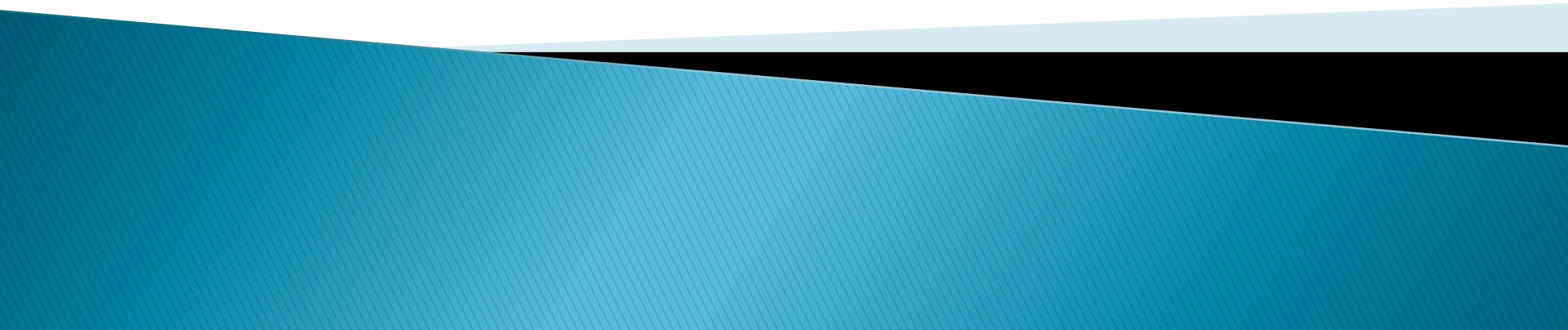


COMP 3760

Algorithm Design and Analysis



Course Details

▶ Instructor:

- Farnaz Dargahi
- Office: SW2-363
- **Please email to confirm all office hour appointments**
- Email: fdargahi@bcit.ca

About Me

▶ Background

- Computer Science and Software Engineering(Ph.D, MSc, BSc.)

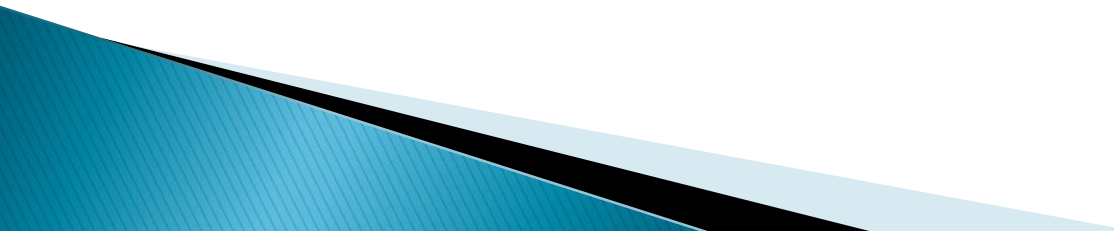
▶ Research Area

- Distributed service scheduling
- Multi-agent Systems
- Algorithmic Mechanism Design, Game Theory
- Wirelessnesses sensor Networks

▶ Prior to that... software development



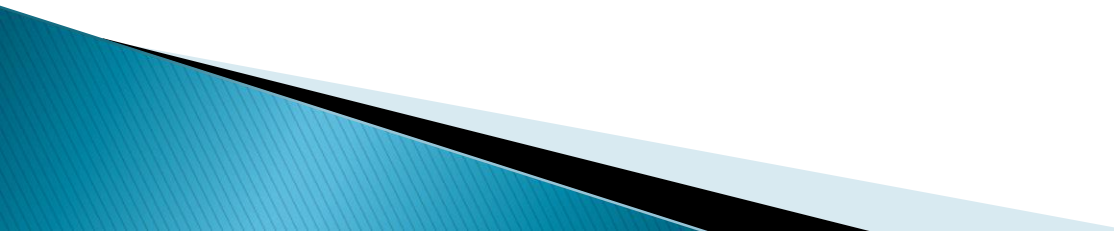
About the Course

- ▶ This is a course on *algorithms*
 - Explicit descriptions of procedures to solve problems
 - ▶ Why we need to study algorithms?
 - Is recognized as the core of computer science
 - To know a standard set of important algorithms
 - Design new algorithms and analyze their efficiency
- 

