reports	Training them on electronic research	Addition in Octal Addition in Hexadecimal		4	6
Questions	Discussions in the lecture	Complements 1's Complements In Binary 2's Complements In Binary 1's and 2's Complements in decimal		4	7
Daily test	use of resources	1's and 2's Complements in Octal 1's and 2's Complements in Hexadecimal		4	8
Reports	Training them on electronic research	Subtraction in Binary Multiplication in Binary Division in Binary		4	9

Questions	Discussions in the lecture	Signed Number Binary coded decimal(BCD)		4	10
Daily test	use of resources	Excess 3 The Gray code		4	11
Reports	Training them on electronic research	parity binary number odd-parity even-parity		4	12
Questions	Discussions in the lecture	Boolean Algebra		4	13
Daily test	use of resources	Boolean Operations Rules and laws of Boolean algebra		4	14
Reports	Training them on electronic research	Standard Representation for Logical The SOP and The POS		4	15
Questions	Discussions in the lecture	The Karnaugh Map Two –variable The Karnaugh Map		4	16
Daily test	use of resources	Three –variable The Karnaugh Map four –variable The Karnaugh Map		4	17
Reports	Training them on electronic research	simplification Karnaugh Map don't care condition		4	18
Questions	Discussions in the lecture	Design Examples Half-adder Full adder		4	19
Daily test	use of resources	Half subtractor Full Subtractor		4	20
Reports	Training them on electronic research	BCD TO 7_ SEGMENT		4	21
Questions	Discussions in the lecture	DECODER Convert cray to binary		4	22
Daily test	use of resources	DECODER Convert binary to cray Parallel adder circuit		4	23
Reports	Training them on electronic research	Flip-Flops asynchronous R-S Flip-Flops synchronous R-S Flip-Flops		4	24

Questions	Discussions in the lecture	D flip-flop J-k Flip Flop TOGGLE FF(T-FF) Flip Flop		4	25
Daily test	use of resources	Encoder		4	26
Reports	Training them on electronic research	Decoder		4	27
Questions	Discussions in the lecture	Multiplexers and their use in combinational logic design		4	28
Daily test	use of resources	Read only memory (ROM)		4	29
Reports	Training them on electronic research	Shift Registers Introduction Serial Shift Registers Parallel Shift Registers		4	30

11.Course assessment

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

•Semi-weekly short tests (quiz) asking sudden and overlapping questions with an explanation of Article 10

•Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10

•Monthly tests 10

•Termly and annual tests 70

12.References

1-Digital Design, Third Edition, by M. Morris Mano. Prentice-H Inc. 2002. 2-Logic Design ,Digital Principles and Application", Malvino, 2000 3-"Introduction to Logic Design" (2nd) edition), Sajjan G. Shiva, 2007	BOOKS
	Main resources
	Recommended resources
	Electronics and website resource

Eman Fathi Ahmed

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Structured Programming	
2. Course code	
EDCO24F102	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory and Practical lectures	
6. Number of hours (total)/number of credits (total)	
30 theoretical hours + 60 practical hours	
7. Name of the course tutors	
Name: Karam Moaid Abdullah E-mail: karamalnuaymi@uomosul.edu.iq	
8. Course objectives	
• Introducing students to basic programming principles • How to use the C++ programming language. • Preparing students to be programmers • Design and implement programs for various requirements	**Objectives of the study subject**
9. Teaching and learning strategies	
• Education: Providing printed lectures from modern, diverse sources rich with examples • Education: Using the smart board to teach students, clarify the solution steps, and extract results • Education: Solving some questions while deliberately containing errors and making students extract the error • Learning: Asking questions and inquiries and making the student work like a teacher by explaining and solving on the blackboard • Learning: Direct questions for each student gradually to determine the extent of his interaction and to get the rest to pay attention • Learning: Each specific group explains its report, interacts among students with questions and answers, and provides... An environment that enables the student to conduct the lecture or discussion	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Study the environment of C++	The parts of C++	4	1
Daily test	use of resources	Simple program	Variables and constants	4	2
Reports	Training them on electronic research	Program on characters	Characters	4	3
Questions	Discussions in the lecture	Program on strings	String	4	4
Daily test	use of resources	Program on expressions	Expression and statement	4	5
Reports	Training them on electronic research	Program on if St.	If statement	4	6
Questions	Discussions in the lecture	Program on if St.	If statement	4	7
Daily test	use of resources	Program on nested if St.	Nested if St.	4	8
Reports	Training them on electronic research	Program on loops	Loops	4	9
Questions	Discussions in the lecture	Program on loops	Loops	4	10
Daily test	use of resources	Program on loops	Loops	4	11
Reports	Training them on electronic research	Program on continue and break	Continue and break	4	12
Questions	Discussions in the lecture	Program on FOR loop	For loop	4	13
Daily test	use of resources	Program on nested FOR loop	Nested for loop	4	14
Reports	Training them on electronic research	Program on switch St.	Switch St.	4	15

Questions	Discussions in the lecture	Program on arrays	Array	4	16
Daily test	use of resources	Program on arrays	Array	4	17
Reports	Training them on electronic research	Program on arrays	Array	4	18
Questions	Discussions in the lecture	Program on function	Functions	4	19
Daily test	use of resources	Program on function	Functions	4	20
Reports	Training them on electronic research	Program on recursive function	Recursive function	4	21
Questions	Discussions in the lecture	Program on Friend and virtual functions	Friend and virtual functions	4	22
Daily test	use of resources	Program on Pointers	Pointers	4	23
Reports	Training them on electronic research	Program on Dynamic memory	Dynamic memory	4	24
Questions	Discussions in the lecture	Program on Structures	Structures	4	25
Daily test	use of resources	Program on Complex structures	Complex structures	4	26
Reports	Training them on electronic research	Program on Arrays of structures	Arrays of structures	4	27
Questions	Discussions in the lecture	Program on Unions	Unions	4	28
Daily test	use of resources	Program on Files	Files	4	29
Reports	Training them on electronic research	Program on Files	Files	4	30

11.Course assessment	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc. •Semi-weekly short tests (quiz) asking sudden and overlapping questions with an explanation of Article 10 •Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10 •Monthly tests 10 •Termly and annual tests 70	
12.References	
▪ C++ for programmers/ John wily and Sonsltd. (1999) LearningC++	BOOKS
Learning C++ in Arabic **Learning C++ in English**	Main resources
	Recommended resources
	Electronics and website resources

Dr. Karam Moaid Abdullah

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Computer organization and technologies	
2. Course code	
EDCO24F103	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory and Practical lectures + electronic	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours + 2 practical hours	
7. Name of the course tutors	
Name: Younis abbas younis E-mail: younis.bayati@uomosul.edu.iq	
8. Course objectives	
• Providing distinguished education based on keeping pace with development to achieve a solid scientific level at the level of preliminary studies and preparation for postgraduate studies • Preparing and qualifying graduates who are scientifically and practically qualified to meet the requirements of the labor market in the public and private sectors in computer science through diversity in learning and teaching methods. • Preparing specialized programs in the field of computing according to the standards followed regionally and globally • Providing distinguished teaching staff and qualifying them for scientific research to train students to apply acquired knowledge and skills to solve realistic problems • Providing quality services and consultations to the community and the labor market in the field of computing and information technology	**Objectives of the study subject**
9. Teaching and learning strategies	
Lecture and discussion method.	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Identify the computer and its main components		4	1
Daily test	use of resources	Identify the computer and its main components		4	2
Reports	Training them on electronic research	Input and output unit		4	3
Questions	Discussions in the lecture	History of Computers		4	4
Daily test	use of resources	History of Computers		4	5
Reports	Training them on electronic research	Integrated Circuits		4	6
Questions	Discussions in the lecture	Microprocessors		4	7
Daily test	use of resources	Microprocessors		4	8
Reports	Training them on electronic research	The Evolution of the Intel x86 Architecture		4	9
Questions	Discussions in the lecture	The Evolution of the Intel x86 Architecture		4	10
Daily test	use of resources	Microcontroller		4	11
Reports	Training them on electronic research	Microcontroller		4	12
Questions	Discussions in the lecture	A Top-Level View of Computer Function		4	13
Daily test	use of resources	A Top-Level View of Computer Interconnection		4	14
Questions	Discussions in the	Interrupt		4	15

	lecture				
Questions	use of resources	Computer Modules		4	16
Questions	Discussions in the lecture	Computer Modules		4	17
Questions	use of resources	Point-to-Point Interconnect		4	18
Questions	Discussions in the lecture	Cache Memory		4	19
Questions	use of resources	Method of Accessing Units of Data		4	20
Reports	Discussions in the lecture	Method of Accessing Units of Data		4	21
Questions	use of resources	Cache Addresses		4	22
Questions	Discussions in the lecture	Replacement Algorithms		4	23
Questions	use of resources	Replacement Algorithms		4	24
Reports	Discussions in the lecture	Internal Memory		4	25
Questions	use of resources	Internal Memory		4	26
Reports	Discussions in the lecture	External Memory		4	27
Questions	use of resources	External Memory		4	28
Reports	Discussions in the lecture	Error Correction		4	29
Questions	use of resources	Introduction to operating system		4	30

11.Course assessment

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

12.References

1. William Stallings Computer Organization and Architect 10th Edition **2.** assembly language programming	BOOKS
	Main resources
	Recommended resources
	Electronics and website resources

Dr. Younis Abbas Younis

Assist. Prof. Dr. Alaa Yaseen Taqa

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Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Mathematics
2. Course code
EDCO24F104
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory lectures
6. Number of hours (total)/number of credits (total)
2 theoretical hours + 1 discussion, Total 90 hours
7. Name of the course tutors
Name: Mohammed Abdulrazaq alkahya, Aghsan Mahmood Ibrahim E-mail: mohammedkahya@uomosul.edu.iq
8. Course objectives

1The course aims to present the basic laws, concepts and axioms in mathematics, starting with the definition of the function, its simplest types and various classifications, passing through how to solve it and the various methods of derivation, as well as identifying the simplest ways to solve it in the course.	**Objectives of the study subject**
9. Teaching and learning strategies	
Lecture and discussion method.	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	1- Mathematical Induction		3	1
Daily test	use of resources	- Mathematical Logic		3	2
Reports	Training them on electronic research	Functions kinds and there graphs.		3	3
Questions	Discussions in the lecture	Limits .continuity		3	4
Daily test	use of resources	Finites. Derivative by definition		3	5
Questions	Discussions in the lecture	Derivative by rules		3	6

Daily test	use of resources	Derivative of higher order		3	7
Reports	Training them on electronic research	Chain rules		3	8
Questions	Discussions in the lecture	Implicit differentiation		3	9
Daily test	use of resources	Hopital rule		3	10
Questions	Discussions in the lecture	Applications of derivatives		3	11
Daily test	use of resources	Sequences		3	12
Reports	Training them on electronic research	Sequences & Series		3	13
Questions	Discussions in the lecture	Taylor & Maclurian series		3	14
Daily test	use of resources	Maclurian series		3	15
Questions	Discussions in the lecture	Integral Definite integral		3	16
Daily test	use of resources	Double integral		3	17
Reports	Training them on electronic research	Applications of integration		3	18
Questions	Discussions in the lecture	Nature logarithm Exponential function (e^x)		3	19
Daily test	use of resources	Exponential function (a^x)		3	20
Questions	Discussions in the lecture	Normal logarithm		3	21
Daily test	use of resources	Trigonometric function & there graphs		3	22
Reports	Training them on electronic research	Inverse Trigonometric		3	23
Questions	Discussions in the lecture	function Hyperbolic		3	24

		function			
Daily test	use of resources	Inverse Hyperbolic function		3	25
Questions	Discussions in the lecture	Relationship between Polar and Cartesian coordinates.		3	26
Daily test	use of resources	Graphing in polar coordinates		3	27
Reports	Training them on electronic research	Special (Gamma, Beta, Error) Fourier series		3	28
Questions	Discussions in the lecture	Discrete Ft, parser relation properties of (Ft)		3	29
Daily test	use of resources	Fast Fourier transformations (FFt)		3	30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

• Calculus and Analytical Geometry, second edition, Mosul University Press (1981). • Al-Nadir fi Calculus and Integration, first edition, Nader Abu Mughli Dar Al-Shorouk, Amman - Jordan (1999). • Differential Equations, second edition, Mosul University Press (1980) **Calculus Finney / Thomas ADDISON WESLEY (1989)**	BOOKS
	Main resources
https://online.stat.psu.edu/statprogram/reviews/calculu	Recommended resources
https://ocw.mit.edu/courses/res-18-001-calculus-fall-2023/pages/textbook/	Electronics and website resour
https://www.integral-calculator.com /	

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اسم وتوقيع صاحب المقرر

Assist. Prof. Dr. Mohammed Abdulrazaq alkahya

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Discrete Structure
2. Course code
EDCO24F105
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory lectures
6. Number of hours (total)/number of credits (total)
2 theoretical hours + 1 discussion, total 90 hours
7. Name of the course tutors
Name: Aghsan Mahmood Ibrahim E-mail: agssan.mood@uomosul.edu.iq
8. Course objectives

The course aims to present the basic laws, concepts, and axioms in the subject of discrete structures Mathematical induction, logical expressions, and matrices. Identify the simplest ways to solve them in the course. Providing distinguished teaching staff and qualifying them for scientific research to train students to apply knowledge And the skills acquired to solve real-life problems	**Objectives of the study subject**

9. Teaching and learning strategies	
Lecture and discussion method.	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Induction Mathematica		3	1
Daily test	use of resources	Introduction - Mathematical Logic - Simple Logic Statements - Variable Use In Proposition Statements - Compound Logic Statements		3	2
Reports	Training them on electronic research	- Logical Propositions - Logical Equivalence		3	3
Questions	Discussions in the	- Tautology Statement & Contradiction Statement		3	4

	lecture				
Daily test	use of resources	- Logical Implication - Algebra Of Propositions - Conditional Statements & Variatio		3	5
Reports	Training them on electronic research	- Quantifiers - Logical Reasoning		3	6
Questions	Discussions in the lecture	introduction Vectors and Matrices		3	7
Daily test	use of resources	- Vectors		3	8
Reports	Training them on electronic research	- Matrices - Models of Square		3	9
Questions	Discussions in the lecture	Matrices - Algebra in the Matrices		3	10
Daily test	use of resources	- Determinants		3	11
Reports	Training them on electronic research	- Minors & Cofactors		3	12
Questions	Discussions in the lecture	- Find Inverse Square Not Singular Matrix		3	13
Daily test	use of resources	- Solving System of liner equations using the Non_homogeneous		3	14
Questions	Discussions in the lecture	Rule Grammar		3	15
Mid-Year Examinations					
Reports	Training them on electronic research	Introduction - Methods of Expressing - Sets Theory 1 -		3	16
Questions	Discussions in the lecture	- Principle Concepts of Sets - Venn Diagrams		3	17
Daily test	use of resources	- Sets of Numbers - Algebra of Sets		3	18
Reports	Training them on electronic research	- Family of Sets & index Family of Sets		3	19

Questions	Discussions in the lecture	- Ordered Pairs & Product Set s - Boolean Algebra		3	20
Daily test	use of resources	Introduction - Binary Relation - Graph of - Relations 1 - - Graph of the Relation - Photographer representation of the relation		3	21
Reports	Training them on electronic research	- The Domain & the Range of a Relation		3	22
Questions	Discussions in the lecture	- Identity Relation & Inverse Relation - Composition Relation		3	23
Daily test	use of resources	- Type of Relation - Equivalence Relations.		3	24
Reports	Training them on electronic research	- Functions - Introduction - Principle Concepts & Definition - Models of Functions -Composition Function		3	25
Questions	Discussions in the lecture	- Algebra of Function - Discussion Functions through the planned equity – Dra w Graphs Functions		3	26
Daily test	use of resources	- Graph Theory 1 - Introduction - Principle Concepts - Type of Graphs – Definitions		3	27
Reports	Training them on electronic research	- Examples of Graphs - Graphs & Relation - Graphs & Matrices		3	28
Questions	Discussions in the lecture	- Pruning Algorithm for Minimal Path		3	29
Daily test	use of resources	- Formal Language and Machines - Introduction - Principle Concepts - Languages - Crammers - Type of Crammer 6- Machines - Finite States Machine - Finite Automata		3	30

11.Course assessment

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

- Mid year exam 25%

• 15% includes (theoretical tests 10%, assignments and reports 5% during the year) • 60% Final test	
12.References	
.Graph Theory by Reinhard Diestel Third Edition Springer-Verlag,Heidelberg Graduate Texts in Mathematics, Volume 173 ,431 pages(2010) 2.First Course in Discrete Mathematics by Ian Anderson Publisher: Springer- Verlag New York, LLC Pub. Date: January 2001 212pp First Course in Discrete Mathematics by Ian Anderson Publisher: Springer- Verlag New York, LLC Pub. Date: January 2001 212pp	BOOKS
	Main resources
	Recommended resources
	Electronics and website resources

Aghsan Mahmood Ibrahim

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Psychology
2. Course code
EDCO24F106
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory lectures
6. Number of hours (total)/number of credits (total)
2 theoretical hours
7. Name of the course tutors
Name: Mohammed Aied E-mail:
8. Course objectives

• Identify the basic concepts of educational psychology • Identify the principles of educational psychology • Identify the importance of educational psychology in the educational process • Identify the goals of educational psychology	**Objectives of the study subject**
9. Teaching and learning strategies	
Theoretical and practical lectures, dialogue and discussions, brainstorming, problem solving, conducting practical experiments, Daily reports and homework	**The strategy**
10.Course structure	

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	The student should mention the concept of educational psychology and the history of the emergence of psychology	The concept of psychology and educational psychology in educational thought and Islamic thought	2	1
Daily test	use of resources	The student should explain the schools of psychology	Schools and branches of psychology	2	2
Reports	Training them on electronic research	And branches of psychology.	Behavior and factors	2	3

