Course Syllabus

Programming Workshop 2 (CSCI 1061U)

Faisal Qureshi

http://faculty.uoit.ca/qureshi

Computer Science, Faculty of Science
University of Ontario Institute of Technology

Winter 2019

Instructor

Faisal Qureshi
Email: faisal.qureshi@uoit.net
Office: UA4032
Web: http://faculty.uoit.ca/qureshi

Lectures

The course runs two sections. Please ensure that you are in the "right" section.

Section 1

- Monday, 2:10-3:30 pm, UA1220
- Thursday, 11:10-12:30 pm, UA1220

Section 2

- Monday, 3:40-5:00 pm, UA1220
- Thursday, 12:40-2:00 pm, UA1220

First day of lectures, Monday, January 7, 2018.

Labs

The course has multiple lab sections. Each student will be assigned to one of these lab sections. All labs cover the same material. Each lab section is limited to 24 students, and these are filled on a first-come bases.

Please check mycampus for up to date information about course scheduling.

Office hours

Friday, 2-3 pm, UA4032, or by appointment.

Course Slack channel

We will use Slack as a way for online communication.

- uoit-csci-1061u-w19

If you aren't on the course Slack channel yet, please let the professor or one of the TAs know. **Your uoit.net email address will be used to add you to the course slack channel.**

Course Description

This is a second course on computer programming that continues from CSCI 1060U and covers more advanced theory and practice. The lectures introduce modern concepts in program design and construction for larger scale programs. The laboratories provide an opportunity to apply these concepts. Topics that are covered in this course

include advanced program design, basic design patterns, templates and standard template libraries, data structures, debugging and version control.

Topics

- Week 1
  - C++ introduction
  - Variables
  - Control flow
  - Functions
  - Console I/O
  - I/O redirection
  - `std::vector`
- Week 2
  - Output formatting
  - Commandline arguments
  - Random numbers
  - File I/O
  - Binary files
- Week 3
  - Multiple files
  - Makefile
  - **Midterm 1**
- Week 4
- Dynamic memory
  - `new`
  - `delete`
  - `delete []`
  - Structures
  - Function pointers
  - Callbacks
- Week 5
  - The `class` keyword
  - Access modifiers: `public`, `protected`, and `private`
  - Member variables and member functions
  - Constructor and destructor
  - Operator overloading: assignment operator
  - Initializer list
  - `this` pointer
  - Reference `&`
  - `const` functions
  - `const` references
  - `friends` functions
  - Extractor (`>>`) operator
  - Insertor (`<<`) operator
  - Static methods and variables
- Week 6
  - Inheritence
  - Polymorphism
  - Virtual functions
  - Abstract classes
  - **Midterm 2**
- Week 7
  - Templates
  - Namespaces

  - Standard Template Library (STL) Introduction
- Week 8
  - STL containers
  - List
  - Deque
  - Queue
  - Priority Queue
  - Map
  - Sort
- Week 9
  - Revisiting function pointers
  - Functors
  - Lambda functions
  - **Midterm 3**
- Week 10
  - Exception handling
  - PIMPL idiom
  - Swap idiom
- Week 11
  - Version control using GIT
  - GNU Debugger (GDB)
  - Code profiling
- Week 12
  - Review
  - **Midterm 4**

Course material

We will use the following textbook for this course. I will be assigning reading assignments from this textbook.

- *Absolute C++, 6th Edition* by Walter Savitch.

Students are strongly encouraged to take their own notes during lectures.

Course work and grading

- Class participation and exercises: 10%
- Lab participation and completion: 40%
- Midterm exams (4): 50%
- Final exam: *This course has no final exam*

Important dates

- Midterm 1, Thursday, Jan 24, in class
- Midterm 2, Thursday, Feb 14, in class
- Midterm 3, Thursday, Mar 14, in class
- Midterm 4, Thursday, Apr 4, in class

We will make every effort to stick to the above schedule.

UOIT academic calendar that lists important dates (and deadlines) is available at here.

Class participation

Class attendance is *strongly* encouraged. In order to assign class participation marks, I will provide in-class exercises during the last 20 to 30 minutes during most lectures. Theses exercises will require programming and will cover the topic currently under discussion. These exercises are due before the end of the lecture. When grading these exercises, I will focus more on the attempt rather then the correct solution. Paying attention during lectures and taking your own notes is one way to successfully complete these exercises.

Assignment marking

The assignments are designed to provide you with an opportunity to engage with the course material. Doing well on your assignments is the best way to ensure that you will do well in the midterm exams also.

Course work submission

Unless otherwise instructed, all course work should be submitted using Blackboard.

Partial marks

Assignments, labs and midterms will primarily be evaluated based on the correctness of solutions; however, partial credit may be assigned for documentation, discussion, etc.

Remarking

It is extremely important that all work is fairly graded. Please submit a remark request by email within 5 days of receiving the grade. The email must contain the reasons for which you think the work should be remarked. *Please note that a remark may result in a lower grade.*

Late submission policy

The penalty for a late submission is 10% per day. An assignment or project will get a **zero** if submitted more than 24 hours after the submission deadline.

Email traffic

The instructor and the TA will make every effort to respond to emails in a timely manner; however, it may take up to two working days to respond to an email. It simply means that emails sent right before a deadline may not be answered in time. Urgent emails may be sent to "faisal.qureshi@uoit.net" with the subject line "csci 1061 - winter 2019".

Discussions

Appropriate use of discussion groups include clarification of lecture material and assignments and other concerns and comments about the course that might of general interest to course participants. Please do not post assignment solutions to the discussion groups.

Collaboration

I encourage you to work together when discussing assignments/projects; however, it doesn't mean that you should share your written solutions or that you submit someone else's work as your own.

Course evaluation

It is important that every student participates in course evaluations. Course evaluations, which are completely anonymous, provide extremely useful feedback to the instructor and the TA, helping improve the course.

Academic integrity

Assignments and tests must be strictly individual work. UOIT takes academic dishonesty very seriously. Please read and understand UOIT's policy on academic integrity available here

Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through the Centre for Students with Disabilities in a timely manner, and provide relevant and recent documentation to verify the effect of their disability and to allow the University to determine appropriate accommodations. More information about Student Accessibility Services (SAS) is available here.

Freedom of Information and Protection of Privacy Act

UOIT is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent. FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. To ensure that your rights to privacy are protected, the I encourage you to use only your Banner ID on assignments or test papers being submitted for grading (the exception to this rule are midterm and final exams, since these are returned individually). This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students. Please contact the UOIT Chief Privacy Officer at *accessandprivacy@uoit.ca* for more information.

Sexual Violence Policy

UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

If you think you have been subjected to or witnessed sexual violence:

- Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence