

Course Information	
Course title	Advanced Methods in Optimization Algorithms
Semester	110-2
Designated for	COLLEGE OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE Data Science Degree Program
Instructor	FREDERICK KIN HING PHOA
Curriculum Number	Data5001
Curriculum Identity Number	946 U0010
Credits	3.0
Course Syllabus	
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Course Description	(I) Traditional Optimization Methods: 01. Linear Programming. 02. Single-State Optimization Methods. 03. Gradient Methods. 04. Local Search Approaches. 05. Simulated Annealing. 06. Tabu Search. (II) Nature-Inspired Metaheuristic Optimization Methods: 07. Genetic Algorithms. 08. Evolution Strategy. 09. Differential Evolution. 10. Genetic Programming. 11. Particle Swarm Optimization. 12. Ant Colony Optimization. (III) Advanced Topics: 13. Competitive Coevolution. 14. Cooperative Coevolution. 15. Multi-Objective Optimization. 16. Statistical Optimization (Distribution Estimation). 17. Policy Optimization (Reinforcement Learning). 18. Quantum-Inspired Optimization Methods.