Questions	Discussions in the lecture	The student knows the concept of behavior and factors	Influencing behavior	2	4
Daily test	use of resources	Influencing behavior	Research methods in psychology and educational psychology	2	5
Reports	Training them on electronic research	The student identifies the most important research methods in psychology and educational psychology	Learning and teaching and their characteristics.	2	6
Questions	Discussions in the lecture	The student should distinguish between the concepts of learning and teaching	Attention and factors	2	7
Daily test	use of resources	For the student to understand the subject of attention and the factors affecting attention with insulin	Influencing attention.	2	8
Reports	Training them on electronic research	For the student to understand the subject of sensation, the types of sensation, and the factors affecting human sensation.	Sensation, types of sensation, and factors affecting the sensation process	2	9
Questions	Discussions in the lecture	For the student to understand the subject of perception and the factors affecting human sensory perception.	Sensation, types of sensation, and factors affecting the sensation process	2	10
Daily test	use of resources	The student should explain the importance of studying motivation towards learning.	Sensory perception and influencing factors	2	11
Reports	Training them on electronic research	The student should distinguish between types of motivation (internal and external).	On sensory perception.	2	12
Questions	Discussions in the lecture	For the student to understand the process of remembering in humans.	Motivation to learn and its importance	2	13
Daily test	use of resources	The student should understand the process of forgetting and its causes.	Study of motivation to learn.	2	14
Reports	Training them on electronic	The student explains ways to process information and how to	Types of motivation (internal - external)	2	15

	research	explain forgetting			
Questions	Discussions in the lecture	The student understands the concept of emotions and the factors influencing emotions	The process of remembering, types of remembering, and factors influencing the remembering process.	2	16
Daily test	use of resources	The student explains the process of transferring the learning effect	The process of forgetting, its causes, and the factors affecting the forgetting process.	2	17
Reports	Training them on electronic research	The student determines how to benefit from the process of transferring the learning effect.	Ways of processing information, and theories that explain the process of forgetting	2	18
Questions	Discussions in the lecture	The student should explain the importance of studying feedback and its types	Emotions and factors influencing emotions	2	19
Daily test	use of resources	To show the student the most important educational applications of feedback in the educational process and his daily life	Transfer of the learning effect and the importance of studying the process of transfer of the learning effect	2	20
Reports	Training them on electronic research	The student explains the concept of thinking and the types of thinking in humans	How to benefit from the process of transmission of teaching and learning in the educational process.	2	21
Questions	Discussions in the lecture	The student determines the levels of thinking and ways to stimulate and develop thinking.	The concept and importance of studying feedback and its types in the educational process	2	22
Daily test	use of resources	The student summarizes the topic of learning concepts, its importance, nature, and generalization of concepts.	Educational applications of the feedback process.	2	23
Reports	Training them on electronic research	The student defines the concept of individual differences in teaching.	The meaning of thinking and types of thinking	2	24

Questions	Discussions in the lecture	For the student to distinguish individual differences in thinking styles and brain control.	Levels of thinking and ways to stimulate thinking and develop thinking.	2	25
Daily test	use of resources	The student understands learning theories and their educational applications	The topic of learning concepts, its importance, nature, and generalization of concepts.	2	26
Reports	Training them on electronic research	The student understands learning theories and their educational applications	Individual differences, and how to take them into account in teaching.	2	27
Questions	Discussions in the lecture	The student understands learning theories and their educational applications	Individual differences in thinking styles and brain control	2	28
Daily test	use of resources	The student summarizes the topic of learning concepts, its importance, nature, and generalization of concepts.	Learning theories (Pafof-Skinner)	2	29
Reports	Training them on electronic research	That the student understands learning theories and Its educational applications	Learning theories (foresight theory)	8	30

11.Course assessment

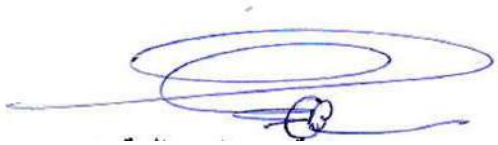
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

-Basics of educational psychology. Mohieddin and Abdul Rahman Adas 1983 - Learning and Thinking Methods, Ismai Ibrahim Ali, and Wissam Tawfiq Al-Mashhadani 2014, Qanc House for Printing, Publishing and Distribution, Amman - Jordan. - Learning Theories, Imad Abdul Rahim Al-Zaghloul 2003, Dar Al-Shorouk Publishing and Distribution, Amman - Jordan.	BOOKS
-Basics of educational psychology. Mohieddin and Abdel Rahman Adas. 1983	Main resources
Educational psychology books.	Recommended resources

	Electronics and website resources



Rahma Talal

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Education principles
2. Course code
EDCO24F107
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory lectures
6. Number of hours (total)/number of credits (total)
2 theoretical hours
7. Name of the course tutors
Name: Qusay Abdulaziz Abdulaziz E-mail: qusay.abdulaziz@uomosul.edu.iq
8. Course objectives

Increasing the student's understanding of the educational and social reality throughout the ages, realizing the educational process at its utmost necessity, and understanding educational theories on various peoples, ancient and modern.	**Objectives of the study subject**
9. Teaching and learning strategies	
- Paper lectures, the most important available means are the blackboard, colored pencils, dialogue and discussion, and some classroom activities - Using educational discussion (educational dialogue), which depends on exchanging ideas to reach facts.	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Define Education		2	1
Daily test	use of resources	Educational necessities		2	2
Reports	Training them on electronic	Education purposes		2	3

	research				
Questions	Discussions in the lecture	Education and Learning		2	4
Daily test	use of resources	Education and Learning		2	5
Reports	Training them on electronic research	Modern Education		2	6
Questions	Discussions in the lecture	Future Education		2	7
Daily test	use of resources	Education in primitive society		2	8
Reports	Training them on electronic research	Education in Babylonian society		2	9
Questions	Discussions in the lecture	Education in Egyptian civilization		2	10
Daily test	use of resources	Education in the pre-Islamic era among the Arabs		2	11
Reports	Training them on electronic research	Education in the Islamic era		2	12
Questions	Discussions in the lecture	Institutes of education in Islam		2	13
Daily test	use of resources	Advantages of Arab-Islamic education		2	14
Reports	Training them on electronic research	Advantages of Arab-Islamic education		2	15
Questions	Discussions in the lecture	Social foundations of education		2	16
Daily test	use of resources	Education and community culture		2	17
Reports	Training them on electronic research	Education and social control		2	18
Questions	Discussions in the	Education and its role in economic development		2	19

	lecture				
Daily test	use of resources	Cultural foundations of education		2	20
Reports	Training them on electronic research	Social Education		2	21
Questions	Discussions in the lecture	Islamic education		2	22
Daily test	use of resources	Media education		2	23
Reports	Training them on electronic research	National Education		2	24
Daily test	use of resources	Special Education		2	25
Reports	Training them on electronic research	Technology of Teaching		2	26
Questions	Discussions in the lecture	Educational Research		2	27
Daily test	use of resources	Teaching and Learning Techniques		2	28
Reports	Training them on electronic research	Educational planning		2	29
Questions	Discussions in the lecture	Education in the global context		2	30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

Foundations of Education by Dr. Attia Khalil Attia	BOOKS
• **Ibrahim Nasser, Foundations of Education, Ammar Publishing House, Cairo, 2016.** • **Khalif Youssef Tarawneh, Basics in Education,**	Main resources

Al-Shorouk Publishing House, Beirut, 2004.	
	Recommended resources
	Electronics and website resources

Qusay Abdulaziz Abdulaziz

Assist.Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Arabic Language
2. Course code
EDCO24F108
3. Semester/year
2024 -2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory lectures
6. Number of hours (total)/number of credits (total)
2 theoretical hours
7. Name of the course tutors
Name: Ruqayah hamed ali E-mail: ruqayah.h.a@uomsul.edu.iq
8. Course objectives

Helping the student to protect his tongue and writing from making mistakes in grammar and spelling, and to be proficient in correct writing, which is necessary for him in the matters of his life.	**Objectives of the study subject**
9. Teaching and learning strategies	
Encouraging cooperation between the teacher and the learner through continuous communication and interaction between them; This is done through speaking, questioning and discussions with students, writing on the board to implement all of this, and respecting the talents of the students. Education is the organized design that helps the learner achieve the desired change in performance. To achieve the goals and outcomes of targeted learning by relying on sources and tools to deliver scientific content to the learner and choosing the appropriate method of teaching with various circumstances and variables.	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	The reason for developing the science of grammar and the first to develop it	The student's knowledge of Arabic scholars, especially the scholars who developed the science of	2	1

			grammar and those who advocated its development		
Daily test	use of resources	Helping the student to know these sections, how to know them, and the evidence for them using grades	Sections of speech and types of knowledge	2	2
Reports	Training them on electronic research	Protecting the student from making the mistake of knowing the subject of the predicate and protecting his tongue from incorrect parsing of them	The subject, the predicate, and their types	2	3
Questions	Discussions in the lecture	Helping the student to recognize the parsing, the structure, and the parts of the verb so that he does not fall into the parsing error	Parsing, construction, and verb sections	2	4
Daily test	use of resources	Helping the student to differentiate between original grades and grades and subsidiary grades	Original and subsidiary inflectional signs	2	5
Reports	Training them on electronic research	Helping the student to know the grammatical signs of each of them and to differentiate between them and their affixes	The dual and the masculine plural, salem, and their attachments and grammatical signs	2	6
Questions	Discussions in the lecture	To familiarize the student with the grammatical signs and which word each appendix comes from	The sound feminine plural, its attachments and signs Their parsing	2	7
Daily test	use of resources	Helping the student to know it and know its grammatical signs and why it is called the Tamam language	The five names And its parsing signs	2	8
Reports	Training them on electronic research	Protecting the student from making a parsing error, and differentiating between it and the five nouns	The five verbs	2	9
Questions	Discussions in the lecture	Helping the student how to pronounce and write each of them and differentiate between	The hamza of pieces, the hamza of alu, and the middle and extreme	2	10

		them through the places in which they are located	hamza		
Daily test	use of resources	To help the student know the signs of parsing its subjects	Imperfect verbs, the reason for giving them this name, why they are called abrogated, and knowing the meaning of each of them	2	11
Reports	Training them on electronic research	To help the student know the signs of parsing its subjects	Letters similar to the verb, their grammatical signs, and the meaning of each of them	2	12
Questions	Discussions in the lecture	To protect the student's tongue from falling into failure to differentiate between each of them	The rules of the marbuta and basat ta's, where each of them occurs, the lunar and solar lams, and the distinction between the dha and the dha.	2	13
Daily test	use of resources	the student has skilled in examining poetry and distinguishing between them	Vertical poetry and free verse	2	14
Reports	Training them on electronic research	To know to the recipient what the speaker means by his words without clarification	punctuation marks	2	15
Questions	Discussions in the lecture		Mid-year exam		16
Daily test	use of resources	the student has to know that it works like modal verbs, but its predicate is a verbal sentence whose verb is present	Verbs of approach, hope, and initiation	2	17
Reports	Training them on electronic research	the student will be aware and aware of when these numbers are mentioned and feminine with the countable type	Number (masculine and feminine)	2	18
Questions	Discussions in the lecture	the student has to control his syntactic movements when he is in a sentence	Parsing the number, and defining it with (the) definition	2	19
Daily test	use of resources	the student knows when the present tense verb is in the nominative and accusative, with visible	Parsing of the present tense verb (nominative of the correct and irregular	2	20

		vowels and estimated vowels	present verbs and their accusative case)		
Reports	Training them on electronic research	To let the student know the cases of their assertion	The correct and irregular present tense verb and its tools	2	21
Questions	Discussions in the lecture	To adjust their grammatical signs	Parsing the defective nouns (the shortened and the deficient)	2	22
Daily test	use of resources	the student can distinguish between them and know when the verb with them is active and active For the unknown	The subject and the deputy subject, the types of each and their parsing	2	23
Reports	Training them on electronic research	To distinguish between them and know their types	The direct object, the direct object, their types, and their expressions	2	24
Questions	Discussions in the lecture	For the student to differentiate between each of them and their types	The absolute object, the direct object, and their types	2	25
Daily test	use of resources	To differentiate between it and other effects	The object for which it is intended (conditions and situations)	2	26
Reports	Training them on electronic research	the student will be able to know the movements of his parsing	What is prohibited from being morphed, and signs of its parsing	2	27
Questions	Discussions in the lecture	the student is well versed in it and the locations of its opening and breaking	The opening of the hamza (Inna), its kasra, and its three cases (obligation, the opening, the obligation of the kasra, and the permissibility of both sides)	2	28
Daily test	use of resources	the student can to distinguish between its sections and names	Thought and its sisters (its definition, its divisions, when the actions of the hearts cease to function, when they are suspended from action, and when their action is cancelled)	2	29

Reports	Training them on electronic research	the student can to be skilled and proficient in knowing the reasons for the sophistication of Arabic poetry	Modern Arabic prose (its renaissance, factors, manifestations, and signs of weakness)		30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

Grammar by Ibn Aqeel	BOOKS
Adequate grammar **Clear grammar and parsing**	Main resources
	Recommended resources
General Arabic language lectures for nc specialists	Electronics and website resources

Ruqayah Hamed Ali

Assist.Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Human rights	
2. Course code	
EDCO24F109	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory lectures	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours	
7. Name of the course tutors	
Name: Shahla kamak abduljwad E-mail: shahla111111@uomsul.edu.iq	
8. Course objectives	
• Study the principles of law • Study international human rights law • Study the characteristics of human rights • Study human rights classifications • Study international organizations and their role in monitoring the implementation of human rights	**Objectives of the study subject**
9. Teaching and learning strategies	
• Education: Preparing theoretical lectures digitally and electronically • Education: Using examples that link scientific material to applied reality • Learning: Asking direct questions to all students to find out how much they have benefited from the scientific material and increasing their interaction with each other to support the learning process. • Learning: Creating interaction between students through questions and answers and providing an environment that enables the student to manage the lecture or discussion.	**The strategy**

10.Course structure	

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	- Defining the law and social rules that regulate society.		1	1
Daily test	use of resources	- Types of laws		1	2
Reports	Training them on electronic research	- Definition of human rights		1	3
Questions	Discussions in the lecture	- Characteristics of human rights		1	4
Daily test	use of resources	- Characteristics of human rights		1	5
Reports	Training them on electronic research	- Characteristics of human rights		1	6
Questions	Discussions in the lecture	- Classification of human rights according to the time standard		1	7
Daily test	use of resources	- Classification of human rights according to scope of application		1	8
Reports	Training them on electronic research	- Political rights Second generation rights		1	9
Questions	Discussions in the lecture	Third generation rights		1	10
Daily test	use of resources	- Collective rights		1	11
Reports	Training them on electronic research	- The right of peoples to self-determination		1	12
Questions	Discussions in the lecture	- The right of peoples to self-determination		1	13
Daily test	use of resources	- Minority rights		1	14

Reports	Training them on electronic research	- Minority rights		1	15
Questions	Discussions in the lecture	- The rights of weak or vulnerable groups Wmen's rights		1	16
Daily test	use of resources	- Women's rights		1	17
Reports	Training them on electronic research	• The rights of weak or vulnerable groups Child Rights The rights of weak or vulnerable groups The rights of indigenous peoples		1	18
Questions	Discussions in the lecture	• The rights of weak or vulnerable groups Rights of people with special needs		1	19
Daily test	use of resources	•Human rights in times of war and military occupation -Human rights in times of war		1	20
Reports	Training them on electronic research	•Human rights in times of war and military occupation -Human rights in times of war		1	21
Questions	Discussions in the lecture	•Human rights in times of war and military occupation -Human rights in times of war		1	22
Daily test	use of resources	•Human rights in times of war and military occupation -Human rights in times of war		1	23
Reports	Training them on electronic research	•Human rights in times of war and military occupation -Human rights in times of war		1	24
Questions	Discussions in the lecture	•Human rights in times of war and military occupation -Human rights in times of war		1	25

Daily test	use of resources	•Definition of administrative corruption -Its definition and types -His reasons - excitement		1	26
Reports	Training them on electronic research	•Definition of administrative corruption -Its definition and types -His reasons - excitement		1	27 - 30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

	BOOKS
- United Nations website **- International Red Cross** **- Binding (Introduction to the Study of Human Rights and Freedoms) by Dr. Firas Jarjis Al-Khatuni, University of Mosul, College of Basic Education** **- Abdul Razzaq Al-Bakri and Zuhair Al-Bashir, Introduction to the Study of Law, Dar Al-Sanhouri**	Main resources
	Recommended resources
	Electronics and website resources

اسم وتوقيع صاحب المقرر

Shahla Kamak Abduljwad

Assist.Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
English Language	
2. Course code	
EDCO24F110	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory lectures	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours	
7. Name of the course tutors	
Name: Nagham Mohyaldain hamid E-mail: nagham.mohuyaldeen@uomosul.edu.iq	
8. Course objectives	
• Students communicate with the English language and develop their linguistic ability with regard to terminology. • Introducing students to correct reading and writing in English. • Introducing students to the correct pronunciation of English words • Knowing and understanding the foundations of the English language subject • Explain the basic processes of matter. • Identify the most important terms in computer science in English	**Objectives of the study subject**
9. Teaching and learning strategies	
• - Theoretical lectures • 2- Surprise exams after each lecture • 3- Conduct discussions during the lecture • 4- Conducting various researches during the semester • 5- Trying to deal with the scientific material in a way that	**The strategy**

makes the student highly focused through questions and knowledge exchange between students, a flexible group strategy	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Chapter 1	English for special purpose Sports Body parts Soccer	4	1-4
Daily test	use of resources	Chapter 2	Boxing Daily routine Weight lifting Family	5	5-9
Reports	Training them on electronic research	Chapter 3	Athletics Feelings Swimming Weather Basketball	5	10-14
Questions	Discussions in the lecture	Chapter 4	Daily problem Fencing College Volleyball Travelling	5	15-19
Daily test	use of resources	Chapter 5	Gymnastics Food Wrestling Home Handball Animal	6	20-25
Reports	Training them on electronic research	Chapter 6	Tennis Jobs 2 .28 Physical fitness Health Travelling	4	26-30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

• "New Headway, Beginner Student's Book "Johan and Liz Soars	BOOKS
• Practical English Usage	Main resources

Al-MAWRID – MODREN ARABIC/ENGLISH DICTIONARY	Recommended resources
• https://arabic.britannicaenglish.com/	Electronics and website resources

Abdul Aziz Taha Ahmed

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Microprocessor and assembly language 8086
2. Course code
EDCO24F201
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory and Practical lectures + electronic
6. Number of hours (total)/number of credits (total)
2 theoretical hours + 2 practical hours
7. Name of the course tutors
Name: Ali abdulrazaq E-mail: aliabd@uomosul.edu.iq
8. Course objectives

1. Teaching the student the internal parts of the processor and how it works 2. Enabling the student to program in assembly language, which is involved in many computer fields 3. Enabling the student to use this information in writing various programs 4. That the student can use his information in teaching	**Objectives of the study subject**
9. Teaching and learning strategies	
Providing printed lectures from modern sources, examples, and solved and unsolved questions. The student solves them and extracts errors if they depend on discovering the error, as well as turning the lesson into a discussion arena by allowing students to ask questions and inquiries and discuss solutions with the rest of the students.	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Cpu architecture		4	1
Daily test	use of resources	Fetch and execute cycle		4	2
Reports	Training them on	Explain the bus system		4	3

	electronic research				
Questions	Discussions in the lecture	memory		4	4
Daily test	use of resources	8086 mp architecture		4	5
Reports	Training them on electronic research	Execution unit		4	6
Questions	Discussions in the lecture	Flags register		4	7
Daily test	use of resources	Bus interface unit		4	8
Reports	Training them on electronic research	Addressing modes		4	9
Questions	Discussions in the lecture	Addressing modes		4	10
Daily test	use of resources	Machine code and instruction format		4	11
Reports	Training them on electronic research	Arithmetic instruction		4	12
Questions	Discussions in the lecture	Arithmetic instruction		4	13
Daily test	use of resources	Logic instruction		4	14
Reports	Training them on electronic research	Shift and rotate instruction		4	15
Questions	Discussions in the lecture	Shift and rotate instruction		4	16
Daily test	use of resources			4	17
Reports	Training them on electronic research	Transfer control instruction		4	18
Questions	Discussions in the	Transfer control instruction		4	19

	lecture				
Daily test	use of resources	deals Block mem.		4	20
Reports	Training them on electronic research	string instruction		4	21
Questions	Discussions in the lecture	string instruction		4	22
Daily test	use of resources	stack		4	23
Reports	Training them on electronic research	interrupt		4	24
Questions	Discussions in the lecture	Interrupt type		4	25
Daily test	use of resources	i/o port		4	26
Reports	Training them on electronic research	array		4	27
Questions	Discussions in the lecture	array		4	28
Daily test	use of resources	procedure		4	29
Reports	Training them on electronic research	procedure		4	30

