



University of Babylon

College of Science for Women

Department of Computer Science

***Academic Program Description
for Undergraduate Studies
Department of Computer science
for the Year
2025-2026***



Academic Program Description

University Name: University of Babylon

College/Institute: College of Science for Women

Name of the academic: Bachelor's in Computer Science

Name of final degree: Bachelor's in Computer Science

Study system: *Undergraduate Studies* \bologna track

Description preparation date: 17/12/2025

Date of filling out the file: 21/3/2026

Signature:

Name of Department Head

Dr. Saif Mahmoud

Date: 21 / 3 / 2026

Signature:

Name of Scientific Assistant

Dr. Kawthar Mohammed Ali

Date: 21 / 3 / 2026

The file is checked by

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department

Mohammed J.Jader

Date: 21 / 3 / 2026

Signature:



Approval of the Dean

Introduction – Academic Program Description

The vision of the Bologna track Program in Computer Science aims to provide academic education characterized by high quality, global competitiveness, and innovation, while qualifying graduates to contribute to achieving digital transformation and building an advanced and sustainable technological future. The Department of Computer Science is one of the main departments in the Faculties of Science, as it includes a number of different scientific specializations, including: communications, computer networks, artificial intelligence, and cybersecurity. The Department of Computer Science is of great importance due to its influential role in providing the labor market with programmers and software developers, and therefore it has the highest priority in keeping pace with the latest developments in the field of information technology. The development of software has opened up broad horizons for the employment of information technology in all scientific and applied fields, as the use of information technology has increased the efficiency and accuracy of work in addition to reducing human effort by relying on computer software.

1. Program Vision

To make the Department of Computer Science a regional and Arab leader in the field of applied research, as the use of information technology has increased the efficiency and accuracy of work, in addition to reducing human effort by relying on computer software.

2. Program Mission

The mission of the Bologna track Programme of the Department of Computer Science is to prepare graduates with high technical and scientific skills, capable of innovation and solving advanced digital problems, with a commitment to applying European quality standards and promoting scientific research and international cooperation. Contributing to the development of the digital society by providing graduates capable of contributing to the digital transformation of society through their skills in software development, data analysis, and IT solutions, and also supporting students to be leaders in the digital knowledge society and contribute to building a sustainable future based on technology.

3. Program Objectives

The objectives of the Bologna track Program for the Department of Computer Science aim to provide students with the knowledge and skills necessary to excel in the fields of computer science and information technology. These objectives are based on developing academic education, enhancing graduates' capabilities, and supporting scientific research. The Department of Computer Science at the College of Science for Girls aims to provide the labor market with what it needs of programmers and software and application developers in various applied levels, in addition to the constant endeavor to keep pace with scientific and technological developments that are reflected in increasing the skills of the department's graduates. In addition to contributing to the development of this important field of knowledge (computer science) by having its researchers present scientific research at international and local conferences, in addition to publishing scientific research in various international journals, as well as patents, workshops, seminars, and training courses that drive the wheel of progress in this field.

4. Programmatic Accreditation

Nothing

5. Other External Influences

Training courses for students to develop scientific skills in advanced technology and programs + field visits

6. Program Structure

Distribution of units across study stages and the percentages of departmental requirements (mandatory or elective), college, and university requirements were as follows:

Stage	Number of Units	Core (Mandatory)	Elective	Supported
First	30	19	0	11
Second	41	24	15	2
Third	39	27	9	3
Fourth	35	19	14	2
Total	145	89	38	18
Percentage		61.4%	26.2%	12.4%

7. Detailed Description of Courses.

This guide covers the courses offered by the Computer Science program for the Bachelor of Science degree. The program offers (48) courses with (6000) total student load hours and 240 total European units. The delivery of courses is based on the Bologna process.

7. Program Description				
<i>Year/level</i>	<i>course code</i>	<i>Name of the course</i>	<i>Credit hours</i>	
			<i>Theoretical</i>	<i>Practical</i>
The first stage, Course (1), according to the Bologna system	UOBAB06040101	Programming Fundamentals	2	2
	UOBAB06040102	Digital Logic	2	2
		foundation of discrete structure	2	-
	UOBAB06040103	Computer Organization	2	2
		Linear algebra	2	-
		English language	2	-
The first stage, Course (2), according to the Bologna system	UOBAB06040201	Structured programming	2	2
	UOBAB06040202	Computer Skills	2	2
		Communication Skills	2	-
		Structures Discrete	2	-
		Probability and Statistics	2	1
		Arabic Language	2	-

