University of Arkansas - Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913-3649
479-788-7000

General Syllabus

CS 4933 Competitive Programming

Credit Hours: 3 Lecture Hours: 3 Laboratory Hours: 0

Prerequisite: consent of instructor

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Introduces algorithms and concepts required to solve complex programming challenges in competitive environments.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Evaluate and choose algorithms and data structures to solve complex problems.
2. Design programs to utilize more complex data structures.
3. Implement algorithms to efficiently solve problems.
4. Evaluate graph algorithms and data structures in application development.
5. Apply advanced mathematical concepts in the design of algorithms.
6. Select, integrate and combine appropriate algorithms for given problems.
7. Create complex problems in team-based environments.

B. University Learning Outcomes (ULO)

This course enhances student abilities in the following area:

Analytical Skills
Critical Thinking Skills: Students will identify a problem, break it down into its component parts and develop a solution.

III. Major Course Topics

A. Standard Libraries
B. Basic complexity analysis
C. Algorithms
D. Data structures
E. Graph theory
F. Combinatorics
G. Dynamic programming
H. Greedy algorithms
I. Computational geometry
J. Advanced problem-solving strategies