

Course specification
(3204 Logic Programming)

Faculty:	<i>HICIT- Higher Institute for Computers & Information Technology-El Shorouk Academy</i>
Programme(s) on which the course is given:	Undergraduate program in Computer Science
Major or minor element of programme:	Compulsory
Department offering the programme	Department of Computer Science
Department offering the course:	Department of Computer Science
Year / Class	3 rd Year – 2 nd semester
Date of specification approval	1/8/2022

A- Basic Information

Title : Logic Programming	Code: 3204		
Weekly Hours:			
Lecture : 3	Exercise: -	Practical :3	Total: 6

B- Professional Information

1- Course Aims:

The objective of CS3204 is to teach students the theory and practice of logic programming. It introduces the basic syntax and semantics of the Prolog programming language. It covers the basic techniques of logic programming, the built-in features of the language, and describes its application to some typical AI topics. Topics covered include: Prolog as a logic programming language; Prolog syntax; Prolog execution; List processing; Prolog and logic; Backtracking and the cut; Prolog and programming schemas; Database manipulation.

2- Program ILOs Covered by Course

<i>Program Intended Learning Outcomes</i>			
Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
A2, A13, A20	B3, B4, B18	C1, C5, C10, C16	D5, D12

3- Intended learning outcomes of course (ILOs)

a. Knowledge and Under-Standing:

- a1- Explain the fundamental principles of logic programming [A2]
- a2- Describe a non-procedural logic programming language such as Prolog [A13, A20]
- a3 - Identify list processing and recursive programming techniques and be able to apply them appropriately in typical programming tasks [A13, A20]
- a4 - Explain the skills for programming logic [A13, A20]

b. Intellectual Skills:

- b1- Analyze the problem using logic programming [B3, B4]
- b2- Illustrate differing approaches to implementation [B4, B18]

c- Professional and practical skills

- c1- *Design a program using conventional Prolog syntax, making appropriate use of built-in control features [C1, C5]*
- c2- *Implement small Prolog applications demonstrating competence in the above [C5, C10, C16]*

d- General and transferable skills

- d1. *Work effectively as an individual and as a member of a team [D5].*
- d2. *Write Structural Report [D5, D12].*

4- Contents

Topic	Hours	Lec.	Exc/Lab
An overview of Prolog: Facts, Relations, Objects, Rules.	6	3	3
Recursion, Predicates, Queries.	6	3	3
Syntax and meaning of Prolog programs.	6	3	3
Lists, operators, arithmetic.	9	3	6
Using structures.	6	3	3
Controlling backtracking.	6	3	3
Input and output.	6	3	3
Built-in procedures.	6	3	3
Programming style and technique.	6	3	3
Operations on data structures	6	3	3
Advanced tree representations.	6	3	3
Basic problem-solving strategies.	6	3	3
Selected topic	3	3	-

5- Teaching and learning methods

Teaching and learning methods	Used
Active Learning	

Lectures (blending learning – online learning using virtual classroom)	√
Tutorial Exercises (hybrid learning – online learning)	√
Practical Lab(blending learning– online learning)	√
Exercises	√
Discussions.	√
Self – Learning strategy	
Reading material	√
Websites search	√
Research and reporting	√
Self-studies	√
Experimental strategy	
Group work	√
Presentation	√
Problem-solving strategy	
Problem-solving/problem-solving learning based	√
Case study	-
Synchronous E-Learning	
Virtual lab	-
Virtual class	-
Chat Room	√
Video lectures	√
Asynchronous E-Learning	
E-Learning	√

6- Student assessment methods

Methods	Assessment	Used
Electronic Midterm Exam	To assess the knowledge and understanding achieved by the student during the previous weeks. (online on e-learning hub)	√
Pencil-to-Paper Final Exam	To evaluate what the student gain at the end of the course, and to assess: the knowledge and understanding, general skills, and intellectual skills.	√
Course Project	To allow students work in team, and to evaluate knowledge, understanding, intellectual, and transferable skills. (online on e-learning hub , FTF)	√
Electronic Course Work & Quizzes	To keep the student always in the course, and to evaluate knowledge, understanding, intellectual, and transferable skills. (online on e-learning hub)	√
Practical Exam	to measure the ability of students to design and implement a software program (FTF).	√
Participation	To assess the knowledge and understanding achieved by the student during the previous weeks.	√

Assessment Schedule

Assessment	Week #
Participation	3-14
Electronic Mid-Term Exam	8
Final Exam	16
Electronic/ hard copy Course Project	3-14
Electronic/ hard copy Course Work & Quizzes	2-14
Practical Exam	15

Assessment Weight

Assessment	Weight %
Participation	5%
Electronic Mid-Term Exam	
Final Exam	70%
Electronic/hard copy Course Project	10%
Electronic/ hard copy Course Work & Quizzes	5%
Practical Exam	10%
Total	100