11.Course assessment

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

•Semi-weekly short tests (quiz) asking sudden and overlapping questions with an explanation of Article 10

•Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10

•Monthly tests 10

•Termly and annual tests 70

12.References

Richard blum, professional assembly language,wiley publishing, inc, 2 Walter a. triebel," the 8086.	BOOKS

microprocessor architecture, software and interfacing techniques".pren hall, 1985 THE INTEL MICROPROCESSORS Pentium, Pentium Pro Proce Pentium II, Pentium III, Pentium 4, and Core2 with 64-Bit Extens Architecture, Programming, and Interfacing Eighth Edition BARRY BREY 2009 Internet	
INTEL MICROPROCESSORS Pentium, Pentium Pro Processor Pentiun Pentium III, Pentium 4, and Core2 with 64-Bit Extensions Architect Programming, and Interfacing Eighth Edition BARRY B. BREY 2009	Main resources
	Recommended resources
	Electronics and website resources

Assist. Prof. Dr. Ali abdulrazaq

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Numerical analysis
2. Course code
EDCO24F202
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory and Practical lectures + electronic
6. Number of hours (total)/number of credits (total)
2 theoretical hours + 2 practical hours
7. Name of the course tutors
Name: Suhaib abdjabbar abdulbaqi E-mail: suhaib.altamir@uomosul.edu.iq
8. Course objectives

The course aims to study the basic laws, concepts and axioms in programming and calculating approximate solutions to ordinary mathematical equations and how to compare them with exact solutions to determine the method. The best solution, in addition to methods for programming it using the MATLAB language, according to what was stated in the course	**Objectives of the study subject**

9. Teaching and learning strategies	
Lecture, Discussion strategy, Brainstorming ,solving equations	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Introduction to numerical analysis		4	1
Daily test	use of resources	Introduction to numerical solution and counting errors		4	2
Reports	Training them on electronic research	Practical examples thereof		4	3
Questions	Discussions in the lecture	Introduction to solving nonlinear equations		4	4

Daily test	use of resources	Drawing method		4	5
Reports	Training them on electronic research	Method of analysis		4	6
Questions	Discussions in the lecture	An introduction to numerical methods for solving a nonlinear equation		4	7
Daily test	use of resources	Bisection Method + false position method		4	8
Reports	Training them on electronic research	Secant method + Fixed-point		4	9
Questions	Discussions in the lecture	Newton Raphson Method		4	10
Daily test	use of resources	The numerical solution to a system of linear equations		4	11
Reports	Training them on electronic research	Direct methods Kaos method		4	12
Questions	Discussions in the lecture	Kaus - Jordan method		4	13
Daily test	use of resources	Jacoby method		4	14
Reports	Training them on electronic research	gauss-seidel method		4	15
Questions	Discussions in the lecture	INTERPOLATION & EXTRAPOLATION		4	16
Daily test	use of resources	Lagrange Interpolation Method		4	17
Reports	Training them on electronic research	Calculus of Finite Differences		4	18

Questions	Discussions in the lecture	Forward differences		4	19
Daily test	use of resources	Backward differences		4	20
Reports	Training them on electronic research	Divided differences		4	21
Questions	Discussions in the lecture	Central differences		4	22
Daily test	use of resources	Numerical Integration		4	23
Reports	Training them on electronic research	Trapezium method		4	24
Questions	Discussions in the lecture	Simpson’s method		4	25
Daily test	use of resources	Simpson’s method 3/8		4	26
Reports	Training them on electronic research	Introduction to methods for solving differential equations by numerical methods		4	27
Questions	Discussions in the lecture	Euler Method		4	28
Daily test	use of resources	Euler Method		4	29
Reports	Training them on electronic research	Runge – Kutta Method		4	30

11.Course assessment

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

•Semi-weekly short tests (quiz) asking sudden and overlapping questions with an explanation of Article 10

•Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10

•Monthly tests 10

•Termly and annual tests 70

12.References	
Numerical analysis in matlab	BOOKS
	Main resources
	Recommended resources
	Electronics and website resources

Assist.Prof. Dr. Suhaib Abdjabbar Abdulbaqi

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Data Structure	
2. Course code	
EDCO24F203	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory and Practical lectures + electronic	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours + 2 practical hours	
7. Name of the course tutors	
Name: Abdulnaser younis Ahmed E-mail: abdulnasir.younus @uomosul.edu.iq	
8. Course objectives	
Learn about ways to organize and store data using different graphic structures. Identify the set of operations that are used to manage each graphic structure Learn how to represent and implement each data structure using the computer Identify the types of applications for each graphic structure Using efficient algorithms to process data and reach results in quick and efficient ways, such as search and ranking algorithms	**Objectives of the study subject**
9. Teaching and learning strategies	
• Education: Preparing theoretical lectures digitally and electronically, relying on modern sources belonging to reputable publishing houses. • Preparing and implementing practical aspect lectures digitally and on paper. • Education: Providing clear video and recorded lectures • Education: Using examples that link scientific material to applied reality. Data display devices are also used to support the education process • Education: Training students on various questions and examples, writing programming paragraphs or tracking programs, in addition to analyzing, interpreting, modifying and maintaining programs based on object-oriented programming	**The strategy**

specifications.

• Learning: Asking direct questions to all students to find out the extent to which they have benefited from the scientific material and increasing their interaction with each other to support the learning process.

• Learning: Each specific group explains the duties assigned to them, interacts among the students with questions and answers, and provides an environment that enables the student to manage the lecture or discussion.

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Introduction into Data structures	Importance of DS	4	1
Daily test	use of resources	Classifications of Data structures	Types of DS	4	2
Reports	Training them on electronic research	Calculating memory address of one dimensional array	How to find out memory location for arrays	4	3
Questions	Discussions in the lecture	Calculating memory address of two dimensional array	How to find out memory location for 2-D arrays	4	4
Daily test	use of resources	Calculating memory address of structures	How to find out memory location for structures	4	5
Reports	Training them on electronic research	Calculating memory address of nested structures	How to find out memory location for nested struc.	4	6
Questions	Discussions in the lecture	Introduction into Stacks and related applications	Stacks	4	7
Daily test	use of resources	Stack Push and Pop algorithms	Push and Pop algorithm	4	8
Reports	Training them on electronic research	Stack examples	Tutorials on stacks	4	9
Questions	Discussions in the lecture	Introduction into Queue and related app.	Queue	4	10
Daily test	use of	Queue Enqueue and	Enqueue and	4	11

	resources	Dequeue algorithm	Dequeue algorithm		
Reports	Training them on electronic research	Circular Queue, Enqueue and Dequeue in Circular Queue	Introduction on CQ, Enqueue an dequeue	4	12
Questions	Discussions in the lecture	Introduction into pointers	Pointers	4	13
Daily test	use of resources	Using pointer in passing parameters	Passing arguments by pointers	4	14
Reports	Training them on electronic research	Linked lists	Linked lists	4	15
Questions	Discussions in the lecture	Doubly linked list	Doubly Linked Lists	4	16
Daily test	use of resources	Circular singly linked list	Tutorials	4	17
Reports	Training them on electronic research	Circular doubly linked list	Circular singly linked list	4	18
Questions	Discussions in the lecture	Introduction to Tree data structure	Tree data structure	4	19
Daily test	use of resources	Binary search tree	Binary search tree	4	20
Reports	Training them on electronic research	Traversing tree data structure	Inorder, Preorder and postorder	4	21
Questions	Discussions in the lecture	Operations on Binary Search tree	How to insert, search and delete values	4	22
Daily test	use of resources	Introduction to Sorting	Sorting	4	23
Reports	Training them on electronic research	Insertion sort	Insertion sort	4	24
Questions	Discussions in the lecture	Selection and Bubble sort	Selection and Bubble sort	4	25
Daily test	use of resources	Introduction to searching	Searching	4	26

Reports	Training them on electronic research	Linear search	Linear search	4	27
Questions	Discussions in the lecture	Binary search	Binary search	4	28
Daily test	use of resources	Complexities	Time and space complexities	4	29
Reports	Training them on electronic research	Complexity of different data structures	How to find the complexity of a data structure	4	30

11.Course assessment

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

•Semi-weekly short tests (quiz) asking sudden and overlapping questions with an explanation of Article 10

•Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10

•Monthly tests 10

•Termly and annual tests 70

12.References

	BOOKS
	Main resources
	Recommended resources
	Electronics and website resources

Assist. Prof. Dr. Abdulnaser Younis Ahmed

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Object Oriented Programming	
2. Course code	
EDCO24F204	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory and Practical lectures + electronic	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours + 2 practical hours	
7. Name of the course tutors	
Name: Alaa Yaseen Taqa E-mail: alaa.taqa@uomosul.edu.iq	
8. Course objectives	
• Study the principles of object-oriented programming • Study how Class works • Study ready-made items such as files, strings, etc • Study the characteristics and properties of object-oriented programming • Study object-oriented programming applications and applications in the labor market • Study the advantages of object-oriented programming and compare it with other programming methods	**Objectives of the study subject**
9. Teaching and learning strategies	
• Education: Preparing theoretical lectures digitally and electronically, relying on modern sources belonging to reputable publishing houses. • Preparing and implementing practical aspect lectures digitally and on paper. • Education: Providing clear video and recorded lectures • Education: Using examples that link scientific material to applied reality. Data display devices are also used to support the education process • Education: Training students on various questions and examples, writing programming paragraphs or tracking programs, in addition to analyzing, interpreting, modifying and maintaining programs based on	**The strategy**

object-oriented programming specifications.

•□Learning: Asking direct questions to all students to find out the extent to which they have benefited from the scientific material and increasing their interaction with each other to support the learning process.

• Learning: Each specific group explains the duties assigned to them, interacts among the students with questions and answers, and provides an environment that enables the student to manage the lecture or discussion.

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	• **Programming Paradigms** - Non structured &structured Programming, - Procedural Oriented Programming & OOP	**Programming Paradigms**	4	1
Daily test	use of resources	• **Introduction to OOP 1** - Class notation and definition (with graphical examples)	• **Introduction to OOP 1**	4	2
Reports	Training them on electronic research	– **Introduction to OOP 2** – Class relation types – Abstraction concept and abstract data type – Examples	• **Introduction to OOP 2**	4	3
Questions	Discussions in the lecture	• **OOP concepts** - Encapsulation concept - Data hiding concept - Reuse concept - Examples	**OOP Concept**	4	4
Daily test	use of resources	• **Class definition using Java** - Class body - Methods	• **Class definition using Java**	4	5

		- Examples			
Reports	Training them on electronic research	• **Creating objects** - **Access attributes** - **Access methods** - **Examples** - **private, and public** - **Examples**	• **Creating objects**	4	6
Questions	Discussions in the lecture	▪ **Polymorphism concepts first part 1** - Method Overloading - Examples	▪ **Polymorphism concepts first part 1**	4	7
Daily test	use of resources	• **Array of objects 1** - Concepts - Declaration - Initialization - Allocate in memory	**Array Object 1**	4	8
Reports	Training them on electronic research	• **Array of objects 2** - Applications (Examples)	Array Object 2	4	9
Questions	Discussions in the lecture	• **Constructor Methods** - Definition - Examples	**Constructor Methods**	4	10
Daily test	use of resources	• **Polymorphism concepts first part 2** - Constructor Overloading - Examples	• **Polymorphism concepts first part 2**	4	11
Reports	Training them on electronic research	• **Strings 1** - Declaration and Initialization - Reading and printing - Example	**String 1**	4	12
Questions	Discussions in the lecture	• **Strings 2** - Processing (sorting, searching, concatenating, etc) - String as the method parameters and return values - Examples	**Strings 2**	4	13
Daily test	use of resources	• **Math class and classes of Number types** - Math methods - Number (Integer, Float,…,etc) methods - Example	• **Math class and classes of Number types**	4	14

Reports	Training them on electronic research	• **Inheritance 1** - Inheritance types - Inheritance structures - Protected Access type - Examples	• **Inheritance 1**	4	15
	Mid-Year Examinations				
Questions	Discussions in the lecture	• **Inheritance 2** - Inheritance Methods in subclass - Constructor method in subclass - Example	• **Inheritance 2**	4	16
Daily test	use of resources	• **Special java keywords 1** - this keyword in java - Super keyword in java • **Special java keywords2** - Method overridden introduction - Shadow variables Examples	• **Special java keywords 1**	4	17
Daily test	use of resources	• **Special java keywords2** - Method overridden introduction - Shadow variables Examples	• **Special java keywords 2**	4	18
Reports	Training them on electronic research	• **Final keyword in java** - Definition • Examples	• **Final keyword in java**	4	19
Questions	Discussions in the lecture	• **Abstract Class** - Definition - Abstract Method definition - Examples	• **Abstract Class**	4	20
Daily test	use of resources	• **Polymorphism concepts second part** - Method overloading (in subclass) - Method overridden	• **Polymorphism concepts second part**	4	21
Reports	Training them on electronic research	• **Polymorphism concepts third part** - Static and dynamic binding - Examples	• **Polymorphism concepts third part**	4	22
Questions	Discussions in the lecture	• **Multiple Inheritance concepts** - Interface definition - Examples	• **Multiple Inheritance concepts**	4	23
Daily test	use of resources	• **Static class and members** - Static attributes - Static methods - Static class • Examples	• **Static class and members**	4	24
Reports	Training them on	• **File Class** - Definition	• **File Class**	4	25

	electronic research	- Creating file for reading - Creating file for writing - Appending to file • Examples			
Questions	Discussions in the lecture	• **Java Packages** - Creating packages - Import packages - Access types (access modifier) with packages - Examples • **Nested Classes** - Nested Classes (Inner class) Definition - Anonymous Inner Classes Definition - Mixing Static and Non- Static Import - Enums as Classes • Examples	• **Java Package** • **Nested Classes**	4	26
Daily test	use of resources	• **Introduction** - installation - Using • **Python for OOP** - Class definition - Object creation Examples	**Introduction to the Python language Python language and its support for object-oriented programming Definition of class and object with examples, Part One**	16	27
Reports	Training them on electronic research	• **Python for OOP** - Inheritance - Polymorphism Examples	**Python language and its support for object-oriented programming Genetics Polymorphism, Part Two**		28
Questions	use of resources	• **Sustainable development1** - **Sustainable development def.** - **Sustainable development goals** - **Energy Efficiency** • **Examples**	**Sustainable development1**		29
Questions	use of resources	• **Sustainable development2** - **Resource Optimization** - **Hardware Recycling** - **Sustainable Programming** - **Examples**	**Sustainable development2**		30

11.Course assessment

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

•Semi-weekly short tests (quiz) asking sudden and overlapping questions with an explanation of Article 10

•Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10

•Monthly tests 10

•Termly and annual tests 70

12.References

	BOOKS
1- Interactive Object-Oriented Programming in Java Learn and Test Your Programming Skills Second Edition Vaskaran Sarcar Foreword by Avirup Mullic,Press,2016 2- Concise Guide to Object-Oriented Programming An Accessible Approach Using Java,Kingsley Sage School of Engineering and Informatics, University of Sussex, Falmer, East Sussex, UK Springer,2019 3- Java How to program", Deitel and Deitel,Prentice Hall,2015 **Java How to Program, 11/e,** Early Objects , ", Deitel and Deitel,Prentice,2020	Main resources
1- Python Object Oriented Programming Exercises Volume 2 by Edcorner Learning,2021 2- Learning Python: Powerful Object-Oriented Programming, by Mark Lutz,Oreilly,2013"	Recommended resources
	Electronics and website resources

Assist. Prof. Dr. Alaa Yaseen Taqa Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Data Base	
2. Course code	
EDCO24F205	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory and Practical lectures + electronic	
6. Number of hours (total)/number of credits (total)	
30 theoretical hours + 30 practical hours	
7. Name of the course tutors	
Name: Mohammed khaldon altalib E-mail:mohammadaltalib79@uomosul.edu.iq	
8. Course objectives	
The student will acquire skills in analyzing systems and collecting data by starting with the system life cycle step by step in general, and then entering into database systems from a theoretical and practical perspective for the purpose of designing and building efficient and well-designed systems. This is in addition to the skills necessary to teach this subject to middle and middle school students.	**Objectives of the study subject**
9. Teaching and learning strategies	
• Education: Providing printed lectures from modern and diverse sources rich in examples • Education: Using the smart board to teach students, clarify the solution steps, and extract results • Education: Solving some questions while deliberately containing errors and making students extract the error • Learning: Asking questions and inquiries and making the student turn to teaching by explaining and solving on the blackboard at that stage. • Learning: Direct questions for all students to find out the extent of their interaction and to get the rest to pay attention • Learning: Each specific group explains its report, interacts among students with questions and answers, and provides • An environment that enables the student to lead the lecture or	**The strategy**

discussion. Make groups of students, each group has a specific project.	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Introduction to Database system (why DB) and database management system (DBMS)		4	1
Daily test	use of resources	Fundamentals of Databases.		4	2
Reports	Training them on electronic research	Database System Concepts and Architecture		4	3
Questions	Discussions in the lecture	Data model, Schemas, Instances		4	4
Daily test	use of resources	Data Modeling Using the Entity Relationship Model		4	5
Reports	Training them on electronic research	How to represent entities and attributes in the ER model		4	6
Questions	Discussions in the lecture	Participation Constraints and Existence Dependencies		4	7
Daily test	use of resources	The Enhanced Entity Relationship (EER) model (Subclass / superclass)		4	8
Reports	Training them on electronic research	Specialization and Generalization		4	9
Questions	Discussions in the lecture	Exercise		4	10
Daily test	use of resources	The Relational Data Model and Relational Database Constraints		4	11

Reports	Training them on electronic research	Types of DB Keys		4	12
Questions	Discussions in the lecture	Mapping ER and EER models to Relational models		4	13
Daily test	use of resources	Relational Integrity constraints		4	14
Reports	Training them on electronic research	An Overview to Normalization and The Problems of Redundancy s		4	15
Questions	Discussions in the lecture	Functional Dependencies and Rules of conclusion		4	16
Daily test	use of resources	The Three Normalization Forms ,1NF.22NF, 3NF		4	17
Reports	Training them on electronic research	Introduction to Transaction Processing Concepts		4	18
Questions	Discussions in the lecture	Why Recovery is needed and the types of failures the system		4	19
Daily test	use of resources	The Log file and ACID properties		4	20
Reports	Training them on electronic research	SQL Server Definition and installation.		4	21
Questions	Discussions in the lecture	SQL commands for Data definition language (DDL)		4	22
Daily test	use of resources	Data manipulation language (DML) SQL commands		4	23
Reports	Training them on electronic research	SQL commands for Data query language (DQL)		4	24
Questions	Discussions in the lecture	Nested Query and Join between tables		4	25
Daily test	use of resources	Understanding the terms (system, Information system, Information Technology , Systems		4	26

