1 Overview

Welcome to CSC469H / CSC2208H: Advanced Operating Systems.

This course builds on the concepts introduced in a standard first course on operating systems (such as CSC369H) to provide students with a deeper understanding of the internal workings of operating systems, and the impact of system-level implementation choices on user-level applications. These insights are important both for students embarking on a research program in computer systems, and for computing professionals who will work with the development and deployment of computer systems. Topics include operating system design and internal structure, benchmarking and performance evaluation, alternatives for inter-process communication, advanced synchronization strategies including non-blocking synchronization, virtual memory solutions for large address spaces and multiprocessors, multiprocessor scheduling, fault tolerance, and security.

2 Course Staff and Communications

| Instructor TAs | Angela Demke Brown  
| Eric Munson and Alexandra Tsvetkova |
| Lecture Tutorial | Wednesdays + Fridays 10-11 (GB 119)  
| Mondays 10-11 (GB 119) |
| Website | http://www.teach.cs.toronto.edu/~csc469h/fall/ |
| Office Office Hours | BA 5228  
| Tuesdays 1pm-2pm, Thursdays 10:30am-11:30am |
| Email | demke [at] cs.toronto.edu |

- **Website and Discussion Board**: The course website is required reading. It contains a schedule of lectures, assignment handouts, documentation and tutorials, policies, and more.

  (http://www.teach.cs.toronto.edu/~csc469h/fall/)

  The page also has a link to a discussion board. A shared discussion board will help you get a faster response to any questions – but this will only work if you participate! The board is the best place to get answers to your questions. Course announcements will be posted to both the discussion board and the course website. Check the board or website regularly!

- **Email**: If you are having trouble with the course material or if you need extra help, please do not hesitate to contact me. I will answer as soon as possible (usually within 24-48 hours, longer on weekends). Keep in mind that the closer to an assignment due date that you send an email, the longer your wait for a reply is likely to be due to increased email volume.

Please follow these guidelines for email correspondence:

1. Read the posts on the discussion board to see if your question has already been answered.
2. If your question may be of interest to other students (e.g., a question about an assignment, the readings, or lectures), post to the discussion board instead of sending email. If your question is personal (e.g., a question about missing a test due to illness), definitely send email.
3. Use a good subject. Include the course number (to avoid the spam filter) and an informative topic (for example, "CSC469: problem compiling libraries for A1").

3 Required Reading

There is no required textbook, however required readings from the research literature will be posted on the course web site.

4 Recommended Texts

5 Marking Scheme

<table>
<thead>
<tr>
<th>Work</th>
<th>Notes</th>
<th>Weight</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>Kernel Modules</td>
<td>10%</td>
<td>Sept 26, 11:59PM</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>Benchmarking</td>
<td>10%</td>
<td>Oct 11, 11:59PM</td>
</tr>
<tr>
<td>Midterm</td>
<td>2 hours, 9-11am</td>
<td>20%</td>
<td>Oct 23</td>
</tr>
<tr>
<td>Assignment 3</td>
<td>Concurrency</td>
<td>15%</td>
<td>Nov 12, 11:59PM</td>
</tr>
<tr>
<td>Assignment 4</td>
<td>Fault Tolerance</td>
<td>15%</td>
<td>Dec 5, 11:59PM</td>
</tr>
<tr>
<td>Final exam</td>
<td>3 hours</td>
<td>30%</td>
<td>See exam schedule</td>
</tr>
</tbody>
</table>

All assignments should be completed in teams of two; CSC469 and CSC2208 students may not work together. Start looking for a partner now! You must form groups on MarkUs at least 48 hours before the deadline.

6 Late Policy

All assignments or exercises are submitted electronically and are due at **11:59 p.m.** on the due date. Each student begins the semester with four grace day “tokens”. One token *per team member* is required to use a grace day, so each team has at most four grace tokens for the term. Once the grace day tokens are used up, late work will not be accepted.

Use your tokens wisely to manage your workload throughout the semester. Note however that we cannot accept term work after the last day of classes, so you can use at most one token for the last assignment.

In the event of an illness or catastrophe, get proper documentation (e.g., medical certificate) and contact me (by email, or in person) **as soon as possible.** It is always easier to make alternate arrangements before the due date or test day.

7 Remarketing

Since your assignments are submitted electronically and will usually be tested with the assistance of an automated testing program, you must follow the submission instructions exactly. Assignments that are remarked due to incorrect submission (including errors or warnings that lead to a failed compile) will be assessed a 10% penalty.

Requests for remarking should be submitted on MarkUs no later than one week after the assignment or test has been returned to the class.

8 Academic Offenses

All of the work you submit must be your own and your work must not be submitted by someone else. Plagiarism is academic fraud and is taken seriously. Please read the Rules and Regulations from the U of T Calendar, especially the Code of Behaviour on Academic Matters.

https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity

Here are a couple of general guidelines to help you avoid plagiarism:

- Never look at another student’s assignment solution, whether it is on paper or on the computer screen, and never show another student your assignment solution. This applies to all drafts of a solution and to incomplete solutions.
- We encourage you to discuss course concepts and to study for exams with other students, but the assignments should be your and your partner’s work. The easiest way to avoid plagiarism is to only discuss the assignment with your partner or the instructor. Similarly, google (and wikipedia) may help you with course material, but do not use the internet to look for solutions to the assignment problems (yes, that includes github and other such similar resources!).
• Important: Never look for assignment solutions online! Places like public Github repositories may contain code that may be useful in your assignments. Using someone else’s code and ideas, even if making some changes, is considered plagiarism. Keep in mind that our plagiarism detection software will definitely detect such cases.

• Important: You must discuss the assignment with your partner, not just to understand the content, but also to avoid the unfortunate situation where your partner might be committing plagiarism. If you suspect that your partner does not understand their own code, it may be a sign that your partner has plagiarized the code from other sources. Keep in mind that you are responsible for all the work submitted and plagiarism cases will be prosecuted for both assignment partners, so you must be vigilant and involved in all parts of the assignment.

• If you work with a partner, both partners MUST understand ALL parts of the assignments. We will conduct interviews for some or all assignments, after the due date, to determine if both partners have a good understanding of the entire assignment. Those who do NOT, will receive a ZERO on it.