

Academic Org: Dept of Computer Sci & Engg – Subject: Computer Science

Course: CSCI3270 **Course ID:** 002597 **Eff Date:** 2022-07-01 **Crse Status:** Active **Apprv. Status:** Approved **【Course Rev】**
Advanced Programming Laboratory 高級程序設計實驗

The course will mainly focus on programming exercises for advanced data structures and algorithms. Topics include dynamic programming, computational geometry, number theory, simulation, combinatorial problems, optimization techniques, graph theory, etc.

本科著重於高級數據結構和算法的程序編寫訓練。專題包括動態規劃，計算幾何，數論，模擬，組合問題，優化技術，圖論等等。

Grade Descriptor: A

EXCELLENT – exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

有關等級說明的資料，請參閱英文版本。

B

GOOD – good performance in all course learning outcomes and exceeding expectation in some of them; demonstration of good understanding of the subject matter and the ability to use proper concepts and materials to solve most of the problems encountered.

有關等級說明的資料，請參閱英文版本。

C

FAIR – adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

有關等級說明的資料，請參閱英文版本。

Equivalent Offering:

Units: 2 (Min) / 2 (Max) / 2 (Acad Progress)
Grading Basis: Graded
Repeat for Credit: N
Multiple Enroll: N
Course Attributes:

Topics:

COURSE OUTCOMES

Learning Outcomes:

Students will be able to:

1. Use dynamic programming in their problem solving
2. Understand basic Number Theory to be able to identify a potential solution
3. Code simulation problems more effectively
4. Analyze the combinatorial characteristic of the problem and solution in programming codes
5. Implement basic graph data structures and advanced graph-based algorithms
6. Learn some basic numerical optimization techniques and apply them in practice

Objectives: related Outcomes

1. Requirements and specifications: 3, 4, 5
2. Fundamental data structures and algorithms: 1, 2, 5, 6
3. Problem solving skills: 1, 2, 3, 5, 6

Outcomes: reflected Objectives

1. Dynamic programming: 3
2. Number Theory: 2, 3
3. Simulation problems: 1, 3
4. Combinatorial characteristics: 1

- 5. Graph data structures: 1, 2, 3
- 6. Numerical optimization: 2, 3

Course Syllabus:

The course will mainly focus on programming exercises for advanced data structures and algorithms. Topics include dynamic programming, computational geometry, number theory, simulation, combinatorial problems, optimization techniques, graph theory, etc.

Assessment Type:

Others : 100%

Feedback for Evaluation:

- 1. Midterm course evaluation
- 2. Final course evaluation
- 3. Discussion with the TA
- 4. Monitor the course newsgroup and email

Required Readings:

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Recommended Readings:

To be determined by the course teacher

OFFERINGS

1. CSCI3270 Acad Organization=CSD; Acad Career=UG

COMPONENTS

LAB : Size=30; Final Exam=N; Contact=1
LEC : Size=30; Final Exam=Y; Contact=1

ENROLMENT REQUIREMENTS

1. CSCI3270

Enrollment Requirement Group:

- 1. Prerequisite: CSCI2100 or ESTR2102;
- 2. Corequisite: CSCI3160 or ESTR3104.

New Enrollment Requirement(s):

Pre-requisite = no change
Co-requisite = no change

CAF

eLearning hrs for blended cls 0
No. of micro-modules 0
Research components (UG) 0%

< E N D O F R E P O R T >