		Analyst)			
Reports	Training them on electronic research	Introduction to Analysis of Database systems and Design of Information Systems		4	27
Questions	Discussions in the lecture	Structure Analysis The life cycle of the system: SDLC		4	28
Daily test	use of resources	Planning, Analysis Phase Design, implementation and maintain and support phases		4	29
Reports	use of resources	-Introduction Harnessing systems analysis to achieve the Sustainable Development Goals -Analyzing health data systems to support healthcare systems. -Supporting quality education. -Improving the sustainability of natural resources. -Supporting innovation in industry and infrastructure -Supporting the transition to clean energy. -Supporting sustainable cities and communities. -Improving food security. - Supporting justice and equality		4	30

11.Course assessment

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

•Semi-weekly short tests (quiz) asking sudden and overlapping questions with an explanation of Article 10

•Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10

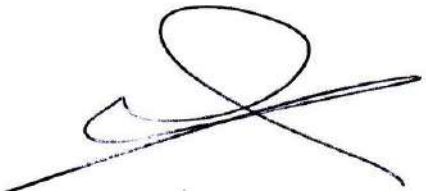
•Monthly tests 10

•Termly and annual tests 70

12.References

	BOOKS

• "FUNDAMENTALS OF Database Systems" Ramez Elmasri, Shamkant B. Navathe SIXTH EDITION, 2010. • 'Database Systems", Thomas Connolly • Carolyn Begg, SIXTH EDITION. • "Developing Information Systems: concepts, Issues, And Practice C. Avgerou And T. Cornford, 2nd Ed., Macmillan Press, 1998.	Main resources
	Recommended resources
www.Tutorialspoints.com https://www.sqlservertutorial.net	Electronics and website resources



Dr. Mohammed Khaldoon

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Computational Theory
2. Course code
EDCO24F206
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory lectures
6. Number of hours (total)/number of credits (total)
3 theoretical hours
7. Name of the course tutors
Name: Kanar mohammed Sami E-mail: lamarsafwan111@uomosul.edu.iq
8. Course objectives

1. Confirm theoretical models of calculation and analyze them 2. Define and prove the capabilities and limitations of certain models of computation 3. Explaining the problems that are impossible to solve and cannot be answered by any mathematical model 4. Prove that there are limits on the account within the context of source limits 5. The possibility of finding solutions to some of the problems facing related to computational theory	**Objectives of the study subject**
9. Teaching and learning strategies	
Lecture and discussion method.	**The strategy**
10.Course structure	

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Define computational Theory		3	1
Questions	Sets	Sets		3	2
Questions	Graphics	Graphics		3	3
Questions	Language theory	Language theory		3	4
Daily test	use of resources	Grammar		3	5
Reports	Training them on electronic research	Derivation		3	6

Questions	Discussions in the lecture	grammar types		3	7
Daily test	use of resources	Context sensitive grammar(CSG)		3	8
Reports	Training them on electronic research	Context free grammar(CFG)		3	9
Questions	Discussions in the lecture	Regular grammar (RG)		3	10
Daily test	use of resources	Ambiguity		3	11
Reports	Training them on electronic research	Chomsky normal form (CNF)		3	12
Questions	Discussions in the lecture	Parse Tree		3	13
Questions	Discussions in the lecture	(CNF) Theorem 1		3	14
Questions	Discussions in the lecture	(CNF) Theorem 2		3	15
Mid-Year Examinations					
Questions	Discussions in the lecture	(CNF) Theorem 3		3	16
Questions	Discussions in the lecture	DFA NDFA		3	17
		Finite automata		3	18
Daily test	use of resources	Finite automata Deterministic FA		3	19
Questions	use of resources	Non Deterministic FA (DFA)		3	20
Daily test	Discussions in the lecture	Non Deterministic FA (DFA)		3	21
Questions	Discussions in the lecture	Convert from NDFA to DFA		3	22
Daily test and discussion	Discussions in the lecture	Convert from NDFA to DFA		3	23
Questions	use of resources	transition-Finite automata with ε transition		3	24
Questions	use of resources	transition-Finite automata with ε transition then NDFA to DFA		3	25
Questions	use of resources	Introduction to Regular Expression		3	26
Daily test	use of resources	Exercises on RE		3	27

Questions	use of resources	RE→FA FA→RE transformation		3	28
Reports	Training them on electronic research	Introduction in Push down automata (PDA)		3	29
Questions	use of resources	(PDA) discussion and exercises		3	30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

1-Digital Design, Third Edition, by M. Morris Mano. Prentice-Hal Inc. 2002. 2-Logic Design ,Digital Principles and Application", Malvino, 2000 3-"Introduction to Logic Design" (2nd) edition), Sajjan G. Shiva, 2007	BOOKS
	Main resources
	Recommended resources
	Electronics and website resour

Kanar Mohammed Sami

Assist.Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Research Methodology
2. Course code
EDCO24F207
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory and Practical lectures + electronic
6. Number of hours (total)/number of credits (total)
60 theoretical hours
7. Name of the course tutors
Name: Yahya Ismail Ibrahim E-mail: yahyaismail@uomosul.edu.iq
8. Course objectives

• Teaching students how to write scientific research, dissertations, and dissertations • Choosing the right model and how to test its efficiency • Methods of collecting information, analyzing it, extracting correct results, and presenting conclusions	**Objectives of the study subject**
9. Teaching and learning strategies	
• Education: Providing printed lectures from modern sources. • Education: Offering different types of solutions to problems • Education: Illustrating future applications of research methods • Learning: Encouraging students to submit research models on proposed topics • Learning: Opening discussion among students on research models, revealing errors, and the possibility of developing them	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the	The concept of scientific research	- The concept of science - Objectives of	2	1

	lecture		science		
Daily test	use of resources	Knowledge	-The concept of knowledge - Types of knowledge	2	2
Reports	Training them on electronic research	Research	-The concept of knowledge -Motives for scientific research	2	3
Questions	Discussions in the lecture	- Characteristics of scientific research - Problems of scientific research	What are the characteristics and problems of scientific research?	2	4
Daily test	use of resources	Methodology Research work - Ethics of scientific research	-The concept of the methodology - Research Methodology – Research work systems - Ethics of scientific research	2	5
Reports	Training them on electronic research	Steps of scientific research	Defining the problem Sources of the problem	2	6
Questions	Discussions in the lecture	Steps of scientific research	Evaluate the problem problem formulation	2	7
Daily test	use of resources	Steps of scientific research	Hypothesis sources Hypothesis conditions Types of hypotheses	2	8
Reports	Training them on electronic research	Determine the research methodology	Review of the most popular curricula	2	9
Questions	Discussions in the lecture	Types of Methodology	Definition and explanation of the types of curricula	2	10
Daily test	use of resources	Types of Methodology	Complete the explanation of the types of curricula	2	11
Reports	Training them on electronic research	Determine the statistical method	Preparing the statistical community	2	12
Questions	Discussions in the lecture	Statistical data errors	-Random error -Error bias -Consistency error	2	13

Daily test	use of resources	Sample selection steps	-Determine the sample unit -Determine the frame Determine the sample size	2	14
Reports	Training them on electronic research	Determine the sample selection method	Simple random sampling -Regular random sampling -stratified sample -Multi-stage random sampling - survey sample	2	15
Questions	Discussions in the lecture	Data collection	-Data collection sources -Methods of data collection	2	16
Daily test	use of resources	Data collection	Data collection methods -Questionnaire form	2	17
Reports	Training them on electronic research	Data processing	-Data review -Data encoding -Sort and tabulate data -Initialize and prepare data	2	18
Questions	Discussions in the lecture	Data Analysis	-arithmetic analysis	2	19
Daily test	use of resources	statistical analysis	-Averages -Dispersion measures - Absolute dispersion measures - Relative dispersion measures	2	20
Reports	Training them on electronic research	-Correlation coefficients -Regression analysis -Analysis results	Correlation coefficients -Regression analysis	2	21
Questions	Discussions in the lecture	Stages of higher research	-Refer to the sources - Taking advantage of sources	2	22
Daily test	use of resources	Stages of higher research	--Documentation of sources -The footnote and its contents	2	23
Reports	Training them on electronic research	Stages of higher research	-Stages of writing	2	24

Questions	Discussions in the lecture	Stages of higher research	Research evaluation	2	25
Daily test	use of resources	Technical organization of scientific research	-Research Title -Contents page	2	26
Reports	Training them on electronic research	Technical organization of scientific research	-Introduction to research -Fix margins	2	27
Questions	Discussions in the lecture	Technical organization of scientific research	-Preparing a list of sources	2	28
Daily test	use of resources	Technical organization of scientific research	Appendices	2	29
Reports	Training them on electronic research	Intellectual and textual plagiarism and plagiarism	Intellectual and textual plagiarism and plagiarism	2	30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

Book of basics of scientific research	BOOKS
Book of basics of scientific research	Main resources
Everything related to scientific research	Recommended resources
Lectures on plagiarism, quoting, and plagiarism	Electronics and website resources

Assist. Prof. Yahya Ismail Ibrahim

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Secondary Education	
2. Course code	
EDCO24F208	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
There are two groups A and B (each group consists of two divisions). Each group has two hours, 2*4 = 8 hours per week. 8 * 4 = 32 per month	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours + 2 practical hours	
7. Name of the course tutors	
Name: Ali Subhee	
8. Course objectives	
• Helping the student become familiar with the school and institutional system and the importance of the secondary education stage. • Students gain knowledge of educational supervision, its goals and methods, ancient and modern. • The student gains theoretical experience of secondary education systems by being exposed to a group of global experiences for this stage. • It develops in the student the skill of planning and organizing the lesson and applying scientific steps in managing educational work within the educational institution. • The student's awareness that educational work revolves around the patterns of educational administration, which are (authoritarian, democratic, and permissive). • Helping the student identify the elements, components, and goals of educational administration. • Helping the student become familiar with the educational innovations present in Iraq. • Identifying the secondary stage, its objectives,	**Objectives of the study subj**

admission conditions, and types of exams. • Identifying the skills that a school principal must possess and the duties that he must perform. • Identify central and decentralized educational administration and their advantages and disadvantages	

9. Teaching and learning strategies

Lecture, discussion and dialogue, educational platform Google classroom, problem solving, Developed lecture, reciprocal teaching, brainstorming, questioning.	**The strategy**

10. Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Secondary education, its objectives, conditions for admission, and types of examinations		2*4=8	1+2
Daily test	use of resources	Educational innovations / advanced schools - comprehensive secondary schools, their principles and goals - industrial arts departments - multi-purpose schools - supplementary classes attached to primary schools - experimental middle schools - students visiting production institutions - studying foreign languages - educational and psychological guidance - teaching programming		2*4=8	3+4+5
Reports	Training them on electronic research	Diversifying secondary education - specialized secondary schools - distinguished schools - acceleration		2*4=8	6+7
Questions	Discussions in the lecture	Educational administration / setting goals _ planning _ organizing _ communication _ follow-up _ evaluation _ decision		2*3=6	8+9+10

		making			
Daily test	use of resources	Centralization and decentralization in educational administration/and their advantages and disadvantages Factors affecting educational administration in terms of centralization and decentralization The political factor - social and demographic factors, including (population, social forces and pressures, natural, geographical and economic factors)		2*3=6	11+12+13
Reports	Training them on electronic research	School administration / its concept and patterns - the autocratic style, its characteristics and disadvantages - the democratic style, its characteristics and advantages - the permissive style, its characteristics and disadvantages		2*4=8	14+15
Questions	Discussions in the lecture	Tasks of the school principal - skills that must be available in the school principal / mental intellectual skills - technical skills - human skills		2*4=8	16+17
Daily test	use of resources	**Educational concept, goals, and methods / individual methods, the supervisor's visit to the school, the supervisor's visit to the teacher in the classroom, the individual interview, the visit** **Group methods / educational workshop - meetings with the educational body of the school - educational conference - model lessons - committees - meeting with teachers of a specific subject or class - training courses - directed readings - supervisory bulletins - educational research - dialogue and symposium - seminar**		2*3=6	18+19+20
Reports	Training them on	**Problems facing vocational education**		2*3=6	21+22+23

	electronic research	**_ Contemporary trends in educational administration _ Elements of a successful plan**			
Questions	Discussions in the lecture	**Classroom management and its problems**		2*3=6	24+25+26
Daily test	use of resources	**E-learning, its goals and importance**		2*3=6	27+28+29
Reports	Training them on electronic research	**review**		2	30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

***Youssef Qahtan, secondary education *Youssef Yaqoub and Ali Hattab, Secondary Education and Educational Administration 2015. *Report on the educational situation in Iraq, Ministry of Education 2004. *Jihan Muhammad and Raed Ali, secondary education and educational administration.**	BOOKS
	Main resources
	Recommended resources
www edutrapef net* * www edutrapia illaf net * www Mohammed iapesse com * www feedo net IRaising chidren *www aricles Islam *www mesoport com* www uobabylon edu iq	Electronics and website resources

Ali Subhee

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Developmental Psychology	
2. Course code	
EDCO24F209	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory lectures	
6. Number of hours (total)/number of credits (total)	
theoretical hours	
7. Name of the course tutors	
Name: Lubna Mohammed Ahmed Email: lubna.mohammed@uomosul.edu.iq	
8. Course objectives	
• For the student to become familiar with the concept of developmental psychology and its areas of interest and study. • The student gets to know the meaning of growth through various intellectual, physical, functional and emotional developmental changes • Describing psychological processes at different ages and revealing the characteristics of the change that occurs at each age • Explaining the phenomenon of temporal changes in human behavior and revealing the factors and variables that determine this change. • Reaching growth standards at each stage. • Detect the factors affecting the growth process • The ability to develop curricula and courses appropriate to the age level • Increased predictability in growth and development • Evaluation of the growth process.	**Objectives of the study subject**
9. Teaching and learning strategies	
Theoretical and practical lectures, dialogue and discussions, brainstorming, problem solving, conducting practical experiments. Daily reports and dutiesabbreviation of logical functions using the Karnoff map.	**The strategy**

Understanding Flip-flops, Encoder, and Decorder, Demuliplexer and Multiplexer	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Concept of developmental psychology	Understand the meaning of developmental psychology	2	1
Daily test	use of resources	The goal of the topic	That the student can understand the meaning of development and growth and the differences between them	2	2
Reports	Training them on electronic research		The first exam for the first semester	2	3
Questions	Discussions in the lecture	How growth occurs	Identify the principles of growth and the factors affecting it	2	4
Daily test	use of resources	How growth occurs	Identify the principles of growth and the factors affecting it	2	5
Reports	Training them on electronic research	Applied research/example	Research methods in developmental psychology	2	6
Questions	Discussions in the lecture	Theories	Theoretical directions in developmental psychology	2	7
Daily test	use of resources	Theories	The importance of life sciences in the development of child psychology	2	8
Reports	Training them on electronic research	Concept of developmental psychology	Understand the meaning of developmental psychology	2	9
Questions	Discussions in the lecture	The goal of the topic	That the student can understand the meaning of development and growth and the	2	10

			differences between them		
Daily test	use of resources	The process of upbringing in the family	Socialization	2	11
Reports	Training them on electronic research	Clarifying the relationship with developmental psychology	Dependent behavior and aggressive behavior	2	12
Questions	Discussions in the lecture	Stages	Congenital growth	2	13
Daily test	use of resources	Sensation and perception	Cognitive development	2	14
Reports	Training them on electronic research	Exam	Exam	2	15
Questions	Discussions in the lecture	Sensation and perception	Cognitive development	2	16
Daily test	use of resources	Thinking steps	Thinking, its tools and stages	2	17
Reports	Training them on electronic research	Mental images Stages of thinking development	Thinking, its tools and stages Thinking, its tools and stages	2	18
Questions	Discussions in the lecture	Its definition and operations	Inference	2	19
Daily test	use of resources	Its components and capabilities	innovation and creativity	2	20
Reports	Training them on electronic research	Language, its meaning and importance	Linguistic development	2	21
Questions	Discussions in the lecture	Its definition and what it is	adolescence	2	22
Daily test	use of resources	Its types	Physical changes	2	23
Reports	Training them on electronic research	Its relationship with the individual and society	Adolescent and society	2	24
Questions	Discussions in the lecture	Adolescent's level of awareness	Adolescent cognitive development	2	25

Daily test	use of resources	Its development according to age stages	Imagination and remembering	2	26
Reports	Training them on electronic research	General characteristics of mental development	Capabilities and aptitudes	8	27-30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

-Psychology of Childhood and Adolescence, Al-Alusi, Jamal Hussein 1983, Capital - University of Baghdad . -Evolutionary Psychology, Arifaj, Sami 1993, Jordan - Amman - Dar Majdalawi.	BOOKS
- Introduction to Developmental Psychology, Alwan, Fadia 2003 Cairo - Arab House Library. **- Psychology of Development - Al-Annabi, Hanan Abdel Hamid. 2003** **- Developmental psychology - from childhood to old age - Al-Tafili, Ittisam Zain Al-Din 2004**	Main resources
	Recommended resources
	Electronics and website resources

Lubna Mohammed Ahmed

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
English Language
2. Course code
EDCO24F210
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
Theory lectures
6. Number of hours (total)/number of credits (total)
30 theoretical hours
7. Name of the course tutors
Name: AbdulAziz Taha Ahmed Email: Abdulazeez.ahmed@uomosul.edu.iq
8. Course objectives

• Students communicate with the English language and develop their linguistic ability with regard to terminology. • Introducing students to correct reading and writing in English. • Introducing students to the correct pronunciation of English words • Knowing and understanding the foundations of the English language subject • Explain the basic processes of matter. • Identify the most important terms in computer science in English	**Objectives of the study subject**

9. Teaching and learning strategies

1- Theoretical lectures 2- Surprise exams after each lecture 3- Conduct discussions during the lecture 4- Conducting various researches during the semester	**The strategy**

5- Trying to deal with the scientific material in a way that makes the student highly focused through questions and knowledge exchange between students, a flexible group strategy	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	Sentence patterns	Structure of sentence Elements of sentence Simple, complex and compound sentence Exercises	4	1-4
Daily test	use of resources	Adjectives	Comparative and superlative Exercises	5	5-9
Reports	Training them on electronic research	Conjunction	Rules for using conjunction (when, and, but, because,)	5	10-14
Questions	Discussions in the lecture	Paragraph about computer	Translation vocabulary, read and exercises	5	15-19
Daily test	use of resources	Types of sentences	The declarative, interrogative and negative sentence	6	20-25
Reports	Training them on electronic research	Grammar	Past and present simple Present perfect	5	26-30

11.Course assessment

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

- Mid year exam 25%

• 15% includes (theoretical tests 10%, assignments and reports 5% during the year) • 60% Final test	
12.References	
• "New Headway, Beginner Student's Book "Johan and Liz Soars	BOOKS
• Practical English Usage	Main resources
Al-MAWRID – MODREN ARABIC/ENGLISH DICTIONARY	Recommended resources
• https://arabic.britannicaenglish.com/	Electronics and website resources

AbdulAziz Taha Ahmed

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
The crimes of the Ba'ath regime	
2. Course code	
EDCO24F211	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
Theory lectures	
6. Number of hours (total)/number of credits (total)	
30 theoretical hours	
7. Name of the course tutors	
Name: Omer Duriad thanoon E-mail: omer.thnon@uomosul.edu.iq	
8. Course objectives	
• Identify and learn about a group of crimes committed by the Baath Party • Identifying the psychological and social crimes committed by the Baath Party regime • Exposing what the Baath regime carried out in the largest process of scientific and cultural impoverishment of the most ancient people • Introducing international crimes and genocide • Exposing environmental crimes committed by the Baath regime • Mass grave crimes committed by the Baath Party regime • Knowing the Baath regime's position on religion	**Objectives of the study subject**
9. Teaching and learning strategies	
• The following strategies are used depending on the content of the lecture: • Discussion strategy. • Think, discuss, share strategy • Flexible groups strategy	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Questions	Discussions in the lecture	The concept of crimes and their types, definition of crime, language, terminology, and crimes of the Baath regime according to the documentation of the law of the Iraqi Supreme Criminal Court in 2005.		4	1-4
Daily test	use of resources	Types of crimes, decisions issued by the Supreme Criminal Court, psychological and social crimes and their effects, and the most prominent violations of the Baathist regime in Iraq.		2	5-6
Reports	Training them on electronic research	Social crimes and mechanisms of psychological crimes, effects of psychological crimes,		4	7-10
Questions	Discussions in the lecture	Militarization of society, the Baathist regime's position on religion, violations of Iraqi laws		4	11-14
Daily test	use of resources	Pictures of human rights violations and crimes of power		6	15-20
Reports	Training them on electronic research	Prison and detention places of the Baath regime		4	21-23
Questions	Discussions in the lecture	Environmental crimes of the Baath regime		3	24-25
Daily test	use of resources	Mass grave crimes		2	26-27
Reports	Training them on electronic research	Examination and distribution of quests		2	28-30

11.Course assessment

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

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)

• 60% Final test	
12.References	
The book on crimes of the Baath regime is issued and approved by the Ministry of Higher Education and Scientific Research	BOOKS
	Main resources
	Recommended resources
	Electronics and web resources

Omer Duriad thanoon

Assist.Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Arabic Language
2. Course code
EDCO24F212
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
6. Number of hours (total)/number of credits (total)
30 theoretical hours
7. Name of the course tutors
Name: Dr. Ruqayah Hamid Email: ruqayah.h.a@uomsul.edu.iq
8. Course objectives
Maintain the talking and the writing style for students in native Arabic Language
9. Teaching and learning strategies

Strategy	Encourage students to interactive with each other and with the lecturer to maintain their reading/writing style.

10. Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to the point 11 above	**Analyze the speech**	**Sermon of Hijat Al-Wadaa' of prophet Mohammed peace upon him**		**2**	**1**
According to the point 11 above	Interpret the meanings of the this sermon	Sermon content		**2**	**2**
According to the point 11 above	Interpret the meanings of the this sermon	Eloquence in the sermon		**2**	**3**
According to the point 11 above	Examples to declare the sermon's meanings	Grammatical issues in the sermon		2	4
According to the point 11 above	Spelling applications	Grammatical forms in the sermon		2	5
According to the point 11 above	Historical life examples	Helping the student to know the inflectional signs of each grammatical form and to differentiate between them and their attachments		2	6
According to	Current Life	Name and its signs		2	7

the point 11 above	examples				
According to the point 11 above	Examples from the Holy Quran	Nominal sentence components		2	8
According to the point 11 above	Examples from the Holy Quran	Nominal sentence rules		2	9
According to the point 11 above	Current Life examples	Indefinite beginner		2	10
According to the point 11 above	Current Life examples	The predicate		2	11
According to the point 11 above	Poems examples	The predicate rules		2	12
According to the point 11 above	Poems examples	The predicate forms		2	13
According to the point 11 above	Examples from the Holy Quran	The predicate and its sections		2	14
According to the point 11 above	Examples from the universe Manifestations	Copier verbs and their similar		2	15
Mid-Year Examinations					
According to the point 11 above	Examples of poems	Conjugations of WAS (kān) and its sisters		2	16
According to the point 11 above	Examples from in class	Forms of the name WAS (Kan) and its sisters		2	17
According to the point 11 above	Examples from nowadays	Forms of the predicate		2	18
According to the point 11 above	Examples from history	(Enna) and its sisters		2	19
According to the point 11 above	Examples from domestic life	Names of (Enna)		2	20
According to the point 11 above	Examples from Holy Quran	The predicate of (Enna) and its sisters		2	21
According to the point 11 above	Examples from Holy Quran	The predicate (sentence)		2	22
According to the point 11 above	Examples from scenes of universe	The subject and its forms		2	23
According to the point 11 above	Examples from poems	The subject complement and its forms		2	24
According to the point 11 above	Examples from nowadays	Verbs of (based on)		2	25
According to the point 11 above	Examples from nowadays	Verbs of (Meanings)		2	26
According to	Examples from	The Object and its forms		2	27

the point 11 above	history				
According to the point 11 above	Examples from domestic life	The State (Al-Hal)		2	28
According to the point 11 above	Examples from Holy Quran	The Discrimination (Al-Tamyez)		2	29
According to the point 11 above	Examples from Holy Quran	The Exemption		2	30

11. Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 25%
- 15% includes (theoretical and practical tests 5%, assignments 5%, reports 5% during the year)
- 60% Final test

12. Resources

BOOKS	
Main resources	
Recommended resources	
Electronics and website resources	

Dr. Ruqayah Hamid

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Artificial Intelligence
2. Course code
EDCO24F301
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
In person (theoretical + practical) and Online to present the required tasks an assignments
6. Number of hours (total)/number of credits (total)
60 theoretical hours + 60 practical hours (6 educational credits)
7. Name of the course tutors
Name: Dr. Hanna Mahmood L. Alaa Saad Email: dr.hanah@uomosul.edu.iq alla.saad@uomosul.edu.iq
8. Course objectives

• To introduce the term artificial intelligence and the various applications it contains to solve many problems. • Understanding, designing and developing smart and expert programs and systems • Understanding methods of representing knowledge, methods of reasoning, and searching for facts and goals • List the characteristics of expert systems, their architecture and applications, and the difference with smart systems • Understanding machine learning and artificial neural networks as a model for machine learning and training students on how to create some smart projects and how to use them, benefit from them in practical life, and retrieve them. • Learn the Python language and use it in applying artificial intelligence programs	**Objectives of the study subject**

9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Discussion strategy.** • **Discovery learning strategy**	**The strategy**

• **Problem solving strategy** • **Advanced organizations strategy** • **Think, discuss, share strategy** • **Mind mapping strategy** • **Flexible groups strategy**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Introduction to Artificial Intelligent	Understand a general idea about artificial intelligence The basic principles of Artificial intelligence and Python language	20	1-5
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Search Algorithms	Learn the field of search and search algorithms	8	6-7
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Systematic and Heuristic search	Understand and implement systematic and intuitive research methods	16	8-11
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	8- Puzzle	Understand the algorithms of some games that use artificial intelligence such as 8-Puzzle	12	12-14
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in	Expert Systems	Learn how expert systems perform and the difference with smart systems, as well as listing the components of expert systems,	12	15-17

	Python language.		methods such as deduction, and building an expert system in the Python language.		
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Introduction to Sustainable Development	Introduction to Sustainable Development	4	18
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Applying AI in the Sustainable Development	Applying AI in the Sustainable Development	4	19
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Knowledge Representation	Learn and practice how to represent knowledge	8	20-21
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Built an Expert System	Built an Expert System	8	22-23
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Machine Learning	Understanding machine learning and its benefits and its uses	8	24-25
امتحانات يومية / واجبات / تفاعل / تقارير/ كتابة برامج	According to point 9 and to the nature of the subject in each lecture, in	Artificial neural network	Understand the principles of artificial neural networks	8	26-27

	addition to the practical session in Python language.				
امتحانات يومية / واجبات / تفاعل / تقارير/ كتابة برامج	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session in Python language.	Architecture and training of HIP, perceptron and delta networks	Understand, implement, train and build systems using artificial neural networks	12	28-30

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 20%
- 30% includes (theoretical and practical tests 10%, assignments 10%, reports 10% during the year)
- 50% Final test

12.References

• Elin Rich, "Artificial Intelligence", 1991 □□George F. Luger, "Artificial Intelligence Structures and Strategies for Complex Problem Solving", Pearson Eduction Asia (Singapore), 6/E, 2009 Amit Konar, "Artificial Intelligence and Soft Computing, Behavior and Cognitive Modeling of the Human Brain", CRC Press, 2000	BOOKS
• Russell, S., Norvig, P., & Intelligence, A. (1995). A modern approach. Artificial Intelligence. Prentice-Hall, Egnlewood Cliffs , 25, 27 -2	Main resources
Nilsson, N. J. (2014). Principles of artificial intelligence. Mor Kaufmann	Recommended resources
•	Electronics and website resources

Dr. Hanna Mahmood L. Alaa Saad

Assist. Prof. Dr. Alaa Yaseen Taqa

جامعة الموصل
كلية التربية للعلوم الصرفة
(رئيس قسم) علوم الحاسوب

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Computer graphics	
2. Course code	
EDCO24F302	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person (theoretical + practical) and Online to present the required tasks an assignments	
6. Number of hours (total)/number of credits (total)	
60 theoretical hours + 60 practical hours (6 educational credits)	
7. Name of the course tutors	
israa.alhamdani@uomosul.edu.iq Email: Name: Prof. Israa Muhammed	
8. Course objectives	
• Teach student how to use computer in drawing and planning • Teach student to deal with binary transformations and its related movement • Train and teach students engineering innovation and planning	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Discussion strategy.** • **Discovery learning strategy** • **Problem solving strategy** • **Advanced organizations strategy** • **Think, discuss, share strategy** • **Mind mapping strategy** • **Flexible groups strategy**	**The strategy**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Introduction to computer graphics	Introduction to computer graphics	4	1
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Types Of Screens And T Differences Between Th	Types Of Screens And The Differences Between Them	4	2
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Virtual and Real Reality :	**Virtual and Real Reality**	4	3
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Three Dimensional Viewing Devices	Three Dimensional Viewing Devices	4	4
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Colors Fundamental	Understand the Colors Fundamental	4	5
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Image And Graphics File Format	Understand the Image And Graphics File Format .	4	6
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Line Generation Algorithm	Understand Line Generation Algorithm	4	7

Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Digital Differential Analyzer (DDA)	Understanding Digital Differential Analyzer (DDA)	4	8
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Berzenham Line Drawing Algorithm	Understand the Berzenham Line Drawing Algorithm	4	9
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	The Circle	Understand and implement Circle	4	10
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Paint Area (Filling Area)	Paint Area (Filling Area)	4	11
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	2d Transformations	2d Transformations	4	12
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	2d Transformations	2d Transformations	4	13
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Successive Transformations	Successive Transformations	4	14
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in	3D Transformation	3D Transformation	4	15

	addition to the practical session				
		Mid-Year Examinations			
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	2D Exercise	2D Exercise	4	16
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	3D Exercise	3D Exercise	4	17
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	**Homogenous Matrix**	**Homogenous Matrix**	4	18
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Window and Clipping Exercise	Window and Clipping Exercise	4	19
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Animation	Animation	4	20
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Intro. In Visual Data	Intro. In Visual Data	4	21
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Introd. In DIP	Introd. In DIP	4	22
Exams/assignments/	According to	Introduction To Color	Introduction To Color	4	23

Interaction/reports/coding	point 9 and to the nature of the subject in each lecture, in addition to the practical session	And Its Space	And Its Space		
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Image Types	Image Types	4	24
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Neighborhood Type	Neighborhood Type	4	25
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Histogram & Histogram Equ.	Histogram & Histogram Equ.	4	26
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Image Enhancement Principle	Image Enhancement Principle	4	27
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Image Enhancement	Image Enhancement	4	28
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the practical session	Image Enhancement	Image Enhancement	4	29
Exams/assignments/ Interaction/reports/coding	According to point 9 and to the nature of the subject in each lecture, in addition to the	Digital Image Morphology	Digital Image Morphology	4	30

	practical session				

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 20%
- 30% includes (theoretical and practical tests 10%, assignments 10%, reports 10% during the year)
- 50% Final test

12.References

• Computer graphics with C++	BOOKS
• Russell, S., Norvig, P., & Intelligence, A. (1995). A modern approach. Artificial Intelligence. Prentice-Hall, Egnlewood Cliffs , 25, 27 -2	Main resources
LAB MANUAL COMPUTER GRAPHICS	Recommended resources
• computer graphics tutorial javatpoint	Electronics and website resources

Prof. Dr. Israa Muhammed Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Compilers	
2. Course code	
EDCO24F303	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours + 2 practical hours (Total=60)	
7. Name of the course tutors	
Name: Dr. Meaad Muhammed Email: meaad_mahammed@uomosul.edu.iq	
8. Course objectives	
• The aim of this course is to enable the student to understand the stages that every program written in any programming language goes through, from execute phase until showing results. • Enable students to become familiar with the six stages of this course and the algorithms used in each stage. • Enabling the student to recognize errors that a programmer may make and try to correct them using one of the error correction techniques and try to build each stage programmatically using the C++ language.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Providing printed lectures from modern, diverse sources rich in examples.** • **Using the blackboard to teach students, clarify the solution steps, and extract results.** • **Practicing on how solving some questions related to the scientific subject.** • **Asking questions and inquiries and trying to involve the**	**The strategy**

largest possible number of students and discuss **Details and their discussion are objective and directed.** • **Giving a set of homework questions to students to encourage them to follow the subject by solving those** **questions can determine whether the material has been understood or not.** • **Using e-learning in teaching according to available capabilities.** • **Writing scientific reports and analyzing data**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to points in section 9	According to points in section 9	**Programming languages, classification of programming languages , Introduction to Compiler : compilers,**	**Introduction to compilers and the mechanism for analyzing and correcting a program written in an advanced language and converting it into a program written in machine language.**	2	1
According to points in section 9	According to points in section 9	**Compiler construction tools ,The phases of the compiler**	**Clarifying the tools for building compiler and clarifying the stages of compiler**	2	2
According to points in section 9	According to points in section 9	**Example for compiler phases ,A simple one pass Compiler, Difference between one pass Compiler and multi pass compiler**	**Understand all stages of the compiler through an illustrative example, explaining the single-pass compiler and the multi-pass compiler**	2	3
According to points in section 9	According to points in section 9	**Error handling ,Symbol tables : Introduction, Symbol table attributes**	**How to build a table of variables and store information about them.**	2	4
According to points in section 9	According to points in section 9	**Ordered symbol table ,Tree structured symbol table ,hash symbol table**	**Explaining the types of variable tables with examples.**	2	5
According to points in section 9	According to points in section 9	**Lexical Analysis : Role of a lexical analyzer**	**Recognizing the phase of vocabulary analysis**	2	6
According to points in section 9	According to points in section 9	**input Buffering, specification and recognition of tokens**	**Learn how to enter, customize and represent vocabulary**	2	7

Exam					8
According to points in section 9	According to points in section 9	**finite automata implications , designing a lexical Analyzer generator**	**Identify regular expressions with an introduction to automated representation methods**	2	9
According to points in section 9	According to points in section 9	**Syntax analyzer : Role of parser**	**Identify the phase of grammatical analysis**	2	10
According to points in section 9	According to points in section 9	**Context free grammar, derivation, parse tree**	**Clarifying the rules of free context, identifying the parsing tree and methods of derivation**	2	11
According to points in section 9	According to points in section 9	**Top-down parsing, problems of Top Down parsing**	**Analysis from top to bottom**	2	12
According to points in section 9	According to points in section 9	**Recursive descent parser, Predictive Parser(LL)**	**Identify one of the top-down analysis algorithms, the principle of which is to examine the entered phrase from left to right**	2	13
According to points in section 9	According to points in section 9	**First and follow functions with examples**	**How to calculate the first and follow functions**	2	14
Exam					15
According to points in section 9	According to points in section 9	**Construction of Predictive Parsing table with examples**	**How to build a predictive parsing table**	2	16
According to points in section 9	According to points in section 9	**LL(1) grammars**	**Knowledge of LL type rules(1)**	2	17
According to points in section 9	According to points in section 9	**Error Recovery , LL(1) parsing Algorithm**	**Identify the error bypass algorithm**		18
According to points in section 9	According to points in section 9	**Bottom-Up parsing techniques**	**Bottom-up analysis: Identify one of the bottom-up analysis algorithms, the principle of which is to examine the entered phrase from right to left.**	2	19
According to points in section 9	According to points in section 9	**shift reduce parsing method , operator precedence parsing**	**Learn about other bottom-up analysis algorithms**	2	20
According to points in section 9	According to points in section 9	**ft to Right parsing: LR Simple Left to Right parsing SLR(1)**	**Learn how the SLR parser works (1)**	2	21

Exam					22
According to points in section 9	According to points in section 9	**LR(0) and SLR(1) with examples**	**Learn how the SLR(1) and LR(0) parsers work through enriching examples**	2	23
According to points in section 9	According to points in section 9	**Canonical LR parser with examples**	**Learn how the CLR parser works (1)**	2	24
According to points in section 9	According to points in section 9	**Look ahead LR parser :LALR with examples**	**Learn how the LALR parser works (1)**	2	25
According to points in section 9	According to points in section 9	**Examples about LALR and CLR**	**Learn how the LALR(1) and CLR(1) parsers work through enriching examples**	2	26
According to points in section 9	According to points in section 9	**LR parsing Algorithm**	**Explaining the parsing mechanism using LR algorithms**	2	27
According to points in section 9	According to points in section 9	**Syntax Directed Translation , Semantic Analysis : Static Semantic checks and dynamic semantic checks.**	**Identifying directed grammatical translation and clarifying the phase of grammatical analysis and intermediate code generation.**	2	28
According to points in section 9	According to points in section 9	**Intermediate Code Generation**	**Clarification of the intermediate code generation phase**	2	29
According to points in section 9	According to points in section 9	**Code optimization Code generation**	**Ensure code optimization and generate the final program in machine language**	2	30

11.Course assessment

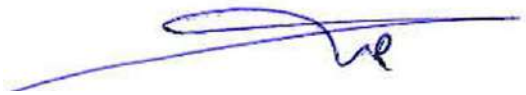
Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 20%
- 30% includes (theoretical and practical tests 10%, assignments 10%, reports 10% during the year)
- 50% Final test

12.References

	BOOKS
• **Compiler Design,**A.A. Puntambeka rFirst Edition 2009 • **Principle of Compiler Design**, Alfred V. Aho , Jeffery D. Ulman. • **Basics of Compiler Design**, Torben Mogenes	Main resources

2000-2008. • **Compiler Construction** – Dhamdere (Mc-Millan).	
	Recommended resources
	Electronics and website resources



