CMPT 405 - D100 Design and Analysis of Computing Algorithms

**Instructor(s):** Leonid Chindelevitch  
**SFU Burnaby**

**Calendar Objective/Description:**
Models of computation, methods of algorithm design; complexity of algorithms; algorithms on graphs, NP-completeness, approximation algorithms, selected topics.

**Instructor's Objectives:**
The goal of this course is to provide a solid theoretical basis for the design and analysis of algorithms used throughout different branches of computer science. By the end of this course students will be able to design their own algorithms for commonly encountered computational problems and analyze their efficiency, or prove that an efficient algorithm is unlikely to exist and design and evaluate an approximation algorithm.

**Prerequisites:**
CMPT 307.

**Topics:**
- Greedy Algorithms
- Dynamic Programming
- Graph Algorithms
- Linear Programming
- Models of Computation
- Computational Complexity
- Approximation Algorithms

**Grading:**
10% participation, 20% midterm, 30% final exam, 40% assignments (best 4 out of 5).

**Recommended Books:**
- Introduction to Algorithms, Thomas Cormen, Charles Leiserson, Ronald Rivest, Clifford Stein, MIT Press, 2009, 9780262033848

**Academic Honesty Statement:**
Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies (http://www.sfu.ca/policies/gazette/student.html).