ECSE 427/COMP 310 -- Operating Systems
January 2013

General Information

Instructor: Muthucumaru Maheswaran
Tel: 398-1465
Email: maheswar@cs.mcgill.ca
Office: Room 754, McConnell Engineering Building
Office hours: MW 11:30-12:30pm. Appointments can be made for meetings at other times.
Email: Please use SOCS email.
Class: ENGMC 304
Tutorial: TBA
Prerequisites: see Calendar
Class web page: No class web page. My Courses will be used for assignments drop off. 
https://piazza.com/mcgill.ca/winter2013/comp310ecse427/home will be used for discussion (you will receive invitations).
TAs: Sandeep Wadhwani, Devarun Bhattacharya, Sameer Jagdale
TA office hours: TBA

“McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism, and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity for more information).”

Course Description and Learning Outcomes

Description: This is an introductory course in computer operating systems. In this course we will study the theoretical and practical concepts behind modern operating systems. In particular, we will study the basic structure of an operating system, its components, design strategies, algorithms and schemes used to design and implement different components of an operating system. Major components to be studied include: processes, inter-process communication, scheduling, memory management, virtual memory, storage management, network management, and security.
Course Content

CONCEPT MAP

Course Schedule

The table below shows a tentative course schedule (I will make a “best effort” to stick to the proposed schedule).

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Reading Material</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>OS Introduction</strong>: OS tour; simple OS; beyond simple OS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td><strong>Multi-threaded Programming</strong>: why threads; programming with threads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><strong>Basic Concepts</strong>: Context switching; system calls; interrupts; dynamic storage allocation; linking and loading</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><strong>OS Design</strong>: Simple OS systems design; OS structure;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td><strong>Processor Management</strong>: Threads and implementation; scheduling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><strong>File systems</strong>: Basics of file systems; crash resiliency; directories and naming;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The course will consist of three hours of instructor led classes per week together with a maximum of one hour of tutorial per week taken by the TAs. The class time will be devoted to the presentation and development of new concepts and the application of these concepts to examples and problems, while the tutorials will discuss solutions to the programming projects and written assignments. The primary focus of the tutorials is to provide sufficient “how-to” knowledge through the discussion of the assignments to help in the development of the programming project series.

### Instructional Method

The course will consist of three hours of instructor led classes per week together with a maximum of one hour of tutorial per week taken by the TAs. The class time will be devoted to the presentation and development of new concepts and the application of these concepts to examples and problems, while the tutorials will discuss solutions to the programming assignments/projects and written assignments. The primary focus of the tutorials is to provide sufficient “how-to” knowledge through the discussion of the assignments to help in the development of the programming project series.

Students are strongly encouraged to use the WebCT discussion groups to talk about the programming and written assignments. These discussion groups will be monitored by the TAs and by the instructor for providing the necessary answers.

### Course Materials

#### Textbook


#### Evaluation

<table>
<thead>
<tr>
<th>Activity</th>
<th>Option-A</th>
<th>Option-B</th>
<th>Option-C</th>
</tr>
</thead>
</table>

Winter 2013  Page 3  1/7/2013
If you do all programming assignments, you are in Option-A. If you don’t submit one of the Programming Assignments (1, 2, or 3), you are in Option-B. If you don’t submit one of the micro or mini assignments you are in Option-C. There is another Option-D, where you can do a mega project instead of all programming, mini, and micro assignments. It will count for 35%.

**NOTE:** The official programming language of this course is C.

**Research Project:** This is available for advanced students (who have prior exposure to OS and C programming). We need to agree on the topic in the first week of the classes. You can do this project instead of the normal programming assignments.

**Double Grading Policy:** This course has a significant portion of the grade allocated for the programming component. You are expected to submit only your work in these assignments. You can receive advise or tips from others (instructor, teaching assistants, or peers), but the final submission should be yours. You are expected to know all the design decisions in the program and explain all aspects of the program handed in as part of the assignment. To test this condition, we will randomly select some students and ask them to explain their programming assignments. The eventual marks for an assignment will be the minimum of the two marks. For example, if 85 is the marks obtained in the first (normal) evaluation of the programming assignment and 50 is the marks obtained in the second evaluation, then effectively you have 50.

**Late Assignment Policy:** There will be two deadlines for each assignment: proper deadline and cut-off date. After the proper deadline, there will be a penalty of 10% for each day the assignment is late until the cut-off date. After the cut-off date, the assignment cannot be handed in. No individual requests for extensions will be granted unless they are for medical reasons.

The deadlines will be set for 11:55 pm or 11:59pm. Please observe the time and date very carefully. It is your responsibility to make sure that the assignment is properly submitted via the WebCT.
Regrading Policy: If you find your assignments or exams are not marked according to the marking scheme, you are encouraged to consult me or the TAs. When you resubmit your assignment or exam for regarding, we reserve the right to regrade the full exam or assignment without restricting the attention to the disputed portion.