Course Work & Quizzes:

- Short Exams, Assignments, Research, Reports, Prand esentationsthe on e-learning hub
- Class/Project discussion in a virtual classroom

6 -List of references

Essential (textbooks)	books	Deitel, Paul, and Harvey Deitel. <i>Intro to Python for Computer Science and Data Science: Learning to Program With AI, Big Data and the Cloud</i> . 2019.
Course notes		<ul style="list-style-type: none"> - [https://web.stanford.edu/~vinayc/logicprogramming/html/] - [https://www.cs.cmu.edu/~fp/courses/15317-f17/lectures/14-lp.pdf]
Recommended books		Bratko, Ivan. <i>Prolog Programming for Artificial Intelligence</i> . 2012.
Periodicals, website		PowerPoint presentations of all course materials All labs material [https://moodle.sha.edu.eg/course/view.php?id=2262]

7- Required Facilities

To assess professional and practical skills given the following facilities:

- a. Tools & SW (Technologies facilities):
- **Visual Prolog platform**
 - **Microsoft TEAMS to create virtual classrooms for lectures, discussions for project**
 - **portal (MOODLE) to make electronic quizzes and electronic midterm exam**
 - **portal(MOODLE) to upload project deliverables and assignment**
 - **academy portal (MOODLE) to upload electronic material**

b. Teaching facilities:

	<i>Lecture</i>	<i>class</i>	<i>Lab</i>
Whiteboard	used	-	used
Pc/laptop	used	-	used
Data show	used	-	used
Webinars	MS TEAMS	-	MS TEAMS
SocialMedia	--	-	Facebook Page for 3 rd year
ChatRoom	ChatTeams	-	ChatTeams
Videos	Stream-MOODLE	-	Stream-MOODLE
Website	MOODLE	-	MOODLE

8- Course Matrices

8.1- Course Content/ILO Matrix

Course Contents	Knowledge & understanding				Intellectual skills		Professional and practical skills		General	
	a1	a2	a3	a4	b1	b2	c1	c2	d1	d2
An overview of Prolog: Facts, Relations, Objects, Rules.	x			x						
Recursion, Predicates, Queries.	x	x	x	x	x	x	x	x		
Syntax and meaning of Prolog programs.	x	x	x	x	x	x	x	x		
Lists, operators, arithmetic.	x	x	x	x	x	x	x	x		
Using structures.	x	x	x	x	x	x	x	x		
Controlling backtracking.	x	x	x	x	x	x	x	x		
Input and output.	x	x	x	x	x	x	x	x		
Built-in procedures.	x	x	x	x	x	x	x	x		
Programming style and technique.					x	x	x	x		
Operations on data structures	x	x	x	x	x	x	x	x		
Advanced tree representations.	x		x	x	x	x	x	x		
Basic problem-solving strategies.	x	x	x	x	x	x	x	x		
Selected topic	x	x	x	x						
Course project									x	x

8.2- Learning Method /ILOs Matrix

Learning Methods	Knowledge and understanding				Intellectual skills		Professional and practical skills		General	
	a1	a2	a3	a4	b1	b2	c1	c2	d1	d2
Lectures	x	x	x	x	x	x	x	x		
Tutorial Exercises					x	x	x	x		
Reading material	x	x	x	x	x	x	x	x		
Websites search	x	x	x	x	x	x		x	x	x
Research and reporting	x	x	x	x					x	x
Problem-solving										
Group work							x	x	x	x
Presentations										
Practical Lab					x	x	x	x		
Discussions.					x	x	x	x	x	x

8.3 Assessment Methods /ILOs Matrix

Assessment Methods	Knowledge and understanding				Intellectual skills		Professional and practical skills		General	
	a1	a2	a3	a4	b1	b2	c1	c2	d1	d2
Electronic Mid-Term Exam	x	x	x	x	x	x				
Final Exam	x	x	x	x	x	x				
Electronic Course Project	x	x	x	x	x	x	x	x	x	x
Electronic Course Work & Quizzes	x	x	x	x	x	x	x	x	x	x
Practical Exam	x	x	x	x	x	x	x	x		

9. Course ILOs Vs Program ILOs

Course ILOs \ Prog ILOs		Knowledge & understanding			Intellectual skills			Professional and practical skills				General	
		A2	A13	A20	B3	B4	B18	C1	C5	C10	C16	D5	D12
k&u	a1	√											
	a2		√	√									
	a3		√	√									
	a4		√	√									
int.	b1				√	√							
	b2					√	√						
p. & p.	c1							√	√				
	c2								√	√	√		
general	d1											√	
	d2											√	√

Course Coordinator: Prof. Dr. Tarek Sobh ()

Head of Department: Prof. Dr. Ahmed El-Abbassy ()

Date: 1/8/2022/