Dr. Meaad Muhammed Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Visual programming	
2. Course code	
EDCO24F304	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person (theoretical + practical) and Online to present the required tasks an assignments	
6. Number of hours (total)/number of credits (total)	
60 theoretical hours + 60 practical hours (6 educational credits)	
7. Name of the course tutors	
ibrahim.albaram@uomosul.edu.iq Email:	Name: Dr. Shaemaa Ahmed
8. Course objectives	
• An overview of Visual Basic, which includes running Visual Basic, describing the elements included in the design environment, how to design the user interface, the difference between a project and a program, and introducing the student to the philosophy of programming using VisualBasic. • Study the basic concepts of visual programming. • Explain the steps of designing and planning the program. • Learn how to deal with forms. • Learn about events, procedures, and how to write BASIC commands. • Dealing with toolbars and studying the characteristics and properties of the tools used in programming in the Visual Basic language. • Study how input and output operations work. • Studying the language of communication between the programming language and programmers. • Training students on how to create some projects and how to save and retrieve them.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture:	**The strategy**

• **Discussion strategy.** • **Discovery learning strategy** • **Problem solving strategy** • **Advanced organizations strategy** • **Think, discuss, share strategy** • **Mind mapping strategy** • **Flexible groups strategy**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Exams/assignments/ Interaction/reports/coding	According to point 9 and the nature of the subject in each lecture	Introduction to Visual programming	Introduction and definition of the programming method in the VB language and its characteristics that distinguish it from other programming languages	16	1-4
Exams/assignments/ Interaction/reports/coding	According to point 9 and the nature of the subject in each lecture language.	Message processing	Understanding and how to deal with the tools used in the BASIC language and how to implement them in GUI	24	5-10
Exams/assignments/ Interaction/reports/coding	According to point 9 and the nature of the subject in each lecture language.	What is Visual basic	Introduction to programming language Input and output using various tools	16	11-14
Exams/assignments/ Interaction/reports/coding	According to point 9 and the nature of the subject in each lecture.	Functions and Looping	How to deal with and build functions and circuits, their parts and their work	24	15-20
Exams/assignments/ Interaction/reports/coding	According to point 9 and the nature of the subject in each lecture.	Arrays	How to code arrays.	20	21-25
Exams/assignments/ Interaction/reports/coding	According to point 9 and the	Menus and	How to deal with	12	26-28

	nature of the subject in each lecture.	Resources	lists and sources		
Exams/assignments/ Interaction/reports/coding	According to point 9 and the nature of the subject in each lecture.	Files	How to deal with files	8	29-30

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 20%
- 30% includes (theoretical and practical tests 10%, assignments 10%, reports 10% during the year)
- 50% Final test

12.References

• **Learn Visual Basic 6.0**	BOOKS
• **Visual Basic للجميع نحو برمجة كائنية التوجه OOP**	Main resources
• https://program2.yoo7.com/t160topichttps://2u.pw/qKmRKD	Recommended resources
• https://www.kutub.info/library/book/657 • https://www.alarabimag.com/books/1722-%D8%AA%D8%B9%D9%84%D9%85-%D9%81%D9%8A%D8%AC%D9%88%D8%A7%D9%84-%D8%A8%D9%8A%D8%B3%D9%83-6.html • https://www.kutub.info/library/book/1190	Electronics and website resources

Dr. Shaemaa Ahmed

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Software Engineering	
2. Course code	
EDCO24F305	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person	
6. Number of hours (total)/number of credits (total)	
60/4 credits	
7. Name of the course tutors	
dr.raya.alothman@uomosul.edu.iq Email:	Name: Dr. Rayaa Basil
8. Course objectives	
• Introduce the basic technologies used in modern multimedia computers, which were extracted from a number of prescribed methodological sources for the purpose of consolidating the foundations and rules of the course methodology. • Understand the basic concepts and principles of information modeling systems for digital images, audio, video, text, and other types of files.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Providing printed lectures from modern, diverse sources rich in examples.** • **Using the blackboard to teach students, clarify the solution steps, and extract results.** • **Practicing on how solving some questions related to the scientific subject.** • **Asking questions and inquiries and trying to involve the largest possible number of students and discuss Details and their discussion are objective and directed.** • **Quizzes.** • **Using e-learning in teaching according to available capabilities.**	**The strategy**

• **Writing scientific reports and analyzing data**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to points in section 9	According to points in section 9	**Why Software Engineering**	**Why Software Engineering**	2	1
According to points in section 9	According to points in section 9	Introduction in Software Engineer	**Introduction in Software Engineering**	2	2
According to points in section 9	According to points in section 9	Software Failures	**Software Failures**	2	3
According to points in section 9	According to points in section 9	Professional Software Developme	**Professional Software Development**	2	4
According to points in section 9	According to points in section 9	Frequently asked questions about software engineering	**Frequently asked questions about software engineering**	2	5
According to points in section 9	According to points in section 9	Software products	**Software products**	2	6
According to points in section 9	According to points in section 9	Important of the software engineering	**Important of the software engineering**	2	7
According to points in section 9	According to points in section 9	Software process activities	**Software process activities**	2	8
According to points in section 9	According to points in section 9	General Issues that affect most software	**General Issues that affect most software**	2	9
According to points in section 9	According to points in section 9	Software Applications	**Software Applications**	2	10
According to points in section 9	According to points in section 9	Software process models/The waterfall model /project	**Software process models/The waterfall model /project**	2	11
According to points in section 9	According to points in section 9	Incremental development/project	**Incremental development/project**	2	12
According to points in section 9	According to points in section 9	Reuse-oriented software engineeri /project	**Reuse-oriented software engineering /project**	2	13
According to points in section 9	According to points in section 9	Software specification/Software design and implementation/Softw validation	**Software specification/Software des and implementation/Softw validation**	2	14-15
	Mid Term Break				

According to points in section 9	According to points in section 9	Software requirements/Functional requirements	**Software requirements/Functional requirements**	2	16
According to points in section 9	According to points in section 9	Non/Functional requirements	**Non/Functional requirements**		17
According to points in section 9	According to points in section 9	Functional Modeling /concepts an phenomena	**Functional Modeling /concepts and phenomena**	2	18
According to points in section 9	According to points in section 9	Class/ Diagram types	**Class/ Diagram types**	2	19
According to points in section 9	According to points in section 9	Actor vs. Instances/Activity Diagr	**Actor vs. Instances/Activity Diagram**	2	20
According to points in section 9	According to points in section 9	System Modeling/ structure and behavior Classes and associations	**System Modeling/ structure and behavior Classes and associations**	2	21
According to points in section 9	According to points in section 9	User Interface Design and system design	**User Interface Design and system design**	2	22
According to points in section 9	According to points in section 9	Human – computer interaction	**Human – computer interaction**	2	23
According to points in section 9	According to points in section 9	Graphical User Interface(GUI)	**Graphical User Interface(GUI)**	2	24
According to points in section 9	According to points in section 9	Software design based on GRASP principles	**Software design based on GRASP principles**	2	25
According to points in section 9	According to points in section 9	Coupling/Cohesion	**Coupling/Cohesion**	2	26
According to points in section 9	According to points in section 9	Software design /Architecture, verification and validation	**Software design /Architecture, verification and validation**	2	27
According to points in section 9	According to points in section 9	Feasibility/ Organization feasibility	**Feasibility**	2	28
According to points in section 9	According to points in section 9	The most important development The field in software engineering	The most important development in The field in software engineering	2	29
According to points in section 9	According to points in section 9	Designing user interface in social development software	Designing user interface in social development softwar	2	30

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 25%
- 15% includes (theoretical and practical tests 5%, assignments 5%, reports 5% during

the year) • 60% Final test	
12.References	
.Software engineering: a practitioner's approach / Roger S. Pressman.—5th ed. .2 Pressman," S/W Engineering principles ," 2010	BOOKS
.1Software engineering: a practitioner's approach / Roger S. Pressman.—5th ed. .2 Pressman," S/W Engineering principles ," 2010	Main resources
	Recommended resources
	Electronics and website resources

Assist. Prof. Dr. Rayaa Basil

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Computer architecture
2. Course code
EDCO24F306
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
In person
6. Number of hours (total)/number of credits (total)
60 hours/4 credits
7. Name of the course tutors
Name: Dr. Yahya Qasim Email: yahyak@uomosul.edu.iq
8. Course objectives

• Introduce the basic technologies used in modern computer architectures, which were derived from a number of established methodological sources for the purpose of consolidating the foundations and rules of the course methodology. • Introduce the basic concepts and principles of computer information modeling systems.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Providing printed lectures from modern, diverse sources rich in examples.** • **Using the blackboard to teach students, clarify the solution steps, and extract results.** • **Practicing on how solving some questions related to the scientific subject.** • **Asking questions and inquiries and trying to involve the largest possible number of students and discuss Details and their discussion are objective and directed.** • **Quizzes.**	**The strategy**

10.Course structure					
Assessment method	**Learning method**	**Topic name**	**Required learning outcomes**	**Hours**	**Week**
According to points in section 9	According to points in section 9	Computer Architecture Classification of computer architecture Von Neumann Machines Non Von Neumann Machines	Computer Architecture Classification of computer architecture Von Neumann Machines Non Von Neumann Machines	2	1
According to points in section 9	According to points in section 9	Memory system architecture	Memory system architecture	2	2
According to points in section 9	According to points in section 9	Memory device characteristics	Memory device characteristics	2	3
According to points in section 9	According to points in section 9	RAM unit components	RAM unit components	2	4
According to points in section 9	According to points in section 9	RAM unit components Semiconductors RAMs RAM design	RAM unit components Semiconductors RAMs RAM design	2	5
According to points in section 9	According to points in section 9	Cache Memory	Cache Memory	2	6
According to points in section 9	According to points in section 9	Cache design	Cache design	2	7
According to points in section 9	According to points in section 9	Principles of locality of reference	Principles of locality of reference	2	8
According to points in section 9	According to points in section 9	Structure of cache memory	Structure of cache memory	2	9
According to points in section 9	According to points in section 9	Basic operation of cache	Basic operation of cache	2	10
According to points in section 9	According to points in section 9	Performance of cache Mapping function Replacement algorithms Write policies	Performance of cache Mapping function Replacement algorithms Write policies	2	11
According to points in section 9	According to points in section 9	Branching	Branching	2	12
According to points in section 9	According to points in section 9	Types of Microinstructions -Horizontal microinstructions -Vertical microinstructions	Types of Microinstructions -Horizontal microinstructions -Vertical microinstructions	2	13-14

According to points in section 9	According to points in section 9	Virtual Memory	Virtual Memory	2	15
Mid-Year Examinations					
According to points in section 9	According to points in section 9	Virtual memory principles Paging technique	Virtual memory principles and paging technique	2	16
According to points in section 9	According to points in section 9	Translation lookaside buffe	Translation lookaside buffer		17
According to points in section 9	According to points in section 9	Page replacement policies -Segmentation technique -Protection -Segmentation with paging	Page replacement policies -Segmentation technique -Protection -Segmentation with paging	2	18
According to points in section 9	According to points in section 9	Sustainable development concept • Computer power save • Chips recycling	Sustainable development concept • Computer power save • Chips recycling	2	19
According to points in section 9	According to points in section 9	CPU structure Register organization	CPU structure Register organization	2	20
According to points in section 9	According to points in section 9	Control Unit Representation Hardwired CU Microprograming CU -Example	Control Unit Representation Hardwired CU Microprograming CU -Example	2	21
According to points in section 9	According to points in section 9	Central Processing Unit Single bus organization	Central Processing Unit Single bus organization	2	22
According to points in section 9	According to points in section 9	Multi bus organization	CPU Multi bus organization	2	23
According to points in section 9	According to points in section 9	Execution of a complete Instruction	Complete execution of the instruction using symbolic microprogramming representation	2	24
According to points in section 9	According to points in section 9	Execution of a complete Instruction	Complete execution of the instruction using symbolic microprogramming representation	2	25
According to points in section 9	According to points in section 9	Input Output System	Input Output System	2	26
According to points in section 9	According to points in section 9	Programmed IO Direct Memory Access DMA controller Types of DMA -DMA transfer	Programmed IO Direct Memory Access DMA controller Types of DMA -DMA transfer	2	27

According to points in section 9	According to points in section 9	Pipelining	Introduction to Pipelining	2	28
According to points in section 9	According to points in section 9	Cycle time of pipelining proce		2	29
According to points in section 9	According to points in section 9	Pipeline latency		2	30

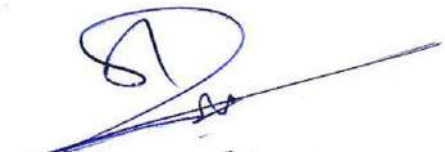
11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 25%
- 15% includes (theoretical and practical tests 5%, assignments 5%, reports 5% during the year)
- 60% Final test

12.References

	BOOKS
• David A. Patterson and Jone L. Hennessy ' computer organization and design: the Hardware / Software Interace. Morgan Kaufmann, 1998 • M.M. Muno ' Computer systems Architecture' 3 Ed. 1993	Main resources
	Recommended resources
	Electronics and website resources



Dr. Yahya Qasim

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Curriculum and teaching methods
2. Course code
EDCO24F307
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
In person
6. Number of hours (total)/number of credits (total)
60 hours/4 credits
7. Name of the course tutors
Name: L. Hala Moayid Email: Hala.moayid@uomosul.edu.iq
8. Course objectives

• The course aims to introduce the foundations of building curricula and its related philosophy and its types • Introduce the concept of academic objectives and how to formulate it. • The student should distinguish between levels of educational objectives and be able to formulate it accurately • To formulate objectives at different levels correctly • Familiarize with the most important teaching methods, their steps, advantages, disadvantages, and the principles on which they were developed. • Introduce the concept of planning and its importance. • Students should be able to write a daily, quarterly and annual teaching plan.	**Objectives of th study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Discussion strategy.** • **Discovery learning strategy** • **Problem solving strategy** • **Advanced organizations strategy** • **Think, discuss, share strategy**	**The strate**

• **Mind mapping strategy**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to points in section 9	According to points in section 9	Introduction, basic concepts in curricula (science, technology) and components of science	Understanding the concept of science and technology	2	1
According to points in section 9	According to points in section 9	Scientific thinking skills, characteristics of science, philoso of teaching science	To distinguish between scientific thinking skills and to mention the characteristics of science	2	2
According to points in section 9	According to points in section 9	Curricula, the traditional concept the curriculum, criticism directed the traditional curriculum	To know the traditional concept of the curriculum and its disadvantages.	2	3
According to points in section 9	According to points in section 9	The modern concept of the curriculum, the components of the curriculum in its modern meaning the factors that contributed to the development of the curriculum	To know the modern concept of the curriculum, what its components are, and the most important factors that contributed to the development of the curriculum	2	4
According to points in section 9	According to points in section 9	A comparison between the traditi curriculum and the modern curriculum, curriculum organizati	To compare the traditional curriculum, the modern curriculum, and the types of curriculum organizations	2	5
According to points in section 9	According to points in section 9	Foundations of curriculum construction, cognitive foundation	To identify the foundations of curriculum construction and explain what the cognitive basis is	2	6
According to points in section 9	According to points in section 9	Philosophical basis, psychologica basis	To clarify what is the philosophical basis and psychological basis	2	7
According to points in section 9	According to points in section 9	The social basis, culture and curriculum, components of cultur curriculum and social change	To distinguish between the social, philosophical and psychological basis and the importance of each of them	2	8
According to points in section 9	According to points in section 9	Types of curricula, the separate subjects curriculum, characteristic of the separate subjects curriculur disadvantages of the separate subjects curriculum	To explain the types of curricula, the separate subjects curriculum, the characteristics of the separate subjects curriculum, and the negatives of the separate subjects curriculum	2	9
According to	According	The interconnected mate	To explain the types of	2	10

points in section 9	to points in section 9	approach, characteristics of interconnected materials appro disadvantages of the interconne materials approach,	objective tests with applied examples		
According to points in section 9	According to points in section 9	The activity approach, characteris of the activity approach, disadvantages of the activity approach	To explain with an example the difference between oral, practical and performance tests	2	11
According to points in section 9	According to points in section 9	The pivotal curriculum, characteristics of the pivotal curriculum, disadvantages of the pivotal curriculum	To know how to evaluate performance	2	12
According to points in section 9	According to points in section 9	Elements of the curriculum, educational goals, and the importa of educational goals	To learn how to do observation	2	13
According to points in section 9	According to points in section 9	Sources for deriving educationa goals, cognitive levels according Bloom's classification	Explain the difference between rating records and rating scales	2	14
According to points in section 9	According to points in section 9	Behavioral objectives, formulatio behavioral objectives, specificati of behavioral objectives Classification of behavioral objectives	To know behavioral objectives, formulate behavioral objectives, and specifications of behavioral objectives Classification of behavioral objectives	2	15
According to points in section 9	According to points in section 9	Teaching methods and educatior techniques: concept (method, sty teaching strategy)	To define teaching methods and educational techniques: the concept (method, style, teaching strategy)		16
According to points in section 9	According to points in section 9	The concept of teaching, the foundations of good teaching, th advantages of a good method Introduction to the development teaching methods	To know the concept of teaching, the foundations of good teaching, and the advantages of a good method Introduction to the development of teaching methods	2	17
According to points in section 9	According to points in section 9	Lecture method: developed lectu methods, factors that help the succ of the lecture method, advantages disadvantages of the method.	Lecture method: developed lecture methods, factors that help the success of the lecture method, advantages and disadvantages of the method.	2	18
According to points in section 9	According to points in section 9	Problem solving method: concept the method, steps of the method advantages and disadvantages of method Discussion method: concept of t method, steps of the method, advantages and disadvantages of method	To mention the steps for constructing a problem-solving method: the concept of the method, steps of the method, advantages and disadvantages of the method Discussion method: concept of the method,	2	19

			steps of the method, advantages and disadvantages of the method		
According to points in section 9	According to points in section 9	Learning circle: the concept of t method, steps of the method, advantages and disadvantages of method Brainstorming: concept	To become familiar with the steps of the learning circle: the concept of the method, steps of the method, advantages and disadvantages of the method Brainstorming: the concept of the method, steps of the method, advantages and disadvantages of the method	2	20
According to points in section 9	According to points in section 9	Project method: concept of the method, steps of the method, advantages and disadvantages of method	To become familiar with the project method: the concept of the method, steps of the method, advantages and disadvantages of the method	2	21
According to points in section 9	According to points in section 9	Interrogation method: concept of method, steps of the method, advantages and disadvantages of method	To become familiar with the method of interrogation: the concept of the method, steps of the method, advantages and disadvantages of the method	2	22
According to points in section 9	According to points in section 9	Direct presentation method: conc of the method, steps of the metho advantages and disadvantages of method	To explain the direct presentation method: the concept of the method, steps of the method, advantages and disadvantages of the method	2	23
According to points in section 9	According to points in section 9	Educational games method, the concept of the method, steps of t method, advantages and disadvantages of the method	To explain the method of educational games, the concept of the method, the steps of the method, the advantages and disadvantages of the method	2	24
According to points in section 9	According to points in section 9	Field visits method: concept of t method, steps of the method, advantages and disadvantages of method	To know the method of field visits, what is the concept of the method, steps of the method, advantages and disadvantages of the method	2	25
According to points in section 9	According to points in section 9	Method of preparing reports: conc of the method, areas of its use, me of making the method successfu educational application of the met	To explain the method of writing reports: the concept of the method, areas of its use, means of making the method	2	26

			successful, and educational application of the method		
According to points in section 9	According to points in section 9	The laboratory in teaching scien the importance of the laboratory teaching, the philosophy of laboratory teaching	To mention the importance of the laboratory in teaching science: the importance of the laboratory in teaching, the philosophy of laboratory teaching	2	27
According to points in section 9	According to points in section 9	Educational technologies: (visua audio, audio-visual, local environment)	To distinguish between educational technologies: (visual, audio, audio-visual, local environment)	2	28
According to points in section 9	According to points in section 9	Planning in teaching: the concept planning, the importance of less planning	To know planning in teaching: the concept of planning, the importance of lesson planning	2	29
According to points in section 9	According to points in section 9	How to prepare lesson plan, types study plans (annual, quarterly, monthly, daily)	To explain how to prepare the plan, the types of study plans (annual, quarterly, monthly, daily)	2	30

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 25%
- 15% includes (theoretical and practical tests 5%, assignments 5%, reports 5% during the year)
- 60% Final test

12.References

Collection of books chosen by the lecturers of Education college.	BOOKS
• **Introduction to general teaching methods**	Main resources
	Recommended resources
https://2u.pw/Yad4a	Electronics and website resources

Hala Moayad

Assist.Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Educational guidance	
2. Course code	
EDCO24F308	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person	
6. Number of hours (total)/number of credits (total)	
60 hours	
7. Name of the course tutors	
Email:	Name: L. Rahmaa Talal
8. Course objectives	
• This course aims to introduce students to the foundations, principles, theories and applications of educational guidance. • Students becomes familiar with methods and means for the success of the counseling process, such as counseling observation, interviews, and the type and method of directing questions necessary for the success of the educational counseling and guidance process. • Students recognizes their role as a "mentor teacher," regardless of his academic specialization, whatever it may be, and that as the primary educational tool in achieving goals.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Classroom skills related to educational counseling vary between the skill of asking questions and giving examples related to the academic or social reality of the learning environment and outside it, as well as striving to stimulate classroom interaction by asking questions to students and asking for their opinions on specific behavioral phenomena, which helps to consolidate the meaning required of the student.** • **Providing printed lectures from modern, diverse sources rich in examples.** • **Using the blackboard to teach students, clarify the solution steps, and extract results.** • **Practicing on how solving some questions related to the scientific**	**The strategy**

subject.

