Silicon Valley University
San Jose
CS 502 Design and Analysis of Algorithms

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Syllabus

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.

Required Books:

1. Cormen, T. H., Leiserson, C. E., Rivest, R. L., and Stein, C., 2009. *Introduction to Algorithms*, Third Edition, The MIT Press, Cambridge, Massachusetts.

2. Neapolitan, R., and Naimipour, K., 2011. *Foundations of Algorithms*, Fourth Edition, Jones and Bartlett Publishers, Sudbury, Massachusetts.

3. Sanjoy Dasgupta, Christos Papadimitriou, Umesh Vazirani, 2006, *Algorithms*, Mc Graw Hill, New York, New York.

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

Recommended Books:

1. Rajeev Motwani, and Prabhakar Raghavan, 1995, *Randomized Algorithms*, Cambridge University Press, ISBN-13: 978-0521474658.

2. Purdom Jr., P. W., and Brown, C. A., 1985, *The Analysis of Algorithms*, Holt, Rinehart and Winston, New York, New York.

3. Raawlins, Gregory J. E., 1992. *Compared to What? An Introduction to the Analysis of Algorithms*, Computer Science Press, An Imprint of W. H. Freeman and Company, Oxford, England.

4. Goodrich, M. T., and Tamassia, R., 2002. *Algorithm Design: Foundations, Analysis, and Internet Examples*, John Wiley & Sons, Inc., New York, New York.