Instructor: Qianping Gu  Office: TASC I 8029
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Lectures: 12:30-13:20 MWF at SEC1013
Grading: Assignments 40%
Project 60%

Lecture Notes
The lecture notes for the course will be in the homepage at CourseCentral under the directory Notes.

Assignments
Assignments will be posted in the homepage at CourseCentral under the directory Assignments. Assignments are due at the end of the lecture on the due date. Late assignments will be accepted only in case of provable illness (a medical excuse from a doctor). In all other cases, late assignments will not be accepted and will not receive partial credit.

Final Exam:
There will be no final exam. Every student must complete a project which has a weight of 60% of the grading of the course.

Reference books
- The Design of Approximation Algorithms by David P. Williamson and David B. Shmoys Cambridge University Press, 2010

Topics
- Overview of networks
  Networks, network elements, basic network mechanisms.
- WDM optical networks and optimization problems
  Logical topology design problem.
  Routing and wavelength assignment (RWA) problem.
  Traffic grooming problem.

- Wireless networks and optimization problems
  Mobile ad hoc networks (MANETs), sensor networks.
  Routing on MANETs and sensor networks.
  Topology control on MANETs and sensor networks.

- Approximation algorithms for NP-hard problems
  Basic approaches for approximation algorithms: Linear programming and rounding data, greedy and local search, dynamic programming and rounding data.

- Graph decompositions based approach for hard optimization problems
  Tree-/branch-decompositions.
  Tree-/branch-decomposition based algorithms.
  Graph decomposition based algorithms for unit disk graphs.

**Academy Honesty**

Students should respect the SFU intellectual honesty policies and code of student conduct (please refer to [http://www.sfu.ca/policies/teaching/t10-01.htm](http://www.sfu.ca/policies/teaching/t10-01.htm) and [http://www.sfu.ca/policies/teaching/t10-02.htm](http://www.sfu.ca/policies/teaching/t10-02.htm) for details).

Submitted answers should be your own work. A student may receive zero credit for a problem or an assignment if the answer is substantially identical to that of another student or a known source. Violation of academic honesty may result in a more severe penalty than zero credit for an assignment, a test, and/or an exam.