Course Specifications

Course Title:	Logic Programming and Symbolic Computation
Course Code:	AI 323
Program:	**Information and Computer Science**
Department:	**Computer Science and Information**
College:	College of Science at Az Zulfi
Institution:	Majmaah university

Table of Contents

A. Course Identification

1. Credit hours:3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☐ Elective ☐
3. Level/year at which this course is offered: 6th level
4. Pre-requisites for this course (if any)**:** Object Oriented programming CSI211
5. Co-requisites for this course (if any)**: Nil** **Algorithms and data structure CSI 223**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	48	80%
2	**Blended**	6	10%
3	**E-learning**	6	10%
4	**Correspondence**		
5	**Other**		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others** (specify)	
	Total	60
Other Learning Hours*		
1	**Study**	30
2	**Assignments**	30
3	**Library**	20
4	**Projects/Research Essays/Theses**	20
5	**Others** (specify)	
	Total	100%

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course will cover a selection of LISP programming techniques for artificial intelligence focusing on the implementation of planning and search algorithms, pattern matching, rule-based systems, logic programming, natural language parsers, and object oriented programming. Previous exposure to LISP is useful; however, the language will be introduced and reviewed at the beginning of the course

2. Course Main Objective

1. Familiarity with the fundamental concepts and algorithms of Artificial Intelligence including searching, planning, problem solving, logic and knowledge representation
2. Be able to implement AI algorithms in a functional
3. Appreciate the problems, current limitations and future potential of AI
4. Have successfully implemented several small AI programs.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	Demonstrate working knowledge in Lisp in order to write simple Lisp programs and explore more sophisticated Lisp code	**K3-AI**
1.2	Know various AI search algorithms	
2	**Skills :**	
2.1	Understand the fundamentals of knowledge representation (logic-based, frame-based, semantic nets), inference and theorem proving	**S3- AI**
2.2	Ability to apply knowledge representation, to real-world problems	
2.3		
3	**Competence:**	
3.1	Know how to build simple knowledge-based systems	**C3-AI**
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	Introduction	4
2	LISP Introduction	4
3	Search: The General Problem Solver	4
4	Pattern Matching: ELIZA	8
5	Search Tools	8
6	Advanced LISP	8

7	Logic Programming	8
8	Natural Language	8
9	Object Oriented Programming in LISP	8
10		
11		
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	Demonstrate working knowledge in Lisp in order to write simple Lisp programs and explore more sophisticated Lisp code	Lectures. Case studies	Written Exam Homework assignments Quizzes
1.2	Know various AI search algorithms		
2.0	**Skills**		
2.1	Understand the fundamentals of knowledge representation (logic-based, frame-based, semantic nets), inference and theorem proving	Lectures. Lab Case studies. Individual presentations. Brainstorming.	Written Exam Homework assignments Lab assignments Class Activities Quizzes
2.2	Ability to apply knowledge representation, to real-world problems		
2.3			
3.0	**Competence**		
3.1	Know how to build simple knowledge-based systems	Lectures. Lab Case studies. Individual group discussions. Brainstorming. Presentations.	Written Exam Homework assignments Lab assignments Class Activities Quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	15%
2	Second written mid-term exam	12	15%
3	Presentation, class activities, and group discussion	Every week	10%
4	Homework assignments	After Every chapter	10%
5	Implementation of presented programs	Every two weeks	10%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
6	Final written exam	16	40%
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
Office hours - Office call – Email - Mobile

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	AI and the Origins of the Functional Programming Language Style. *Minds & Machines* **27,** 449–472 (2017). https://doi-org.sdl.idm.oclc.org/10.1007/s11023-017-9432-7-2017
Essential References Materials	
Electronic Materials	
Other Learning Materials	Video and presentation

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom and Lab, as those that are available at college of science at AzZulfi.
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart Board - data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	A/N

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
course evaluation	Student-faculty management meeting	Questionnaires
Evaluation of Teaching	Program/Department Instructor	Discussion within the staff members teaching the course

Evaluation Areas/Issues	Evaluators	Evaluation Methods
		Departmental internal review of the course.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	