About the Course

- ▶ Algorithms don't change quickly
 - 20 years ago, nobody was learning Java
 - They were learning the same algorithms
 - They are good programmers now

At the end of the course, you should be able to...

- ▶ Describe common algorithms
 - ▶ Analyze pseudo-code using asymptotic notation
 - ▶ Design algorithms using several techniques e.g. Divide and Conquer, Greedy, Graph techniques, etc
 - ▶ Implement algorithms in Java
 - ▶ Recognize different types of problems and how to go about solving them
 - ▶ Argue the correctness of algorithms
- 

Details

- ▶ Textbook
 - “The Design and Analysis of Algorithms,” Levitin In the book store

Details

► Grading:

Criteria	%	Comments
Lab Assignments	25	Weekly assignments, 11 assignments in total
Quizzes	20	Biweekly held in lab, 6 quizzes in total
Midterm Exam	25	
Final Exam	30	
Total	100	

► **Note:** the passing grade in this course is 50%.

Pre-requisites 1

- ▶ Java (Comp 2526)
 - You need to be able to program in Java
 - Used for assignments
 - Used to test algorithm efficiency
 - I am not going to teach you Java
 - You can use any IDE you want
 - You are expected to write “good code” as you learned previously

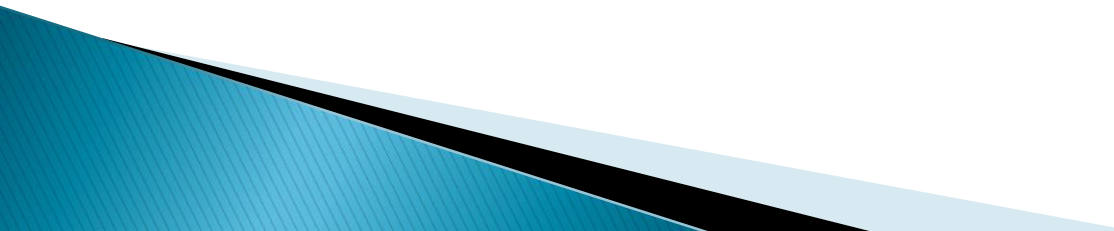
Pre-requisites 2

- ▶ Discrete math (COMP 2121)
 - Parts of this course are theoretical
 - Parts of this course use math
 - Solve polynomial equations
 - Set up and solve summations
 - Work with logarithms
 - I expect you know these things
 - I am happy to review and explain them
 - PLEASE DON'T FALL BEHIND BECAUSE OF BASIC MATH

Pre-Requisites 3

- ▶ Not an official pre-req... but C programming is good to know
 - Lots of web resources on algorithms in C
 - Lots of procedural descriptions of algorithms
 - It is useful to understand C when you read it

Course Strategy

- ▶ Lectures
 - Focus on one core topic each week
 - ▶ Labs
 - Reinforce topic through practice
 - ▶ Homework/reading
 - Is my way of telling you what I think is important
 - You should care about this
- 

Best Student Strategy

- ▶ Do practice problems
 - The only way to get good in algorithm design is practice
- ▶ Keep up with material
 - It is hard to succeed “cramming” for tests
- ▶ If you do the reading/homework:
 - Quizzes and labs will be easy

Labs and Quizzes

- ▶ Labs are done in the lab time
 - Practice with problem solving
 - Mandatory attendance
 - Sometimes on paper, sometimes programming
- ▶ Quizzes are also done in the lab time
 - 20–30 minutes, individually