SUNY at New Paltz, Fall 2025

CPS526-01: Advanced Data Structures

Tuesday, Friday: 11:00 am - 12:15 pm, SH 259

Instructor:

Professor Keqin Li
Science Hall 249, X3534, lik@newpaltz.edu

Office Hours:

Tuesday, Friday: 9:00 - 11:00 am

Textbooks:

Mark Allen Weiss
Data Structures and Algorithm Analysis in Java
third edition, Pearson, 2012, ISBN: 0-13-257627-9.

Michael Main
Data Structures and Other Objects Using Java
fourth edition, Pearson, 2012, ISBN-10: 0132576244.
Webpage of the book: https://www.cs.colorado.edu/~main/dsoj.html

Evaluation:

- Programming assignments: 30%
- Midterm examination (Friday, 10/10/2025): 30%
- Final examination (Tuesday, 12/16/2025): 40%

Student Learning Outcomes (Course Objectives):

Upon completion of this course, students will be able to:

1. Understand and program using advanced data structures
2. Understand and analyze the performance of data structures related algorithms

Course Outline:

- Lists, Stacks, and Queues
- Search Trees (binary search tree, AVL tree, splay tree, B-tree)
- Hashing
- Priority Queues (binary heap, leftist heap, skew heap, binomial queue)
- Sorting Algorithms (Shellsort, heapsort, mergesort, quicksort, lower bound)

- Graph Algorithms (DFS, BFS)
- Analysis Techniques (recurrence equation, amortized analysis)

Academic Policies:

Academic integrity and related academic policies and procedures can be found at http://www.newpaltz.edu/advising/policies.html.

Student Evaluation of Instruction (SEI):

Please complete the form online during 11/24/2025 - 12/8/2025.
