CS-406 (Artificial Intelligence)

Course Description

Course code number	CS-406	Course Title	Artificial Intelligence
Semester hours	3 hours	No. of Credit Units	3
Prerequisite	-	Course Coordinator	Dr. Ah Nge Htwe Professor

Course Aims

The overall goal of artificial intelligence is to create technology that allows computers and machines to function in an intelligence manner.

Learning Outcomes

Students who have completed this course should be
- Understand the role of knowledge representation, problem solving, and learning in intelligent system engineering

Course Contents

This course provides students in computer science.
1. Explain the basic knowledge representation, problem solving, and learning methods of Artificial Intelligence
2. Describe artificial intelligence & compare it to conventional computing.
3. The students should identify why typical AI problems are difficult to solve
4. To introduce the various searching techniques, constraint satisfaction problem and example problems- game playing techniques
5. Students will learn how different types of constraints can be expressed in the formal manner.

Reference Materials

1. Artificial Intelligence A Modern Approach (Second Edition) by Stuart Russell & Peter Norving
2. Prolog Programming for Artificial Intelligence by lvan Bratko

Course Organization:

The expected learning outcomes for the course will be accessed through fives forms of activity.
1. Attending the lecturers
2. Preparing for and participating in the recitations.
3. Assignments
4. Reading the text
5. Exams

Assessment

Exam	50%
Tutorials/Moodle Test	10%
Class Participation	10%
Quiz	5%
Presentation /Assignment	10%
Project	15%

Tentative Schedule

45 periods for 15 weeks (50 minutes for 1 period)

No.	Chapter	Page	Period	Detail Lecture Plan
1.	**Chapter 1** **Introduction to Prolog**		**6**	**Book 1**
	• Defining relations by facts • Defining relations by rules • Recursive rules • How Prolog answers questions • Declarative and procedural meaning of programs			
2.	**Chapter 2** **Syntax and Meaning of Prolog Programs**		**6**	**Book 1**
	• Data Objects • Matching • Declarative meaning of Prolog programs • Procedural meaning • Example : monkey and banana • Order of clauses and goals • The relation between Prolog and logic		**6**	
3.	**Chapter 3** **Lists, Operators, Arithmetic**		**8**	**Book 1**
	• Representation of lists • Some operations on lists • Operator notation • Arithmetic		**8**	
4.	**Chapter 1** **Introduction**		**2**	**Book 2**
	1.1 What is AI?	1-5	1	Explain Figure 1.1 and Ex 1.1

	1.2 The Foundations of AI 1.3 The History of AI 1.4 The state of the art	5-27 27-28	1	Overview
5.	**Chapter 2** **Intelligent Agents**		**5**	Book2
	2.1 Agents and Environments	32-34	1	
	2.2 Good behavior: The concept of Rationality	34-38	1	
	2.3 The nature of Environment PEAS	38-40	1	Explain Detail
	Exercises & Assignment	56-57	1	Exe. 2.1,2.5
	Tutorial		1	
6.	**Chapter 7 Logical Agents**		**9**	**Book2**
	7-1 Knowledge-Based Agents	195 -197		Detail Explain
	7-2 The Wumpus World	197 -200	1	Detail Explain
	7-3 Logic	200 -204		Detail Explain

	7- 4 Propositional Logic
	A Very Simple Logic
	        Syntax
	        Semantics
	        A Simple Knowledge Base
	        Inference
	        Equivalence, Validity and Satisfiability
		204 - 211	2	Detail Explain

	7- 5 Reasoning Patterns in Propositional Logic
	        Resolution
	        CNF
	        A resolution algorithm
	        Forward and Backward Chaining
		211 -220	2	Detail Explain

	7- 6 Effective Propositional Inference A complete Backtracking Algorithm 7- 7 Agents Based on Propositional Logic A Comparison	220 – 222 231	2	
	Exercises 1, 2, 4, 5, 6, 7, 8, 9	236 - 238	1	
	Tutorial(Chapter 7)		1	
7.	**Chapter 8 First-Order Logic**		**9**	**Book2**
	8-1 Representation Revisited	240 - 245	1	
	8-2 Syntax and Semantics of First-Order Logic Models for First-Order Logic Symbols and interpretations Terms	245 - 253	2	Explain detail

	Atomic Sentences Complex Sentences Quantifiers Equality			
	8-3 Using First-Order Logic Assertions and Queries in First-Order Logic The kinship domain Numbers, sets, and lists The Wumpus world	253 - 260	2	
	8-4 Knowledge Engineering in First-Order Logic Knowledge Engineering process	260 - 262	2	Explain detail
	Exercises 2, 6, 7, 8, 11	268-269	1	
	Tutorial		1	