- **Asking questions and inquiries and trying to involve the largest possible number of students and discuss**
- **Details and their discussion are objective and directed.**
- **Giving a set of homework questions to students to encourage them to follow the subject by solving those questions can determine whether the material has been understood.**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to points in section 9	According to points in section 9	guidance and mental health	Introduction to the third year and its importance and to the subject of educational guidance and its importance	2	1
According to points in section 9	According to points in section 9	guidance and mental health	Introduction to the meaning of counseling, its concepts	2	2
According to points in section 9	According to points in section 9	guidance and mental health	clarification of the relationship of counseling with other sciences	2	3
According to points in section 9	According to points in section 9	guidance and mental health	Guidance objectives, principles and foundations	2	4
According to points in section 9	According to points in section 9	Individual and group guidance	foundations of educational counseling	2	5
According to points in section 9	According to points in section 9	Individual and group guidance	Methods of counselling	2	6
According to points in section 9	According to points in section 9	Individual and group guidance	Individual guidance	2	7
According to points in section 9	According to points in section 9	Individual and group guidance	Group guidance	2	8
According to points in section 9	According to points in section 9	Individual and group guidance	Group guidance beneficial	2	9
According to points in section 9	According to points in section 9	Psychological and educational guidance	The role of the counselor in counseling	2	10
According to points in section 9	According to points in section 9	Psychological and educational guidance	Psychological and educational fields	2	11
According to points in section 9	According to points in section 9	Psychological and educational guidance	Psychological and educational fields	2	12

According to points in section 9	According to points in section 9	Psychological and educational guidance	Professional guidance	2	13
According to points in section 9	According to points in section 9	Psychological and family counseling	Therapeutic guidance	2	14
According to points in section 9	According to points in section 9	Psychological and family counseling	Family counseling	2	15
According to points in section 9	According to points in section 9	Psychological and family counseling	Counseling children and youth	2	16
According to points in section 9	According to points in section 9	Psychological and family counseling	Counseling adults	2	17
According to points in section 9	According to points in section 9	Guidance Theories	Counseling people with special needs	2	18
According to points in section 9	According to points in section 9	Guidance Theories	Psychoanalysis theory	2	19
According to points in section 9	According to points in section 9	Guidance Theories	Concepts of psychoanalysis theory	2	20
According to points in section 9	According to points in section 9	Guidance Theories	Educational applications of the theory	2	21
According to points in section 9	According to points in section 9	Guidance Theories	Behavioral theory	2	22
According to points in section 9	According to points in section 9	Guidance Theories	Principles of Behavioral Theory	2	23
According to points in section 9	According to points in section 9	Information needed for guidance	Educational Applications of the Theory	2	24
According to points in section 9	According to points in section 9	Information needed for guidance	Existential Theory	2	25
According to points in section 9	According to points in section 9	Guidance and counseling in school	Objectives of Existential Theory	2	26
According to points in section 9	According to points in section 9	Guidance and counseling in school	Therapeutic Methods of Theory	2	27
According to points in section 9	According to points in section 9	Mental health	Guided Observation	2	28
According to points in section 9	According to points in section 9	Mental health	Interview and CV	2	29

According to points in section 9	According to points in section 9	Mental Health Counseling and Guidance in School Counseling and Guidance in School Mental Health Mental Health Mental Health Counseling and Guidance in School	Case Study and Counselor Teacher Counselor Teacher Problems Addressed by Counseling Definition of Mental Health and Its Goals Normal Abnormal Criteria Abnormal Behavior and Its Criteria	2	30

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 25%
- 15% includes (theoretical tests 10%, assignments and reports 5% during the year)
- 60% Final test

12.References

• Counseling and mental health, by Dr. Tamar Muhammad	BOOKS
	Main resources
	Recommended resources
	Electronics and website resources

Rahmaa Talal

Assist. Prof. Dr. Alaa Yaseen Taqa

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم علوم الحاسوب

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Web Design
2. Course code
EDCO24F401
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
In person or Online (Google meet)
6. Number of hours (total)/number of credits (total)
120 hours
7. Name of the course tutors
Name: Dr. Maan Yonis Email: dr.maan.y@uomosul.edu.iq
8. Course objectives

• Aims to introduce students to the basics of designing and programming electronic pages using HTML5, CSS3, and PHP. • Students who complete the academic year will have the necessary knowledge to design personal websites • Setting up the first web presence for small businesses. • Students will be able to create a standard dynamic website with a modern look individually	Objectives of the study subject

9. Teaching and learning strategies

The following strategies are used depending on the content of the lecture: • Discussion strategy. • Discovery learning strategy • Problem solving strategy • Advanced organizations strategy • Think, discuss, share strategy • Mind mapping strategy • Quizzes and exams • Submitting reports and assignments	The strategy

10. Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to points in section 9	According to points in section 9	- Standard web page structure and its components	Introduction to web design	4	1
According to points in section 9	According to points in section 9	HTML	Introduction to HTML	4	2

According to points in section 9	According to points in section 9	How to View HTML Source	Required Tools and programs to design and create websites	4	3
According to points in section 9	According to points in section 9	What are HTML tags? Logical vs. Physical Tags Examples	HTML part1	4	4
According to points in section 9	According to points in section 9	Nested Tags Why Use Lowercase Tags? Tag Attributes Examples	HTML part2	4	5
According to points in section 9	According to points in section 9	Basic HTML Tags Examples	HTML part3	4	6
According to points in section 9	According to points in section 9	HTML Backgrounds HTML Color Examples	HTML part4	4	7
According to points in section 9	According to points in section 9	HTML Character Entities Examples	HTML part5	4	8
According to points in section 9	According to points in section 9	HTML Lists Examples	HTML part6	4	9
According to points in section 9	According to points in section 9	HTML Links Example	HTML part7	4	10
According to points in section 9	According to points in section 9	HTML Images The Image Tag and the Src Attribute Example	HTML part8	4	11
According to points in section 9	According to points in section 9	Tables Example	HTML part9	4	12
According to points in section 9	According to points in section 9	- The importance of separating style and content. The basic structure and general structure of CSS. • Example	Introduction to CSS	4	13
According to points in section 9	According to points in section 9	• Create web pages using CSS templates - Examples	CSS templates 1	4	14
According to points in section 9	According to points in section 9	- Find, download and customize templates. - Formatting and cleaning code	CSS templates 2	4	15
		Mid-Year Examinations			

		Applying teaching to schools			16-21
According to points in section 9	According to points in section 9	Introduction to XAMPP	Explain how to create a server	4	22
According to points in section 9	According to points in section 9	Defining and explaining variables and how to execute programs via the server - Example	Introduction to PHP	4	23
According to points in section 9	According to points in section 9	• Special php keywords 1 - this keyword in php - Super keyword in php	PHP part1	4	24
According to points in section 9	According to points in section 9	• Special java keywords2 - Method overridden introduction - Shadow variables Examples	PHP part2	4	25
According to points in section 9	According to points in section 9	• Final keyword in php - Definition - Examples	PHP part3	4	26
According to points in section 9	According to points in section 9	- Arrays and its functions Examples.	PHP part 4	4	27
According to points in section 9	According to points in section 9	• Data ,times, get,post and its functions Examples	PHP part 5	4	28
According to points in section 9	According to points in section 9	The basics factors of implementing a website Example	Project1	4	29
According to points in section 9	According to points in section 9	Design and implement a website Example	Project2	4	30

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 20%
- 30% includes (theoretical and practical tests 10%, assignments 10%, reports 10% during the year)

• 50% Final test	
12.References	
• Duckett, J., & Schlüter, J. (2011). HTML and CSS. Wiley. • Nixon, R. (2012). Learning PHP, MySQL, JavaScript, and CSS: A step-by-step guide to creating dynamic websites. " O'Reilly Media, Inc.".	BOOKS
	Main resources
	Recommended resources
1- Google and Youtube. ... 2- W3schools. ... 3- MDN Web Docs. ... 4- CSS-Tricks. ... 5- Google Web Development Blog. ... 6- SitePoint. ... 7- Stackoverflow. ... 8- Codepen.	Electronics and website resources

Dr. Maan Yonis

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Operating System	
2. Course code	
EDCO24F402	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours + 2 practical hours	
7. Name of the course tutors	
manar_alabaji@uomosul.edu.iq Email:	Name: Dr. Manar
8. Course objectives	
• Introduce the basic and general information about the importance of operating systems in supporting the physical entities of computers and running various application programs. • Identifying the most important theories of algorithms that go into designing operating systems, in addition to identifying the most important problems that occur when operating computers and how to manage the various available resources such as primary and secondary memory, processor time.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Providing printed lectures from modern, diverse sources rich in examples.** • **Using the blackboard to teach students, clarify the solution steps, and extract results.** • **Practicing on how solving some questions related to the scientific subject.** • **Asking questions and inquiries and trying to involve the largest possible number of students and discuss** **Details and their discussion are objective and directed.**	**The strategy**

- **Giving a set of homework questions to students to encourage them to follow the subject by solving those**

questions can determine whether the material has been understood or not.

- **Using e-learning in teaching according to available capabilities.**
- **Writing scientific reports and analyzing data**

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to points in section 9	According to points in section 9	Introduction Definition, goals, influence on computer architecture	**Introduction to OS**	2	1
According to points in section 9	According to points in section 9	Operating System Structure OS services, User and OS interface, System calls, types of system calls, System program, OS design and Implementation, System boot	**OS structure**	2	2
According to points in section 9	According to points in section 9	Types of operating systems Batch , Multiprogramming, time sharing, parallel, Distributed, and real time	**OS types**	2	3
According to points in section 9	According to points in section 9	Process: 1-Process concept Definition, process states, PCB,context switch	**Concept of process**	2	4
According to points in section 9	According to points in section 9	2-Process scheduling Scheduling queues, schedulers و process creation, process termination, process suspension, . . etc	**Process scheduling**	2	5
According to points in section 9	According to points in section 9	Scheduling algorithms: 1-Basic concepts Idea of multiprogramming, CPU-I/O burst cycle, CPU scheduler, preemptive and nonpreemptive scheduling, dispatcher	**Scheduling algorithms**	2	6
According to points in section 9	According to points in section 9	2-Scheduling algorithms FCFS, SJF, SRTF, priority(preemptive , nonpreemptive)	Algorithms1	2	7
According to points in section 9	According to points in section 9	time Slice RR, Multilevel queue, multilevel feedback queue.	Algorithms2	2	8
According to points in section 9	According to points in section 9	Deadlock : 1-Deadlock characterization Necessary conditions, resource allocation graph,	Deadlock characterization	2	9

According to points in section 9	According to points in section 9	2-Methods of handling deadlock	Methods of handling deadlock	2	10
According to points in section 9	According to points in section 9	1-Deadlock prevention	Deadlock prevention	2	11
According to points in section 9	According to points in section 9	2-Deadlock avoidance Resource allocation graph, Safe and unsafe state,	Deadlock avoidance	2	12
According to points in section 9	According to points in section 9	3-Deadlock detection Single instance of each resource type, several instances of each resource type, detection algorithm usage	Deadlock detection	2	13
According to points in section 9	According to points in section 9	-Recovery from deadlock Process termination, resource preemption	Recovery from deadlock	2	14
According to points in section 9	According to points in section 9	Threading		2	15
		Mid-Year Examinations		2	
		Applying teaching to schools			16-21
According to points in section 9	According to points in section 9	Memory Management: 1-Contigous memory allocation Single partition allocation, multiple partition allocation, external and internal fragmentation	**Memory**	2	22
According to points in section 9	According to points in section 9	2-Paging	Paging	2	23
According to points in section 9	According to points in section 9	3-Segmentation Basic method, hardware, implementation of segment tables, protection and sharing, fragmentation	Segmentation	2	24
According to points in section 9	According to points in section 9	File system structure	File system structure	2	25
According to points in section 9	According to points in section 9	File-system Implementation File system organization, allocation methods(contiguous, linked, indexed) .	File representation	2	26
According to points in section 9	According to points in section 9	Disk structure -Disk scheduling FCFS, SSTF,	Disk structure -Disk scheduling	2	27

According to points in section 9	According to points in section 9	Disk management sk formatting, boot block, bad block	Disk management	2	28
According to points in section 9	According to points in section 9	ıstainable development in the field of computers - Definition of sustainable development and its elements ustainable development in the field of computers and operating systems	Operating systems and their role in achieving sustainable development 1	2	29
According to points in section 9	According to points in section 9	Elements and goals of sustainable development in relation to computer operating systems -Achieving elements and goals of sustainable development in relation to the economic sustainability of operating systems: A-Open source software B-Sustainable updates and support -Achieving elements and goals of sustainable development in relation to the social sustainability of operating systems: A-Universal access B-Education and training -Achieving elements and goals of sustainable development in relation to the environmental sustainability of operating systems: Energy efficiency and use of renewable energy through the design of devices and equipment, the use of energy management techniques, improving software efficiency, etc.	Operating systems and their role in achieving sustainable development 2	2	30

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 20%
- 30% includes (theoretical and practical tests 10%, assignments 10%, reports 10% during the year)
- 50% Final test

12.References

• Operating System Concepts, IBRAHAM SILBERsCHATZ, 2011,John Wiley and Sons Inc	BOOKS
• Introduction to operating systems design and	Main resources

Implementation	
IVSL	Recommended resources
• www.tutorialspoint.com	Electronics and website resources

Dr. Manar AbdulKareem Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:
Computer networks
2. Course code
EDCO24F403
3. Semester/year
2024-2025
4. Preparation date of this description
1/9/2024
5. Available forms of attendance
In person (theoretical + practical) and Online to present the required tasks an assignments
6. Number of hours (total)/number of credits (total)
60 theoretical hours + 60 practical hours (6 educational credits)
7. Name of the course tutors
Name: Dr. Awos Kh. A L. Huda Email: a.k.ali@uomosul.edu.iq
8. Course objectives

• To introduce the term computer networks and the related various applications. • Understanding, designing and building computer networks. • Understanding the main components of networks. • List the layers of networks, network model architecture and applications, and the difference with other models • Understanding how to subnets big computer networks according to clients needs and the differences between classful and classless addressing and train students on how to create subnets. • Learn the Cisco packet tracer app and use it to build various types of networks.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Discussion strategy.** • **Discovery learning strategy** • **Problem solving strategy** • **Advanced organizations strategy** • **Think, discuss, share strategy**	**The strategy**

• **Mind mapping strategy** • **Flexible groups strategy**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Exams/assignments/ Interaction/reports/coding	According to point 9.	- Living In Network - What Is Network - Data Communication - The Fundamental Of a Communication System - Transmission Mode - Serial And Parallel	Knowledge	4	1
Exams/assignments/ Interaction/reports/coding	According to point 9.	- Communication Over The Network - The Element Of Communication - Communicating The Messages - Component Of The Network	Knowledge	4	2
Exams/assignments/ Interaction/reports/coding	According to point 9.	- Network Media - LAN, WAN, And Internet Network - Network Protocol	Knowledge	4	3
Exams/assignments/ Interaction/reports/coding	According to point 9.	Network topology Network design	Knowledge	4	4
Exams/assignments/ Interaction/reports/coding	According to point 9.	- Layered Models - The Benefits Of Layered Model - Protocol And Reference Models - OSI Model	Knowledge	4	5
Exams/assignments/ Interaction/reports/coding	According to point 9.	- TCP/IP Layer - Comparing OSI & TCP/IP Model	Knowledge	4	6
Exams/assignments/ Interaction/reports/coding	According to point 9.	- Application Layer Functionality And Protocol - User Application - Services - Application Protocol - Examples	Knowledge	4	7
Daily test	Attendance to quiz	Quiz	Evaluation	2	8
Exams/assignments/ Interaction/reports/coding	According to point 9.	Addressing in the Network Types of network addresses	Knowledge	4	9
Exams/assignments/ Interaction/reports/coding	According to point 9.	Physical Addresses MAC address	Knowledge	4	10
Exams/assignments/ Interaction/reports/coding	According to point 9.	Logical Addresses IP address	Knowledge	4	11
Exams/assignments/ Interaction/reports/coding	According to point 9.	Features of IP address	Knowledge	4	12
Exams/assignments/ Interaction/reports/coding	According to point 9.	IP address classes	Knowledge	4	13
Exams/assignments/ Interaction/reports/coding	According to point 9.	Distributing IP address	Knowledge	4	14
Exams/assignments/ Interaction/reports/coding	According to point 9.	- Addressing The Network - IPv4 Address - IPv4 Address For Different Purposes	Knowledge	4	15
		Mid-Year Examinations			
		Applying teaching to			16-21

		schools			
Exams/assignments/ Interaction/reports/coding	According to point 9.	- Special Addresses - Assigning Addresses - Sub netting	Knowledge		22
Exams/assignments/ Interaction/reports/coding	According to point 9.	IPv6 Packet	Knowledge		23
Exams/assignments/ Interaction/reports/coding	According to point 9.	IPv6 address format	Knowledge		24
Exams/assignments/ Interaction/reports/coding	According to point 9.	IPv6 address types	Knowledge		25
Exams/assignments/ Interaction/reports/coding	According to point 9.	Neighbor Discovery Protocol	Knowledge		26
Exams/assignments/ Interaction/reports/coding	According to point 9.	ICMPv6	Knowledge		27
Exams/assignments/ Interaction/reports/coding	According to point 9.	Stateless address autoconfiguration (SLAAC)	Knowledge		28
Exams/assignments/ Interaction/reports/coding	According to point 9.	Stateless address autoconfiguration (SLAAC)	Knowledge		29
Exams/assignments/ Interaction/reports/coding	According to point 9.	Stateless address autoconfiguration (SLAAC)	Knowledge		30

11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 20%
- 30% includes (theoretical and practical tests 10%, assignments 10%, reports 10% during the year)
- 50% Final test

12.References

• Behrouz A , "Data Communications and Networking", fourth edition	BOOKS
• Behrouz A , "Data Communications and Networking", fourth edition	Main resources
•	Recommended resources
Computer Network Tutorial for Beginners (guru99.com)	Electronics and website resour

Assist. Prof. Dr. Awos Kh. Ali

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Computer security	
2. Course code	
EDCO24F404	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours + 2 practical hours (6 credits)	
7. Name of the course tutors	
asmaa_mow@uomosul.edu.iq Email:	Name: Dr. Asmaa
8. Course objectives	
• Providing the student with the skills that provide security protection for the components of computer systems (hardware, software, data, and related personnel) from the various types of attacks to which computer systems are exposed. • Identify the principles of encryption and decryption and study different basic encryption methods, such as compensation and substitution methods, and modern methods used globally such as RSA, AES, DES.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Providing printed lectures from modern, diverse sources rich in examples.** • **Employ projector for the purpose of teaching students, clarifying the solution steps, and extracting results** • **Using the blackboard to teach students, clarify the solution steps, and extract results.** • **Practicing on how solving some questions related to the scientific subject.** • **Asking questions and inquiries and trying to involve the largest possible number of students and discuss**	**The strategy**

Details and their discussion are objective and directed.

