



# THE UNIVERSITY OF WINNIPEG

## APPLIED COMPUTER SCIENCE

**Course Number - GACS-7301-001**

**Course Name – Implementation and Impact of Peer-to-Peer Systems**

### **Instructor Information**

**Instructor:** Prof. Sergio G. Camorlinga

**Office:** 3D29

**E-mail:** s.camorlinga@uwinnipeg.ca

**Office Hours:** Th: 16:00 - 17:00 p.m.

or by email appointment

**Class Meeting Time:** Tu, Th: 10:00 am – 11:15 am **Room No:** 3D03

**Course Web Page:** <https://courses.acs.uwinnipeg.ca/7301-001>

**Instructor's Home Page:** <https://www.acs.uwinnipeg.ca/scamorlinga>

### **Important Dates**

First Class: Jan 4<sup>th</sup>, 2018

Reading Week (no classes) Feb 18th – Feb 24th, 2018

Midterm Exam: Mar 6<sup>th</sup>, 2018

Final Withdrawal Date w/o academic penalty: Mar 14th, 2018

(A minimum of 20% of the work on which the final grade is based will be evaluated and available to the student before the voluntary withdrawal date)

Last Class: Apr 3<sup>rd</sup>, 2018

### **Course Objectives/Learning Outcomes**

This course is divided into two parts. First part of the course examines the foundations, implementation, and characteristics of various peer-to-peer systems (both research and production). Topics discussed will include the formation, structure, maintenance, purpose, and function of peer-to-peer systems, as well as their commonalities and differences. The second part of the course examines the social issues that arise from the way peer-to-peer systems are structured and used. The issues examined in this part include: copyright-related issues such as the Napster and Grokster decisions; anonymity and privacy, with respect to systems such as Tor; and security-related issues.

## **Evaluation Criteria**

- Assignments: 10%
  - There will be 4 assignments worth 2.5% each.
    - May include theory, programming and/or analysis exercises
  - Due at the beginning of class on due dates.
  - No late assignment will be accepted, or under special circumstances accepted with 20% off for each late day.
  - Assignments should be hand in by due date on paper (no handwritten) unless email submission is requested. Handwritten assignments will not be accepted.
  - Multiple submissions are not permitted. Students may submit a partially completed assignment, and will receive credit for those attempted problems.
  - If electronic hand in is requested, students are responsible to review their assignments before submission to make sure the correct files are attached to the email.
  
- Paper Presentations: 10%
  - There will be 2 paper presentations per student
  - The presentations will be in teams of 2 students
  - Each presentation is worth 5% each
  - PowerPoint slides should be used for the presentation
  
- Final Project: 60%
  - Two phases
    - Project description (5%)
    - Final project report plus source code (55%)
  
- Midterm Exam: 20%
  - Closed-book midterm exam

## **Exam Requirements**

- Photo ID at exam is required.
- You are expected to write the test/exam on its given day.
- No electronic devices (e.g. cell/smart phone, laptop, scientific calculators, translators, etc.) are permitted.
- Simple calculators can be used though. Simple calculators are subjected to test and can be denied use at mid-term test and final examination times.
- Unless a medical certificate is provided, no accommodation is made for missed exams.

## **Final Letter Grade Assignment**

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90+ - 100%	B+	75 - 79%	C	60 - 64%
A	85 - 90%	B	70 - 74%	D	50 - 59%
A-	80 - 84%	C+	65 - 69%	F	below 50%

## **Email Communication**

Emails from accounts at uwinnipeg.ca are usually not filtered by the UofW email filter. Thereby it is recommended electronic communication used for the course utilize a UofW email account to minimize the risk of filtering.

## **Services for Students**

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 786-9771 or [accessibilityservices@uwinnipeg.ca](mailto:accessibilityservices@uwinnipeg.ca) to discuss appropriate options. All information about a student's disability or medical condition remains confidential  
<http://www.uwinnipeg.ca/accessibility> .

Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the 2017-18 Undergraduate Academic Calendar.

All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at [www.uwinnipeg.ca/respect](http://www.uwinnipeg.ca/respect) .

## **Misuse of Computer Facilities, Plagiarism, and Cheating**

Academic dishonesty is a very serious offense and will be dealt with in accordance with the University's policies. Be sure that you have read and understood Regulations & Policies #9, in the 2017-2018 UW Graduate Studies Academic Calendar available at <https://www.uwinnipeg.ca/academics/graduate-calendar/docs/grad-regandpols.pdf>

Additional information is available at University of Winnipeg library video tutorial "Avoiding Plagiarism" <https://www.youtube.com/watch?v=UvFdxRU9a8g>

*Avoiding Academic Misconduct.* Uploading essays and other assignments to essay vendor or essay trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) involves “aiding and abetting” plagiarism. Students who do this can be charged with Academic Misconduct.

*Avoiding Copyright Violation.* Course materials are owned by the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the same class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also obtain instructor/presenter permission before photographing or recording slides, presentations, lectures, and notes on the board.

### **Text Book(s) / Reading List**

There is no textbook suitable for the course contents, however we will use the following books as guides, supplemented with readings and other books throughout the course.

- Peer-to-Peer Computing: Applications, Architecture, Protocols, and Challenges  
Yu-Kwong Ricky Kwok  
CRC Press, Taylor & Francis Group, 2012 Edition  
978-1-4398-0934-1  
978-1-4398-0935-8 (eBook)
- Distributed Systems  
Maarten van Steen, Andrew S. Tanenbaum  
Maarten van Steen Publisher / Amazon, 2017 3<sup>rd</sup> Edition  
978-15-430573-8-6 (printed)  
978-90-815406-2-9 (digital)
- Systems Programming: Designing and Developing Distributed Applications  
Richard J. Anthony  
Morgan Kaufmann Eds, 2015 1<sup>st</sup> Edition  
978-0-1280-0729-7  
978-0-1280-0817-1 (eBook)

### **Prerequisite and Restriction Information**\*

(This information can be found in the UW Graduate Academic Calendar)

- Prerequisites: Consent of the Department Graduate Program Committee Chair or Instructor

## **Course Outline (Tentative)**

Part I: Foundations, implementation and characteristics of P2P systems

- Introduction
- Architectures
- Design and implementation
  - Processes
  - Communication
  - Naming
  - Coordination
  - Consistency and replication
  - Fault tolerance and security

Part II: Social issues

- Social impact of P2P systems
- Incentives
- Trust
- Security

Part III: Conclusions

- P2P into the future

Note that all topics listed may not be covered and may be offered in a slightly different time order.

## **Additional Course Related Information**

1. When it is necessary to cancel a class due to exceptional circumstances, instructors will make every effort to inform you via uwinnipeg email, as well as the departmental assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms.
2. Your uwinnipeg email address will normally be used for course related correspondence.
3. Please note that withdrawing before the VW date does not necessarily result in a fee refund.
4. April 5, 2018 is the class make-up date for courses that conflict with Good Friday, March 30.
5. No classes: Feb. 18-24 Winter Mid-term reading week; Friday, March 30 (Good Friday).