Course Syllabus

1. Program of Study Bachelor of Science (Computer Science)
Faculty/Institute/College Mahidol University International College

2. Course Code ICCS 451 **Course Title** Artificial Intelligence

3. Number of Credits 4 (Lecture/Lab) (4-0)

4. Prerequisite(s) ICCS 321

5. Type of Course Elective

6. Trimester / Academic Year 1st trimester / every academic year

7. Course Description

Understanding of the basic techniques for building intelligent computer systems. LISP and PROLOG programming languages. Symbolic computation and problem solving. Search strategies. Game playing. Theorem proving. Learning. Natural language processing. Heuristic programming. Expert systems.

8. Course Objective(s)

After the completion of the course, students will

1. understand the concepts of artificial intelligence,
2. be able to apply appropriate searching techniques to various kinds of problems, including heuristic, stochastic, and genetic algorithmic searchings.
3. be able to effectively select techniques for implementing expert systems,
4. understand and be able to apply neural networks to problem solvings,
5. be able to implement AI applications using PROLOG, LISP, or other programming languages.

9. Course Outline

Week	Topic				Instructor
	Lecture	Hour	Lab	Hour	
1	Introduction, Intelligent agents.	4	-	-	**Dr. Udom Silparcha**
2	Predicate calculus, Problem solving, search formulations, basic algorithms, Logic programming, PROLOG programming.	4	-	-	
3	Graph theory, depth-first and breadth-first search.	4	-	-	
4	Heuristic search, best-first search, recursion-based search, stochastic search: simulated annealing.	4	-	-	
5	Uncertainty, Bayesian	4	-	-	

	approaches. Knowledge representation.				
6	Midterm Examination, Symbolic programming. LISP programming.	4	-	-	
7	Machine learning, induction algorithm, unsupervised learning.	4	-	-	
8	Artificial neural networks, perceptron.	4	-	-	
9	backpropagation learning, competitive learning.	4	-	-	
10	Genetic algorithm, classifier systems. Natural language processing. Markov model.	4	-	-	
11	Image understanding, Course conclusion. Review.	4	-	-	
	Total	**44**		**0**	

10. Teaching Method(s)

1. Lectures
2. Tests / Assignments

11. Teaching Media

1. Textbooks
2. Lecture notes
3. Powerpoint presentations
4. Videos

12. Measurement and evaluation of student achievement

Marks	Grade
81 or more	A
76 – 80	B+
71 – 75	B
66 – 70	C+
61 – 65	C
56 – 60	D+
51 – 55	D
50 or less	F

13. Course evaluation

Components	%
Tests & Assignments	30
Midterm Exam	30
Final Exam	40

Total	100

14. Reference(s)

1. George F. Luger, William A. Stubblefield, “Artificial Intelligence: Structures and Strategies for Complex Problem Solving”, 4th Ed., Addison-Wesley, 2002.
2. J. Wesley Hines, “Fuzzy and Neural Approaches in Engineering”, John Wiley & Sons, Inc., 1997.
3. Robert Sekuler, Randolph Blake, “Perception”, 4th Ed., McGraw-Hill, 2002.

15. Instructor(s)

Dr. Udom Silparcha

16. Course coordinator

Dr. Udom Silparcha