

W 03

# 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 courses 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 times, Big-O, Big- $\Omega$ , Big- $\Theta$ , Recurrence, Recursion, and Induction. Advanced algorithm design & analysis techniques such as divide and conquer, dynamic programming, greedy methods (Minimum Spanning Tree), amortized analysis, and P & NP analysis will also be covered. Examples in Database Analysis and Design, Genome Project, and Materials' Microstructure Analysis (graph algorithms) will be thoroughly discussed to illustrate wide applications of computer algorithms.

**Prerequisite:** CS1150, CS 2720 and MA 1130 or MA1140

**Labs:** Scheduled labs & seminars for this course are in J101. Labs & seminars will begin in the week of January 13.

**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:	15%
Quizzes:	28%
Midterm Exam:	20%
Final Exam:	37%