

GRANDE PRAIRIE REGIONAL COLLEGE

DEPARTMENT OF COMPUTING, MATHEMATICS and STATISTICAL SCIENCES

Algorithms I CS 2040 3(3-0-1)

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This course is the first course of two-course sequence on algorithms design and analysis stream, with the emphasis on the fundamentals such as searching, sorting, and graph algorithms. Topics to be covered includes: Algorithm Analysis-running time, Big- O , Big- Ω , Big- Θ , Recurrence, Recursion, and Induction. Advanced algorithm design & analysis techniques such as divide and conquer, dynamic programming, greedy methods (such as Minimum Spanning Tree), amortized analysis, and P & NP analysis will also be covered. Examples in Database Analysis and Design, Genome Project, and Metallic Materials' Microstructure Analysis (graph algorithms) will be discussed to illustrate wide-range applications of computer algorithms'.

Prerequisite: CS1150, CS 2720 and MA 1130 or MA1140

Labs: Scheduled labs for this course will begin in the week of January 9.

Text Book: T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein. [Introduction to Algorithms \(Second Edition\)](#). McGraw Hill, 2001. ISBN 0070131511

Marking:

Assignments:	25%
Quizzes:	20%
Midterm Exam:	25%
Final Exam:	30%