General information
Meeting Times and places: Thursdays 5:30 – 8:00 pm RI 104

Instructor: Dr. Stefan A. Robila
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Office Hours: Tuesday 1:30-2:30
Thursday 4:30-5:30

Purpose of the course
This course is a survey of topics related to operating systems. Students learn fundamental concepts of modern operating systems by studying how and why operating systems have evolved. Topics include CPU scheduling, process synchronization, memory management, file systems, I/O systems, privacy and security, and performance evaluation. Students implement parts of an operating system as a means of exploring the details of some of these topics.

Instructional Objectives
At the end of the course, the students should be able to:

- Explain the objectives and functions of modern operating systems.
- Describe the evolution of the operating systems.
- Analyze the tradeoffs in operating system design.
- Analyze the performance of preemptive and non-preemptive scheduling algorithms.
- Explain the need for process synchronization and demonstrate the proper use of common synchronization techniques.
- Explain memory hierarchy, including virtual memory, caching, paging and segmentation, and analyze memory performance and cost-performance tradeoffs.
- Explain the different approaches to file system organization and their strengths and weaknesses.
- Design, implement, test, and debug software describing OS components using a high-level language.

Prerequisites
Knowledge of a high level language is a must. Some of the examples and assignments will require programming implementations (preferably in Java). Basic understanding of computer organization is also assumed.
**Class Materials**

Textbook (required):


*The textbook is available through the MSU bookstore although it is possible that better pricing may be obtained through third party vendors.*

There is also plenty of other information sources that will help you understand better the course. A list of them will be provided and maintained on Blackboard. Feel free to email me additions to it.

A JAVA reference book such as Lewis and Loftus or Deitel and Deitel is also strongly recommended.

**Class Structure**

The class meets once every week for 2h30 minutes each time. Note that the class time does not include any breaks. The class format will be a sequence of lectures on operating systems. The class includes examinations, and homework assignments. The lecture materials, the lab, homework and project description are found online on Blackboard.

**Evaluation**

*Homework (60%):* Several homework assignments will be provided. They will cover the topics presented during the lectures and will include practical problems (requiring implementation). The assignments are to be solved individually by each student. The due date and time will be indicated each time the homework is assigned and will be strictly enforced (late submission means no submission). I do not intend to provide any individual extensions of the deadlines. All submitted homework must be provided in printed format (unless allowed by the instructor). Handwritten assignments will not be accepted. It is possible that parts of the homework to take the shape of a project.

*Written Examination (40%):* There will be one in class midterm examination and one in class final examination (20%). The midterm examination date will be announced at least two full weeks ahead. The final examination is already scheduled by the university.

**Grading**

No curve will be used in assigning the grades. Instead, here is how the grades will be determined:

<table>
<thead>
<tr>
<th>Total</th>
<th>850-1000</th>
<th>700-849</th>
<th>550-699</th>
<th>500-549</th>
<th>499&lt;</th>
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</thead>
<tbody>
<tr>
<td>Grade</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
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The splits between plus and minus grades varies depending on the actual distribution of the final averages. However, if your average is 925 or more, you are assured of A.
**Important notes**

It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact their instructors to discuss their individual needs for accommodations.

**Academic Honesty**

Cheating and plagiarism will not be tolerated. Copying work from other students, presenting work not done by you as your own, or otherwise misrepresenting your work will result in penalties including a failing grade for the respective task. University regulations related to this topic will be strictly enforced.

Homework assignments and examinations are intended to be solved individually. It should be pointed out that in case of duplicate submissions, all the students involved would be penalized in equal measure. Allowing other people to copy your solutions is considered academic dishonesty. Group work for the term paper/project is allowed only through agreement with the instructor.

**Attendance**

Attendance is mandatory. Only two unexcused absences are allowed, and in this case it is your responsibility to obtain information on any classroom activity that you may have missed. A third absence will result in the lowering of your grade (for example from an A- to a B+). If you have more than four unexcused absences you will fail the course. Excused absences include illness (a doctor's note is needed) or a serious personal crisis (a letter from the Dean of students is required). Travel time is not an excused absence. Sporting events are not excused absences.

You are expected to take the examinations at the times that will be indicated. Missing an exam or test creates a very difficult situation for all parties involved. As such make-up for missed tests will be administered under extreme circumstances. The attendance policy applies to a missed test. A missed test will be considered an unexcused absence. Without a doctor's note, a letter from the Dean of Students is required.

Assignments are to be handed in class, the day they are due. Nothing will be collected from the instructor's mailbox, or any other place. You should therefore assume that the deadline is a couple of days ahead of time, to cover yourself for possible problems. That way you will have time to print and proofread your work. Nothing will be accepted after the due date and time.

The Computer Science departmental policy for incomplete grades goes as follows:
"A grade of incomplete may be assigned only under the following circumstances:
1. The student has completed at least 12 weeks of the course
2. The student has a passing grade in the course
3. The student has a serious reason (e.g., a medical condition) to miss the rest of the work.
Incomplete contracts should call for the student to complete the work as soon as reasonably possible".

**SOME IMPORTANT THOUGHTS**
Please note that this class requires a constant amount of work. Each week a new book chapter will be considered. You are required to read this chapter in advance and to solve as many problems as possible from the end of the chapter.

The class requires certain programming knowledge. If you have not used Java for some time, you **must use the first week to catch up with it**. Note that a CS lab is available in RI 105 for your use. If you have some free time while at school, plan to spend it there.

Periodic check of the class website is a must since news and class materials will be continuously posted on it.

Please read carefully any instructions and make sure you understand what you have to do before working on a task and submitting it for grading.

**Etiquette:** Come to class *on time*—lectures will start at 5:30 pm sharp, even with a single student in the room. Please, plan your commute accordingly.

*If you do come late,* quietly find a seat and take it with as little disturbance as possible. If you must leave the room—do so quietly.

As you walk into class, kindly *silence all beepers, cell phones, PDAs* and other noise-producing equipment.

**How to succeed in this class:**
- Take advantage of the posted slides to save effort in taking notes.
- *Pay attention and participate in the class discussions.* If you plan on snoozing in class you should consider taking rest in bed instead.
- If you don’t understand something get help *early.*
- Start work on assignments/homeworks *early.*
- Come to office hours prepared with *specific* questions.
- Be honest with yourself and study at home
- Start work on assignments/homeworks *early.*

**How to communicate with the instructor outside the class time:**
- Stop in at during the posted office hours.
- Email with the subject line starting with **CMPT 481 / 584.**
  - *Messages with subjects different than this may take longer to answer.* Messages sent during the weekdays will most probably be replied to in the same day. Messages sent on Friday afternoon until Monday morning will be answered on Monday morning.
- Call the office phone number.
  - *Leaving a message may not result in a quick answer as I am not checking the voicemail too often.*