- **Giving a set of homework questions to students to encourage them to follow the subject by solving those**

questions can determine whether the material has been understood or not.

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Activities/exam	lecture	Introduction Steganography, Cryptography and Watermarking	Introduction Steganography, Cryptography and Watermarking	2	1
Activities/exam	lecture	Cryptography	Cryptography	2	2
Activities/exam	Lecture and lab	Classical Encryption Techniques	Classical Encryption Techniques	2	3
Activities/exam	Lecture and lab	Symmetric Cipher Model Substitution Techniques Caesar, Monoalphabetic, Ciphers	Symmetric Cipher Model Substitution Techniques Caesar, Monoalphabetic, Ciphers	2	4
		Playfair Cipher	Playfair Cipher	2	5
Activities/exam	Lecture and lab	Hill Cipher	Hill Cipher	2	6
Activities/exam	Lecture and lab	Polyalphabetic (Vigenère) Cipher	Polyalphabetic (Vigenère) Cipher	2	7
Activities/exam	Lecture and lab	Transposition Techniques Rail fence cipher	Transposition Techniques Rail fence cipher	2	8
Activities/exam	Lecture and lab	Matrix transposition cipher	Matrix transposition cipher	2	9
Activities/exam	Lecture and lab	Code Book, Bit-Manipulation ciphers	Code Book, Bit-Manipulation ciphers	2	10
Activities/exam	Lecture and lab	Modern Encryption Techniques	Modern Encryption Techniques	2	11
Activities/exam	Lecture and lab	S-DES Key Generation	S-DES Key Generation	2	12
Activities/exam	Lecture and lab	S-DES Rounds	S-DES Rounds	2	13
Activities/exam	Lecture and lab	Asymmetric Cipher Model Public Key Cryptography	Asymmetric Cipher Model Public Key Cryptography	2	14
Activities/exam	Lecture and lab	RSA	RSA	2	15
	Mid-Year Examinations				
		Applying teaching to schools			16-21
Activities/exam	Lecture and lab	RSA Examples	RSA Examples		22
Activities/exam	Lecture and	Mini RSA	Mini RSA		23

	lab				
Activities/exam	Lecture and lab	Mini RSA Examples	Mini RSA Examples		24
Activities/exam	Lecture and lab	Message Authentication and Hash Function	Message Authentication and Hash Function		25
Activities/exam	Lecture and lab	MAC	MAC		26
Activities/exam	Lecture and lab	Hash Function	Hash Function		27
Activities/exam	Lecture and lab	Viruses	Viruses		28
Activities/exam	Lecture and lab	Other Malicious Content	Other Malicious Content		29
Activities/exam	Lecture and lab	Cyber Security	Cyber Security		30

11. Course assessment

- Semi-weekly quizzes: asking sudden and overlapping questions with an explanation of Article 10
- Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10
- Monthly tests 10
- Termly and annual tests 70
- Marking is out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports.

12.References

Security in Computing, by Charles P. Pfleegers Fourth Edition, Prentice Hall,2006 • Chapman, Elizabeth, 'Building Internet Firewalls', O'Reilly, 2000 • Chris, Siyan, 'Internet Firewall and Network Security', New Riders, 1996 • William, Steven, 'Firewall and Internet Security', Addison Wesley, 1994.	BOOKS
• Stallings, William, *'Network & Internetwork Security',* Prentice Hall, 1995 • Stallings, William, *'Cryptography and Network Security',* Prentice Hall, 2005.	Main resources
• Mike Speciner,Radia Perlman,Charlie Kaufman Network Security: Private Communications in a Public World 2nd Edition, Kindle Edition, Pearson International, 2002 • Wenliang Du, Internet Security: A Hands-on Approach (Computer & Internet Security) 3rd ed. Edition, 2022	Recommended resources
	Electronics and website resources

Dr. Asmaa Muafaaq

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Internet of Things	
2. Course code	
EDCO24F405	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person	
6. Number of hours (total)/number of credits (total)	
2 theoretical hours (2 credits)	
7. Name of the course tutors	
Marwan.aldabbagh@uomosul.edu.iq Email:	Name: Dr. Zena Natiq
8. Course objectives	
• Understand the basics of the Internet of Things • Identify the factors that contributed to the emergence of the Internet of Things • Introduce design and program Internet of Things devices • Identify the elements of Internet of Things devices • Understand the process of transferring Internet of Things data to the cloud and between cloud service providers.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the lecture: • **Providing printed lectures from modern, diverse sources rich in examples.** • **Employ projector for the purpose of teaching students, clarifying the solution steps, and extracting results** • **Using the blackboard to teach students, clarify the solution steps, and extract results.** • **Practicing on how solving some questions related to the scientific subject.** • **Asking questions and inquiries and trying to involve the largest possible number of students and discuss** **Details and their discussion are objective and directed.**	**The strategy**

• **Giving a set of homework questions to students to encourage them to follow the subject by solving those** **questions can determine whether the material has been understood or not.**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
Activities/exam	According to points in section 9	Introduction and History of The Internet of Things (IoT).	Introduction and History of The Internet of Things (IoT).	2	1
Activities/exam	According to points in section 9	Concepts and Definitions of The Internet of Things (IoT).	Concepts and Definitions of The Internet of Things (IoT).	2	2
Activities/exam	According to points in section 9	Requirements, Functionalists and structure of IoT.	Requirements, Functionalists and structure of IoT.	2	3+4
Activities/exam	According to points in section 9	Role of IoT in Sustainability	IoT enabling technologies.	2	5
	According to points in section 9	IoT enabling technologies and Architecture.	IoT Architecture.	4	6+7
Activities/exam	According to points in section 9	Major component of IoT (Hardware & Software).	Major component of IoT (Hardware & Software).	2	8
Activities/exam	Arduino and Raspberry Pi in IoT	Arduino and Raspberry Pi in IoT	Understanding the role of Arduino and Raspberry Pi in IoT	4	9+10
Activities/exam	According to points in section 9	Overview and Role of Storage in Cloud / Server /Inhouse Storage.	Overview and Role of Storage in Cloud / Server /Inhouse Storage.	4	11+12
Activities/exam	Arduino and Raspberry Pi in IoT	Databases Connectivity with IoT and uses.	Databases Connectivity with IoT and uses.	2	13
Activities/exam	According to points in section 9	How to transfer data by Wireless / Wired connectivity.	How to transfer data by Wireless / Wired connectivity.	2	14+15
		Applying teaching in schools			16-21
Activities/exam	GSM, 2g ,3g ,4g & 5g	GSM, 2g ,3g ,4g & 5g	GSM, 2g ,3g ,4g & 5g	2	22
Activities/exam	According to points in section 9	IoT communication and networking protocols, Role of wired and wireless communication.	IoT communication and networking protocols, Role of	4	23+24

			wired and wireless communication.		
Activities/exam	According to points in section 9	IoT services and applications.	IoT services and applications.	2	25
Activities/exam	According to points in section 9	Attack, Defense, and Network Robustness of Internet of Things	Attack, Defense, and Network Robustness of Internet of Things	4	26-27
Activities/exam	According to points in section 9	Malware Propagation and Control in Internet of Things	Malware Propagation and Control in Internet of Things	2	28
Activities/exam	According to points in section 9	Privacy Preservation Data Dissemination	Privacy Preservation Data Dissemination	4	29+30

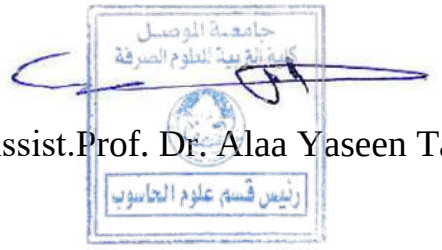
11. Course assessments

- Semi-weekly quizzes: asking sudden and overlapping questions with an explanation of Article 10
- Laboratory tests on the computer and in written form to enable the student to solve them without a computer 10
- Monthly tests 10
- Termly and annual tests 70
- Marking is out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports.

12. References

	BOOKS
• Digital Design, Third Edition, by M. Morris Mano. Prentice-Hall, Inc. 2002. • Logic Design ,Digital Principles and Application", Malvino, 2000	Main resources
	Recommended resources
	Electronics and website resources

Dr. Zena Natiq



Assist.Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Measurement and evaluation in education	
2. Course code	
EDCO24F406	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person	
6. Number of hours (total)/number of credits (total)	
60 theoretical hours (4 credits)	
7. Name of the course tutors	
Name: Dr. Ibrahim Al-Baram	Email: ibrahim.albaram@uomosul.edu.iq
8. Course objectives	
• Identify the basic concepts (testing, measurement, evaluation). • Distinguish between various types of tests. • Identify the characteristics of educational measurement. • Distinguish between the characteristics of educational measurement and physical measurement. • Identify the types of evaluation according to the time of procedure. • Understanding the relationship between educational objectives and the educational evaluation process. • Identify the types of achievement tests and prepare a table of specifications. • Identify the characteristics of a good test (validity, reliability, ease of application and correction, comprehensiveness, objectivity, standards), its concept, types, and factors that affecting it. • Identify behavioral goals and their classifications. • Learn about the testing experience and the steps to conduct it. • Calculating the difficulty and ease factor, incorrect alternatives.	**Objectives of the study subject**

9. Teaching and learning strategies

The strategy	
The following strategies are used depending on the content of the lecture: • **Discussion strategy.** • **Discovery learning strategy** • **Problem solving strategy** • **Advanced organizations strategy** • **Think, discuss, share strategy** • **Mind mapping strategy**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to points in section 9	According to points in section 9	The concept of measurement and evaluation - Introduction to measurement and evaluation - The meaning of measurement and evaluation (measurement, evaluation, testing)	Understanding the concept of measurement and evaluation	2	1
According to points in section 9	According to points in section 9	The importance of measurement and evaluation and the relationship between them - the relationship between evaluation and curriculum	To deduce the relationship between measurement and evaluation	2	2
According to points in section 9	According to points in section 9	Types of evaluation: introductory evaluation and final evaluation	To explain with an example the types of evaluation	2	3
According to points in section 9	According to points in section 9	The spoken calendar and the standard evaluation	To explain the difference between spoken and standard evaluation	2	4
According to points in section 9	According to points in section 9	Achievement tests - essay tests	Enumerate the types of tests and give examples of tests	2	5
According to points in section 9	According to points in section 9	Objectives and their relationship to evaluation - educational objectives - Bloom's	To enumerate the types of goals according to Bloom's levels with examples	2	6
According to points in section 9	According to points in section 9	Preparing the specifications table - applying the specifications table	To prepare a table of specifications for a specific topic in the computer	2	7
According to points in section	According to points in	Objective tests 1- Completion	To explain the types of objective tests with applied	2	8

9	section 9		examples		
According to points in section 9	According to points in section 9	- True and false 3- Pairing	To explain the types of objective tests with applied examples	2	9
According to points in section 9	According to points in section 9	- Multiple choice	To explain the types of objective tests with applied examples	2	10
According to points in section 9	According to points in section 9	-Oral exams - Practical or performance tests	To explain with an example the difference between oral, practical and performance tests	2	11
According to points in section 9	According to points in section 9	Non-test evaluation methods: performance evaluation	To understand how to evaluate performance	2	12
According to points in section 9	According to points in section 9	- Observation - Conditions of observation - Types of observation	To learn how to do observation	2	13
According to points in section 9	According to points in section 9	Grading records - rating scales	Explain the difference between rating records and rating scales	2	14
According to points in section 9	According to points in section 9	School card	To understand what is school card and explain its importance	2	15
		Mid-Year Examinations			
		Applying teaching in schools			16-21
According to points in section 9	According to points in section 9	Specifications of a good test 1- Validity - Types of validity	-To identify stability -To enumerate methods for calculating stability	2	22
According to points in section 9	According to points in section 9	2- Reliability - Methods of calculating reliability		2	23
According to points in section 9	According to points in section 9	3- Ease of application	Mention the steps for building a good test	2	24
According to points in section 9	According to points in section 9	Steps for constructing the test - Determining the objectives of the test	To know the steps of constructing news in detail	2	25
According to points in section 9	According to points in section 9	Determining the content of the test	To know the steps of constructing news in detail	2	26
According to points in section 9	According to points in section 9	Types of paragraphs used in the test	To know the steps of constructing news in detail	2	27
According to points in section 9	According to points in	Extracting the characteristics of objective tests: Ease	To be able to calculate the difficulty factor	2	28

	section 9		of test items		
According to points in section 9	According to points in section 9	Difficulty: Calculating the difficulty factor	To be able to distinguish between test items	2	29
According to points in section 9	According to points in section 9	Discrimination	To be able to calculate the effectiveness of alternatives	2	30

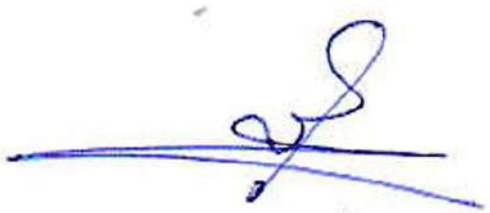
11.Course assessment

Split grade out of 100 according to the tasks assigned to student, such as daily preparation, exams, reports.

- Mid year exam 25%
- 15% includes (theoretical and practical tests 5%, assignments 5%, reports 5% during the year)
- 60% Final test

12.References

•	BOOKS
•	Main resources
	Recommended resources
• https://2u.pw/gKCwVF • https://2u.pw/Yad4a • https://2u.pw/RX0qJ1M	Electronics and website resources



Hala Moayad

Assist. Prof. Dr. Alaa Yaseen Taqa

Course description form

University: Mosul **College:** Education for Pure Sciences **Department:** Computer Science

1. Course name:	
Practical Education(Teaching)	
2. Course code	
EDCO24F407	
3. Semester/year	
2024-2025	
4. Preparation date of this description	
1/9/2024	
5. Available forms of attendance	
In person	
6. Number of hours (total)/number of credits (total)	
64 theoretical hours + 30 practical hours + 6 weeks placement	
7. Name of the course tutors	
mailto:ibrahim.albaram@uomosul.edu.iq Email:	Name: Dr.Ibrahim AbdulGhany
8. Course objectives	
• Familiarity with the basic concepts related to learning resources and educational technology and their use in teaching. • Familiarize students with the modern educational foundations and standards for practical education. • Defining the modern roles of the teacher, keeping pace with the changes in this field. • Preparing and writing quarterly and daily study plans. • Training students to act as a teacher in real, mini-learning situations that resemble a regular classroom. • Helping students to employ learning resources in the educational communication process. • Help students to benefit from the experiences of others through micro-teaching. • Train students to use active teaching and learning methods in the university classroom in front of their colleagues. • Developing student's self-learning skills, and discovering answers and information through the feedback he receives after applying an educational situation using microteaching.	**Objectives of the study subject**
9. Teaching and learning strategies	
The following strategies are used depending on the content of the	**The strategy**

lecture: • **Providing printed lectures from modern, diverse sources rich in examples.** • **Discussion/brainstorming/role exchange/probing questions /lesson presenting**	

10.Course structure

Assessment method	Learning method	Topic name	Required learning outcomes	Hours	Week
According to section 9	**According to section 9**	**The concept of practical education, its importance, goals, and foundations**	**Explain the importance, objectives, and foundations of practical education**	**3**	**1**
According to section 9	According to section 9	The ethics of the teaching profession and the characteristics and duties of a good teacher	Defining the ethics of the teaching profession and the characteristics and duties of a good teacher?	3	2
According to section 9	According to section 9	The student prepares a daily teaching plan	Practical applications for how to prepare a teaching plan	6	3-4
According to section 9	According to section 9	Explains academic and professional teaching skills and their practical application	Academic and professional teaching skills and their practical application	3	5
According to section 9	According to section 9	Learns about sustainable development in education	Education and sustainable development	6	6-7
According to section 9	According to section 9	Learns about practical education within the framework of sustainable development	Practical education and sustainable development	6	8-9
According to section 9	According to section 9	Prepares the student to perform an actual lesson in the classroom	Classroom observations (observation form, observation basics) and guidelines for	6	10-11

			group application		
According to section 9	According to section 9	The student performs teaching skills according to the mini-lesson	Micro-teaching	12	12-15
According to section 9	According to section 9	Students apply actual lessons in the partner school	Group application	18	16-21
According to section 9	According to section 9	Strengths, weaknesses and benefits from the application.	Discussion of group application reports	27	22-30

11.Course assessment	2
• 10 marks for creating electronic lessons for the lessons that the student explained during the period of actual application in schools • The theoretical aspect includes 40% of the grade set by the subject teacher, and 60% of the grade during the actual placement process in the cooperating with schools is set by the application supervisor and the principal and teacher of the subject in the cooperating school according to special forms for that. • 10 marks for preparing a teaching plan for one of the topics in computer science • 10 marks for presenting the plan and discussing it in front of his classmates within the practical aspect of the subject • 10 marks for preparing reports on practical education and on various topics that student will benefit from during the application process in schools	3-6
12.References	7-8

Group of books by the subject tutor	BOOKS	9-11
	Main resources	12-15
	Recommended resources	16-21
	Electronics and website resources	22-30

اسم وتوقيع صاحب المقرر

Dr. Ibrahim Al-Baram

جامعة الموصل
كلية التربية للعلوم الصرفة
رئيس قسم علوم الحاسوب

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