Second stage Course (1)	C8	Object Oriented Programming (1)	2	2
	C11	Computation Theory (1)	3	-
	C16	Database (1)	2	2
	E57	Linux Fundamentals	2	2
	E55	Microprocessor and Assembly Languages	2	2
	C9	Data Structures	2	2
	S4	English Language (2)	2	-
Second stage Course (2)	E1	Object Oriented Programming (2)	2	2
	C12	Computation Theory (2)	3	-
	C17	Database (2)	2	2
	C4	Computer Architecture	3	-
	E45	Web Design & Programming	2	2
	E4	Operational Researches	3	-
	C27	Probability and Statistics	3	-
The third stage Course (1)	C13	Language Translator (1)	2	2
	C19	Artificial Intelligence	2	2
	C10	Algorithms Design and Analysis (1)	2	2
	C18	Computer Graphics	2	2

	C20	Computer Networks (1)	2	2
	C15	Software Engineering	2	2
	S7	Scientific Research Methodology	2	
The third stage Course (2)	C14	Language Translator (2)	2	2
	E22	Machine Learning	2	2
	C10	Algorithms Design and Analysis (2)	2	2
	E60	Embedded Systems	2	2
	C20	Computer Networks (2)	2	2
	E56	Parallel Computing	2	2
	S5	English Language (3)	2	-

8. The expected learning outcomes of the program

Knowledge

Knowledge and Understanding

1. The student learns about the nature of computer science.
2. The student learns about preparing scientific research in the field of computers.

	<p>3. The student is able to use computers in most applications.</p> <p>4. The student is able to analyze and solve problems that may occur in the field of computer science.</p> <p>5. The ability to find scientific solutions to community problems programmatically.</p> <p>6. The ability to analyze and evaluate software systems before starting to design the system</p> <p>7. Providing the student with some basic rules in evaluating and building software systems based on the basics of Software Engineering</p>
<p><i>Skills</i></p>	
<p>Subject-Specific Skills</p>	<p>B1 Theoretical</p> <ul style="list-style-type: none"> - B2 Practical - B3 Summer Training - B4 Graduation Research
<p>Thinking Skills</p>	<p>1. Let's Think about Thinking Ability: The goal of this skill is for the student to believe in what is tangible (student's abilities) and understand when, what and how he should think and work on improving the ability to think reasonably.</p> <p>2. High Thinking Skill: The goal of this skill is to teach thinking well before making a decision that determines the student's life, for example if the student wants to make a good decision, it is important to think well before making the decision and if he decides without thinking or if he cannot think well or if he cannot decide or perhaps will not decide, this means he does not have a high thinking skill</p> <p>3. Critical Thinking Strategy in Learning (Critical Thanking): It is a term that symbolizes the highest levels of thinking that aims to pose a problem and then analyze it logically to reach the required solution.</p> <p>4. Brainstorming</p>

Ethics	
Evaluation methods	<p>1-Through the regular exam (paper).</p> <p>2-Through writing computer programs (practical application).</p> <p>3-Through the method of expression with faces.</p> <p>4-Preparing reports by students.</p> <p>5-Relying on scheduled and unscheduled hours. By conducting the exam on the Moodle system using the E-learning technology</p>

9. Teaching and Learning Strategies

Learning strategies

- 1- Thinking strategy according to the student's ability (example: if the student can learn the correct management concept, he will acquire the skill of managing and organizing his personal life).
- 2- High thinking skill strategy (example: if the student wants to make a good decision, it is important to think well before making the decision, and if he decides without thinking or if he cannot think well or if he cannot decide or perhaps will not decide, this means he does not have a high thinking skill).
- 3- Critical thinking strategy in learning (Critical Thinking) (is a term that symbolizes the highest levels of thinking that aims to pose a problem and then analyze it logically to reach the required solution).
- 4- Brainstorming.

Methods of teaching and learning

- 1-Method of delivering lectures.

2-Student Center

3-(Student groups Team Project)

4-(Work shop workshops)

5-(Scientific trips to follow up on the environmental reality)

6-(Learning Technologies on Campus)

7-(experiential learning)

8-(Application Learning)

10. Evaluation methods : : The assessment methods in the Bologna Pathway programme rely on a combination of different assessment methods that aim to measure students' performance and their deep understanding of scientific and applied concepts, in addition to their practical skills and their ability to innovate and solve problems. These methods include:

1- Exams

2-Matrix (Learning Matrix)

3-Which Face (Method of Expression by Faces)

4-CAT (Feedback from Students)

5-Learning Triangle (Learning Triangle)

6-Preparing reports.

7-Relying on scheduled and unscheduled hours.

