Design and Analysis of Algorithms

General Information

Instructor: Nirdosh Bhatnagar
Email: nbhatnagar@svuca.edu

Course Description: This course provides students with balanced introduction on: (a) computational models for asymptotic time-space complexity analyses, and (b) algorithmic design techniques with performance and cost implications. The tentative topics include: computational models and asymptotic time-space analyses; algorithmic design paradigm; analysis techniques; graph and network flow algorithms; dynamic programming algorithm theory and design; NP-completeness and approximation algorithm alternatives for NP-hard problems of important practical applications.

Prerequisites: Calculus, Discrete Mathematics, and Basics of Data Structures.

Textbooks:

1. **Required**: *Introduction to Algorithms*, Third Edition, Thomas Coreman, Charles Leiserson, Ronald Rivest, and Clifford Stein, MIT Press, 2009, ISBN-13: 978-0262033848

2. **Recommended:** *Foundations of Algorithms*, Fourth Edition, by Richard Neapolitan, and Kumarss Naimipour, ISBN-13: 9780763782504.

3. **Recommended**: *Algorithms*, Sanjoy Dasgupta, Christos Papadimitriou, Umesh Vazirani, Mc Graw Hill, 2006, ISBN-13: 978-0073523408.

4. **Recommended**: *Algorithms Unplugged*, Editors: Berthold Vöcking , et al, Springer; 2011, ISBN-13: 978-3642153273;

Extra Help: Immediately after class, and by appointment.

Grading Policy:
Attendance & Class Participation: 5 %
Homeworks: 35%
Midterm Examination: 25%
Final Examination : 35%

Assignments: Normally one assignment per week. It is due the next week.

Honor Code: All students taking courses in the SVU agree; individually and collectively, that they will neither give nor receive un-permitted aid in examination or other course work that is to be used by the instructor as a basis of grading