

EECE.4810/EECE.5730: Operating Systems

Spring 2018

Syllabus

Course Meetings

Section 201: MW 2-3:15, Ball 314

Course Website

Main page: <http://mjgeiger.github.io/OS/sp18/>

Schedule: <http://mjgeiger.github.io/OS/sp18/schedule.htm>

Course Discussion Group

All course announcements will be posted on the discussion group—you are responsible for checking the board regularly or enabling direct e-mail updates from Piazza.

Sign up link: <http://piazza.com/uml/spring2018/eece4810eece5730>

Instructor

Dr. Michael Geiger

E-mail: Michael_Geiger@uml.edu

Office: Ball Hall 301A

Phone: 978-934-3618 (x43618 on campus)

Office hours: Monday 9-10:30, Wednesday 9-10:30, Thursday 1:30-3

During the above hours, student questions are my top priority. I am available by appointment at other times.

Feel free to stop by my office, e-mail me questions, or schedule a one-on-one appointment. Office hours are subject to change.

Teaching Assistant

TBD

TA office hours will be posted on the course website and discussion group ASAP.

Recommended Textbooks

No textbook is required, but I use these books in the development of my lectures:

A. Silberschatz, P.B. Galvin, and G. Gagne, *Operating System Concepts*, 9th Edition, 2012, Wiley.

ISBN: 978-1118063330

T. Anderson and M. Dahlin, *Operating Systems: Principles and Practice*, 2nd Edition, 2014, Recursive Books.

ISBN: 978-0985673529

Course Overview

Catalog Description: Covers the components, design, implementation, and internal operations of computer operating systems. Topics include basic structure of operating systems, Kernel, user interface, I/O device management, device drivers, process environment, concurrent processes and synchronization, inter-process communication, process scheduling, memory management, deadlock management and resolution, and file system structures. Laboratories include examples of components design of a real operating systems.

Prerequisites: EECE.2160: ECE Application Programming, EECE.3170: Microprocessors I, and EECE.3220: Data Structures

Course Objectives: By the end of this course, you should understand and be able to work with all of the following fundamentals of operating systems:

1. **Process Management:** Multithreading, scheduling, synchronization
2. **Memory Management:** Memory allocation, paging, virtual memory management
3. **Storage Management:** File systems, disk management, input/output systems
4. **Protection and Security:** Access rights and control, system security
5. **Distributed Systems:** Networks, socket programming, distributed file systems

Grading: Grades will be computed on an A to F scale; A+ grades may only be assigned in the graduate course (EECE.5730), in accordance with UMass Lowell policy. The weights assigned to the various items are:

Programming/homework assignments	55%
Exam 1	15%
Exam 2	15%
Exam 3	15%

Incomplete grades will only be given in exceptional situations, and the student must be passing the class at the time the grade is requested.

Please note that students in EECE.5730 will be required to complete more work than students in EECE.4810. This additional work may take the form of additional assignments, extra problems on assignments given to the whole class, and/or extra exam problems.

Exams: Make-up exams will only be offered in exceptional circumstances. You must notify your instructor as early as possible in order to determine an appropriate make-up date.

Class participation: You are responsible for all material discussed or announced in class. You are expected to attend class regularly and participate in any in-class discussions, as such exercises are essential to your learning. Although lecture attendance is not explicitly required, regular attendance will improve your understanding of the course concepts.

Programming/homework assignments: Your assignments will be a mix of typical homework problems and group programming projects. All assignments will be posted on the course web page and discussion group.

Assignment policies include the following:

- Problem sets:
 - All problem sets must be completed individually.
 - All assignment solutions must be clearly legible.
 - Although typewritten solutions are preferred, handwritten solutions are acceptable in some cases.
 - All electronic submissions must be combined into a single file—archive files are not acceptable, nor are scanned pages in which each page is in a separate file. Failure to follow this rule will result in a 10 point deduction.
- Programming projects:
 - All programming projects can be completed in groups of up to 3 students unless otherwise specified.
- Late policy:
 - Assignments are penalized at a rate of 10% per day, including weekends and holidays.
 - Assignments more than 5 days late will not be accepted.

Academic Honesty

All problem sets and exams must be completed individually unless otherwise specified. Group programming projects should be completed with no collaboration between groups. You may discuss concepts or material covered in class, but may not share any details of your solutions to assigned problems, including algorithms and code. Plagiarism is also unacceptable and will be treated as an instance of cheating.

Any assignment or portion of an assignment that violates this policy will receive a grade of zero for all parties concerned. Depending on the severity of the infraction, or in cases of repeat violations, additional penalties may be given at the instructor's discretion, up to and including a failing grade in the course.

Further information on the university Academic Integrity policy can be found at:

<http://www.uml.edu/Catalog/Undergraduate/Policies/Academic-Policies/Academic-Integrity.aspx>

Course Schedule

This schedule contains a tentative schedule of topics we will cover throughout the term; the course website will contain the most up-to-date version. The web page will also describe textbook sections associated with each lecture and the due dates for each assignment.

Please note that the exam dates are fixed: the first exam will be held **Wednesday, February 21 in class**, the second exam will be held **Wednesday, 3/28 in class** and the final exam will be held **at a date/time to be determined**.

Also, please be aware of the deadlines for withdrawing with a grade of “W”: undergraduate students (even those taking EECE.5730) must withdraw by **Monday, 4/9**, while graduate students must withdraw by **Thursday, 4/26**.

Week	Date (M)	Lecture Topics
1	1/22	Course introduction/overview Processes and process management
2	1/29	Processes and process management
3	2/5	Multithreading
4	2/12	Synchronization
5	2/19	<i>No Monday lecture—Presidents Day</i> Synchronization (continued) (<i>Tuesday, 2/20</i>) WEDNESDAY, 2/21: EXAM 1
6	2/26	CPU scheduling
7	3/5	Memory management
8	3/12	<i>No classes—Spring Break</i>
9	3/19	Memory management (continued)
10	3/26	Memory management (continued) WEDNESDAY, 3/28: EXAM 2
11	4/2	File systems
12	4/9	File systems (continued)
13	4/16	<i>No Monday lecture—Patriots’ Day</i> Distributed systems
14	4/23	Protection and security
15	4/30	Topics TBD Final exam preview <i>Classes end Thursday, 5/3</i>
	TBD	FINAL EXAM