8- Additional duties inside and outside the college.

11. Faculty

Faculty Members

<i>Academic Rank</i>	<i>Instructor's name</i>	<i>Specialization</i>		<i>Special Requirements/skills (it applicable)</i>	<i>Number of the teaching staff</i>	
		<i>General</i>	<i>Special</i>		<i>staff</i>	<i>Lecturer</i>
Professor	Dr. Suhad Ahmed Ali	Computer	Artificial Intelligence		√	
Professor	Dr. Majid Jabbar Jawad	computer	security and information processing		√	
Professor	Dr . Samaher Hussein Ali	Computer	Artificial Intelligence		√	
Professor	Dr. Samah Abdel Hadi Abbas,	Mathematics	Mathematics		√	
Professor	Dr Muhammad Abdullah Nasser	Computer	security and information processing		√	
Professor	Dr. Sahar Adel Kazem	Computer	Security and information		√	
Professor	Dr. Israa Hadi Obaid,	Computer	Translators and Computational Theory		√	
Professor	Dr. Saif Mahmoud,	Computer	computer networks		√	
Professor	Dr. Mahdi Abdel Salman	Computer	Distributed Systems		√	
Professor	Dr. Muhammad Obaid	Computer	Information Technology/Software		√	
Assistant Professor	Dr. Salah Mahdi Saleh	Computer	Timbers Patterns		√	

Professor	Dr. Ahmed Badri Muslim,	Computer	Parallel Algorithms		√	
Assistant Professor	Dr. Ali Yaqoub Youssef	Computer	artificial intelligence		√	
Assistant Professor	Dr. Farah Muhammad Hassan,	Computer	information security		√	
Assistant Professor	Dr. wed Kazem Aliwi	Computer	Computer		√	
Assistant Professor	Dr. Ahmed Mohamed ,Hussein	Computer	Computer		√	
Assistant Professor	Dr.. Zainab Abdel Moneim Abdel Hadi,	Mathematics	Functional Approximation Theory		√	
Teacher	Zainab Falah Hassan	Computer	Computer		√	
Assistant Professor	Dr. Elaf Ali Abboud	Computer	Computer		√	
Teacher	Noor Kazem Ayoub	Computer	Computer		√	
Assistant Professor	Asraa Abdullah Hussein	Computer	Computer		√	
Teacher	Russell Muhammad Nimah	Computer	Computer		√	
t teacher	Nada Fadel Muhammad	Computer	Computer		√	
assistant teacher	Ishraq Abdel Amir Yahya	Computer	Computer		√	
Assistant Professor	Hadeel Qasim Ghani	Computer	Computer		√	
Assistant Professor	Zahraa Jabbar Hussein	Computer	Computer		√	
teacher	Zahraa Abdel Mohamed	Computer	Computer		√	

teacher	Jinan Ali Abd	Computer	Computer		√	
teacher	Shaima Abdel Kazem Hadi	Computer	Computer		√	
teacher	Zahraa Aboud Ahmed	Computer	Computer		√	
teacher	Rafif Mazhar Katran	Computer	Computer		√	

Professional Development

Mentoring new faculty members

Teaching, like any other art, can be acquired through practicing and following its methods and principles, provided that there is a sincere desire to practice the teaching profession. The method in education means taking interconnected steps to reach a specific goal that is hoped to be achieved. Therefore, the basic principles of good teaching must be followed, which are:

- 1- Guiding and directing learners by creating educational situations that lead to desired activities.
- 2- Providing an atmosphere of love, affection and cooperation between the teacher and learners and between the learners themselves through his love for his students without discrimination and not overdoing feminization.
- 3- Adopting democratic leadership through the sensory relationship between the teacher and his students, which leads them to control based on mutual respect and creating a cooperative atmosphere between the students and between the teacher and his students.

Professional development for faculty members

- 1- Thinking strategy according to the student's ability (example: if the student can learn the correct concept of management, he will acquire the skill of managing and organizing his personal life). And the strategy of high thinking skill (example: if the student wants to make a good decision, it is important to think well before making the decision and if he decides without thinking or if he cannot think well or if he cannot decide or perhaps will not decide, this means he does not have high thinking skill).
- 2- General and transferable skills (other skills related to employability and personal development).
- 3- Verbal communication.
- 4- Teamwork.

5- Analysis and investigation (collecting information systematically and scientifically to establish facts and principles to solve the problem). Initiative (motivation to work and the ability to take initiative, identify opportunities and put forward ideas and solutions.

12. Acceptance criterion

Central acceptance and parallel acceptance

13. The most important sources of information about the program

5- The website of the college and university.

