

ASSUMPTION UNIVERSITY
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
COURSE OUTLINE
CSX4201/ITX4201 ALGORITHM DESIGN

Course type: Major Elective Course

Prerequisite: CSX3002 Object Oriented Concepts and Programming or equivalent

Semester : 1 / 2023

Instructor : Asst. Prof. Dr. Thitipong Tanprasert (Sec 541)
Friday 9:00 – 12:00
Room VMS 805

Office

VMS 608, VMS. Building 6th floor

Email : thitipong@scitech.au.edu

Office Hours : 12:00 – 13:00 Friday
8:00 – 9:00 Thursday

References:

Artificial Intelligence – The Modern Approach, Stuart.Russell and Peter Norvig, Prentice Hall

Course Description

Fundamental concepts in modern AI and its purpose as well as different disciplines in the field, state space searching, heuristic algorithms, machine learning, and their application developed in modern platforms.

Course Objectives

- To understand the foundations of Artificial Intelligence and Machine Learning
- To understand various search methodologies.
- To be able to select the suitable techniques/algorithms and/or to develop applications to cope with real world problems effectively

Class Schedule:

Weeks	Topics	Remarks
1	Introduction to AI and Programming Environment	
2	Problem Solving by Searching and basic Uninformed Search Techniques	
3	Iterative Deepening Search and Greedy Best-First Search	
4	Informed Search: Heuristic Functions, A* Search and Iterative Deepening A*	
5	Search in Complex Environment, Local Search, Genetic Algorithm	
6	Online Search, Learning Real-Time A*	
7	Adversarial Search, Minimax Algorithm	
8	Introduction to Machine Learning, Artificial Neural Networks	
9	Alternative Classification Techniques: Support Vector Machine, Decision Tree and Random Forest	
10	Machine Learning for Clustering: K-Means, FCM, DBSCAN, Self-Organizing Map	
11	Association Rule Mining	
12	Term Project Proposal	Evaluation

13	Progress Report 1	Evaluation
14	Progress Report 2	Evaluation
15	Term project presentation	Evaluation

Mark Allocation:

Assignments	40%
Project proposal	15%
Project progress reports	20%
Project final presentation and report	25%

Other Requirements:

- 80% attendance (checked **ONLY** within the first 15 minutes of each 90 minutes)
IMPORTANT : The class attendance checking has been strongly enforced for many semesters and students who missed checking more than 20% had been withdrawn from the course. Therefore, it is emphasized here that ***the percentage of attendance is calculated from the checking in the first 15 minutes***. A student who walks in later than the specified checking period may be allowed to sit in the class, but he or she will not be checked for attending the session.
- Participating in the project presentation