



جمهورية مصر العربية

وزارة التعليم العالي والبحث العلمي

Ministry of Higher Education and Scientific Research



المعهد العالى للحاسبات وتكنولوجيا المعلومات  
مدينة الشروق - القاهرة  
شعبة علوم الحاسب

## Course specification

**Course Code:** CS 307

**Course Title:** Logic Programming

**Academic Year:** /

**Course specification**  
**(CS 307 – Logic Programming)**

Course Outline	
<b>Faculty:</b>	HICIT- (Higher Institute for Computers & Information Technology-El Shorouk Academy)
<b>Programme(s) on which the course is given:</b>	Undergraduate program in Computer Science
<b>Major or minor element of programme:</b>	Compulsory
<b>Department offering the program</b>	Department of Computer Science
<b>Department offering the course:</b>	Department of Computer Science
<b>Level</b>	Third Level
<b>Date of specification approval</b>	DD/MM/YYYY

Basic Information			
<b>Code:</b>	CS 307	<b>Title:</b>	Logic Programming
<b>Prerequisites:</b>	CS 102 Computer Programming		
<b>Weekly Hours:</b>			
<b>Lecture: 2</b>	<b>Exercise:</b>	<b>Practical: 2</b>	<b>Total: 3</b> credit hours

Professional Information
<b><u>Course Aims:</u></b>
This course aims 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; Prolog syntax; Prolog execution; List processing; Prolog and logic; Backtracking and the cut; Prolog programming schemas; Database manipulation.

Program ILOs Covered by Course			
Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
A2, A7, A9	B1, B2,B4,B17	C1, C10	D1, D3

## Intended learning outcomes of course (ILOs)

- a. Knowledge and Under-Standing:
- a1. Understand of the fundamental principles of logic programming.
  - a2. Understand a non-procedure logic programming language such as Prolog.
  - a3. Understand list processing and recursive programming techniques and be able to apply them appropriately in typical programming tasks.
  - a4. Explain the skills for programming logic.
- b. Intellectual Skills:**
- b1. Analyze the problem using logic programming.
  - b2. Illustrate different approaches for implementation.
- c. Professional and practical skills**
- c1. Design a program using conventional Prolog syntax, making use of built-in control features.
  - c2. Design and implement a small Prolog applications demonstrating competence in the above.
- d. General and transferable skills**
- d1. Work effectively as an individual and as a member of a team.
  - d2. Write structural report.

## Contents

Topic	Contact Hours	
	lecture	Lab
An overview of Prolog: Facts, Relations, Objects, Rules.	3	3
Recursion, Predicates, Queries.	3	3
Syntax and meaning of Prolog programs	3	3
Lists, Operators, Arithmetic.	6	6
Controlling backtracking.	3	3
Input and output	3	3
Built-in procedures	3	3
Programming style and techniques	3	3
Operations on data structures	3	3
Advanced tree representations.	3	3
Basic problem-solving strategies	3	3

## Teaching and learning methods

Teaching and learning methods	Used
Lectures	√
Tutorial Exercises	√
Practical Lab	√
Discussions.	√

Self – Learning (Reading material, Websites search,)	-
Self-studies	-
Group work	-
Presentation	-
Problem solving/problem solving learning based	-
Case study	-
Synchronous E-Learning	-
Video lectures	-
Asynchronous E-Learning	-

<b>Student assessment methods &amp; Schedule</b>		
<b>Methods</b>	<b>Used</b>	<b>Week#</b>
Midterm Exam	√	8
Final Exam	√	16
Course Work & Quizzes	√	2-14
Practical Exam	√	16

<b>Assessment Weight</b>	
<b>Assessment</b>	<b>Weight %</b>
Mid Term Exam	15%
Practical Exam	15%
Final Exam	60%
Course Work & Quizzes	10%
Total	100%

<b>Course Work &amp; Quizzes</b>
Short Exams, Assignments, Research, Reports, Presentations
Class/Project discussion

<b>List of references</b>	
<b>Essential books (textbooks)</b>	Prolog programming for artificial intelligence, 4th edition, by Ivan Bratko.
<b>Course notes</b>	E-Learning Portal
<b>Recommended books</b>	
<b>Periodicals, website</b>	
<b>Videos link</b>	

### Required Facilities

Tools & SW (Technology facilities):	- Gnu Prolog - Visual Prolog - Textpad Editor	
Teaching facilities:	Whiteboard	√
	Computer Lab	√
	Data show	√
	E-Learning	√
	Videos	√
	Website	√

### Course Content/ILO Matrix

Course Contents	Knowledge & understanding				Intellectual skills		Professional and practical skills		General	
	a1	a2	a3	a4	b1	b2	c1	c5	d1	d2
DB System concepts and architecture	X			X						
Entity-Relationship (ER) and Entity-Enhanced Relationship (EER) models	X	X	X	X	X	X	X	X		
Relational model concepts and Relational mapping	X	X	X	X	X	X	X	X		
Structured Query Language (SQL)	X	X	X	X	X	X	X	X		
MS SQL server as a relational DB Management System	X		X	X	X	X	X	X		
Functional dependencies and normalization for a relational database	X	X	X	X	X	X	X	X		
Selected Topics (NOSQL, DB security, Distributed DB))	X	X	X	X	X	X	X	X		
Course project	X		X	X	X		X	X		

### Learning Method /ILOs Matrix

Learning Methods	Knowledge and understanding				Intellectual skills		Professional and practical skills		General	
	a1	a2	a3	a4	b1	b2	c1	c5	d1	d2
Lectures	X	X	X	X	X	X	X	X		
Tutorial Exercise					X	X	X	X		
Practical Lab					X	X	X	X		
Discussions					X	X	X	X	X	X

Assessment Method /ILOs Matrix										
Learning Methods	Knowledge and understanding				Intellectual skills		Professional and practical skills		General	
	a1	a2	a3	a4	b1	b2	c1	c5	d1	d2
Midterm Exam	X	X	X	X	X	X	X	X		
Final Exam	X	X	X	X	X	X	X	X		
Course work	X	X	X	X	X	X	X	X	X	X
Practical Exam	X	X	X	X	X	X	X	X		

Course / Program ILOs Matrix												
Prog ILOs Course ILOs		Knowledge & understanding			Intellectual skills				Professional and practical skills		General	
		A2	A7	A9	B1	B2	B4	B17	C1	C10	D1	D3
Knowledge and understanding	a1	x	x	x								
	a2	x	x	x								
	a3	x	x	x								
	a4	x	x	x								
Intellectual skills	b1				x	x	x	x				
	b2				x	x		x				
Professional and practical skills	c1								x			
	c2									x		
General skills	d1										x	
	d2											X

**Course Coordinator : Dr. Mohamed Mostafa ( )**  
**Head of Department: Dr. Ahmed El-Abbassy ( )**  
**Date: --/--/2023**