<https://csg.uobabylon.edu.iq/>

<https://csg.uobabylon.edu.iq/department/?cdid=4>

https://csg.uobabylon.edu.iq/department/dep_lectures.aspx?cdid=4

2- The electronic system of the Bologna Process.

3-University guide .<https://systems.uobabylon.edu.iq/>

4-The most important books and resources in the college library.

14. Program development plan

The Bologna process was applied to first-year students and work is underway to apply it to future stages, with workshops and seminars being held to familiarize faculty members with the requirements of the Bologna process and how to work with it, discuss the negatives and obstacles, and find solutions for them. The electronic system was applied in the education process.



Program skills Outline

Required program learning outcomes

Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				Other skills related to employability and personal development			
				A ₁	A ₂	A ₃	A ₄	B ₁	B ₂	B ₃	B ₄	C ₁	C ₂	C ₃	C ₄	D ₁	D ₂	D ₃	D ₄
The first stage, Course (1), according to the Bologna system	UOBAB06040101	Programming Fundamentals	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	UOBAB06040102	Digital Logic	S	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		foundation of discrete structure	S	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	UOBAB06040103	Computer Organization	B	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		Linear algebra	S	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		English language	B	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Program skills Outline

				Required program learning outcomes															
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				Other skills related to employability and personal development			
				<i>A₁</i>	<i>A₂</i>	<i>A₃</i>	<i>A₄</i>	<i>B₁</i>	<i>B₂</i>	<i>B₃</i>	<i>B₄</i>	<i>C₁</i>	<i>C₂</i>	<i>C₃</i>	<i>C₄</i>	<i>D₁</i>	<i>D₂</i>	<i>D₃</i>	<i>D₄</i>
The first stage, Course (2), according to the Bologna system	UOBAB06040201	Structured programming	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	UOBAB06040202	Computer Skills	S	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		Communication Skills	B	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
		Discrete Structures	S	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

		Probability and Statistics	S	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
		Arabic Language	B	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Program skills Outline

				Required program learning outcomes																
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				Other skills related to employability and personal development				
				A ₁	A ₂	A ₃	A ₄	B ₁	B ₂	B ₃	B ₄	C ₁	C ₂	C ₃	C ₄	D ₁	D ₂	D ₃	D ₄	
Second stage Course (1)	C8	Object Oriented Programming (1)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C11	Computation Theory (1)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C16	Database (1)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	E57	Linux Fundamentals	Elective	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	E55	Microprocessor and Assembly Languages	Elective	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

	C9	Data Structures	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	S4	English Language (2)	Supported	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Program skills Outline

				Required program learning outcomes															
Year /Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				Other skills related to employability and personal development			
				A ₁	A ₂	A ₃	A ₄	B ₁	B ₂	B ₃	B ₄	C ₁	C ₂	C ₃	C ₄	D ₁	D ₂	D ₃	D ₄
Second stage Course (2)	E1	Object Oriented Programming (2)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C12	Computation Theory (2)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C17	Database (2)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

	C4	Computer Architecture	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	E45	Web Design & Programming	Elective	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	E4	Operational Researches	Elective	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C27	Probability and Statistics	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Program skills Outline

				Required program learning outcomes															
Year /Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				Other skills related to employability and personal development			
				<i>A₁</i>	<i>A₂</i>	<i>A₃</i>	<i>A₄</i>	<i>B₁</i>	<i>B₂</i>	<i>B₃</i>	<i>B₄</i>	<i>C₁</i>	<i>C₂</i>	<i>C₃</i>	<i>C₄</i>	<i>D₁</i>	<i>D₂</i>	<i>D₃</i>	<i>D₄</i>
The third stage Course (1)	C13	Language Translator (1)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C19	Artificial Intelligence	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C10	Algorithms Design and Analysis (1)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

	C18	Computer Graphics	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C20	Computer Networks (1)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C15	Software Engineering	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	S7	Scientific Research Methodology	Supported	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Program skills Outline

				Required program learning outcomes															
Year /Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				Other skills related to employability and personal development			
				A ₁	A ₂	A ₃	A ₄	B ₁	B ₂	B ₃	B ₄	C ₁	C ₂	C ₃	C ₄	D ₁	D ₂	D ₃	D ₄
The third stage	C14	Language Translator (2)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	E22	Machine Learning	Elective	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Course (2)	C10	Algorithms Design and Analysis (2)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	E60	Embedded Systems	Elective	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	C20	Computer Networks (2)	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	E56	Parallel Computing	Elective	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	S5	English Language (3)	Supported																

