CMSC 312: Introduction to Operating System

Syllabus

Instructor: Preetam Ghosh.
Teaching Assistants: TBD

1.0 – Overview (Catalog Course Description):

Semester course; 3 lecture hours. 3 credits.

Prerequisite: CMSC 311or EGRE 364

Computer systems structure, process management (threads/scheduling/ synchronization/deadlocks), memory management, storage management (file-system interface, I/O systems), distributed systems. Students will work in teams to design and implement an operating system simulation.

2.0 – Course Structure:

Lecture hours/week – 3
Lab hours/week – 0

3.0 – Course Goals:

This undergraduate course provides a thorough introduction into the topic of operating systems. The students will be expected to have programming and reasoning abilities, as well as background on data structures and computer organization.

Upon successful completion of this course, the student will be able to:

1. Understand computer system structures.
2. Understand process management in operating systems, including such topics as process definition, threads, scheduling, synchronization and deadlocks.
3. Understand memory management in operating systems, including such topics as main and virtual memories, memory allocation and paging and segmentation.
4. Understand storage management in operating systems, including such topics as file-system interface, mass storage structure and I/O systems.
5. Understand distributed systems, including such topics as network-based operating systems, distributed file systems and distributed coordination.

4.0 – ABET Criteria Addressed:

c. An ability to design, implement, and evaluate a computer -based system, process, component, or program to meet desired needs.

j. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based

systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

5.0 – Major Topics Covered:

- Operating systems structures
- Process scheduling
- Concurrency
- Memory Management
- File Management
- Distributed systems

6.0 – Textbook:

"Operating System Concepts" 9th Edition by Abraham Silberschatz, Peter B. Galvin, Greg Gagne. Publisher: Wiley; 9 edition (December 17, 2012), ISBN-10:1118063333 ISBN-13: 978-1118063330.

7.0 – Class Schedule:

M/W, WH101, 5:30-6:45 pm (online option: https://vcu.zoom.us/j/94611684363)
Office Hours: M/W EH4248 (in-person), online (https://vcu.zoom.us/j/92985416829), 4:30-5:30pm

8.0 – Evaluation

Grading scale (not valid anymore):

90% and above	A
75% to 89%	B
60% to 74%	C
50% to 59%	D
0% to 49%	F

Grade distribution:

Project & Assignments	50%
Midterm	20%
Final exam	30%

We will use a Linux VM for this course. All programming assignments must be tested on this class server and performance results reported. Instructions on how to login will be provided on the Canvas announcements.

Course Policies:

Late/Missing Work Policy
No late work will be accepted. Please review the course calendar to ensure you are aware of all due dates and that you plan accordingly. All due dates are in Eastern Standard Time. If you have reason for extended absence from your academic studies, such as hospitalization or incarceration, please contact me.

Accessibility Concerns
If you encounter any accessibility issues please contact me and I will try to find an alternative.

Intellectual Property and Copyright
Intellectual property and copyrighted material that is presented in this course is not for redistribution.

Course Attendance and Participation

It is expected that you will spend between 9-12 hours a week on this class completing readings, activities, and engaging with your peers. For every credit hour it is expected that students are putting in 3-4 hours of work. This is a 3 credit class therefore you should expect to spend 9-12 hours per week on this class. In addition it is expected that you are logging into the course several times throughout the week to complete assignments and engage with your classmates.

9.0 – Technology Support

Engineering & VCU Resources:

- **Personal Computer Requirement**: For our current system requirements and recommendations, see: https://egr.vcu.edu/admissions/accepted/computer-recommendations/
- **Remote Access to Public Lab computers**: To provide remote access, we use the Citrix App2Go environment to provide full and exclusive control over "the next available" computer in the lab. See this link for more details: https://wiki.vcu.edu/x/Oa0tBg
- **VCU provides a lot of software available for students to download to their personal computers.** For a list of software and the specifics for each, see: https://ts.vcu.edu/software-center/. In particular, Microsoft Office is available free to students.
- **VCU is transitioning to Canvas.** See the Canvas Student Guide at this link: https://community.canvaslms.com/t5/Student-Guide/tkb-p/student
- **For IT help in the College of Engineering**, see our Wikipedia for "student" help at: https://wiki.vcu.edu/display/EGRITHELP
- **VCU's Technology Services (TS) provides support for "central IT" services**. If you have a technical issue with any of the following services, please submit a ticket with VCU Technology Services at https://itsupport.vcu.edu/ or call (804) 828-2227. VCU TS maintains and supports these services and will be able to provide assistance to you.
    - VCU Cisco VPN
    - 2Factor or Dual Authentication (DUO)
    - Blackboard/Canvas
    - Gmail or other Google Apps
    - Zoom videoconferencing
    - VCU App2Go (Application server)
    - Resetting VCU password
- **For IT issues related to College of Engineering teaching and research, email egrfixit@vcu.edu**

For loaner Chromebooks for emergency purposes: See this link for more details: https://vcutsmpc.getconnect2.com/

VCU Syllabus Statement

Institutional Policies

Students should visit http://go.vcu.edu/syllabus and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.

Accommodations for Students with Disabilities

- Disability Statement: If you are a student with a disability requesting reasonable accommodations in this course, please visit Student Accessibility and Educational Opportunity. All requests for reasonable accommodations require registration with SAEO in advance of need. Faculty, students and SAEO will work together regarding classroom accommodations. You are encouraged to discuss approved accommodations with your faculty.

Counseling Services

- Resources for online students can be found through the Online Counseling Center.

Tutoring

- The Campus Learning Center offers appointment, drop-in and group tutoring in undergraduate courses across the disciplines.

Writing Center

- The writing center provides assistance at all stages of the writing process, from brainstorming to final draft.

Cheating and Plagiarism

- Plagiarism is stealing and passing off the ideas or words of another as one's own; it is using another's production without crediting the source. The best way to avoid plagiarism is to cite properly in any assignment information and concepts that are not your own originally. If a student is discovered to have plagiarized, that student will fail that particular assignment.
- Academic integrity is expected in all aspects at the university including this course. Don't expect less of yourself than you do of your students For more information: https://students.vcu.edu/studentconduct/

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