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Fall 2019

CS 332-005: Principles of Operating Systems

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1.1 CONTACT INFORMATION

Instructor: Alex Gerbessiotis **E-mail:** alexg+cs332@njit.edu
Office: GITC 4213, 4th floor **Tel:** (973)-596-3244
Office Hours: Tue 4:15-5:30pm and Wed 4:15-5:30pm Else, by appointment Thu/Wed
Assistant: TBA on WEB
Class Hours: Tue, Thu 2:30-3:50pm, KUPF 106
Web-Page: http://www.cs.njit.edu/∼alexg/courses/cs332/index.html
Web-Page: http://web.njit.edu/∼alexg/courses/cs332/index.html

Print Handout 1 (PDF) from Web-Page and compare it to this document! They must be identical (in content, if not in layout).

1.2 COURSE ADMINISTRATION

CourseWork: 4 exams (including the final); 5 Homeworks (HW) ;

Points: 1000 points = Ex1(100) + Ex2(250) + Ex3(100) + Ex4(350) + HW(200)

HW: Five homeworks to be submitted per Handout 2 guidelines through moodle. Exams may draw from these. Due on a Thursday (before noon time).

Exams: Dates in Course Calendar (but first three are on a Thu); all exams in classroom and closed-everything unless otherwise noted. Exam 2 ('midterm') and Exam 4 (final) are open-designated-textbook and cumulative; you may bring a hard-copy of the textbook but you are not allowed to borrow one during the exam. Exam1 and Exam 3 are 50 min, Exam 2 is 100min, and Exam 4 is 120min.

1.3 CALENDAR

Fall 2019			
Week	Tue – Thur	Item Out	Item In
W01	09/03 - 09/05	HW1 out	
W02	09/10 - 09/12	HW2 out	HW1 in (before noon Thu)
W03	09/17 - 09/19		HW2 in
W04	09/24 - 09/26	**Exam1**	exam on Thu
W05	10/01 - 10/03	HW3 out	
W06	10/08 - 10/10		HW3 in
W07	10/15 - 10/17	**Exam2**	exam on Thu
W08	10/22 - 10/24		
W09	10/29 - 10/31	HW4 out	
W10	11/05 - 11/07		HW4 in
W11	11/12 - 11/14	**Exam3**	exam on Thu
W12	11/19 - 11/21	HW5 out	
W13	11/26 - NOCLS	Tue is Thu	Thursday is Thanksgiving Day!
W14	12/03 - 12/05		HW5 in
W15	12/10 - RDAY		
W16		**Exam4**	exam on Registrar's Schedule

Any modification/deviation from the calendar and its items will be done in consultation with the attending a class students and be posted on the course web-page. It is imperative that students check the course web-page regularly and frequently. Exceptions are as announced by the Provost's Office.

1.4 BASELINE COURSE SYLLABUS

Course: CS332. Principles of Operating Systems.

Credits: 3 credits.

Prerequisites: CS 114 or CS 116 or IT 114 or IT 102.

Description: Organization of operating systems covering structure, process management and scheduling; interaction of concurrent processes; interrupts; I/O, device handling; memory and virtual memory management and file management.

Textbook: [Recommended, designated] Operating Systems: Internals and Design Principles 9th edition, William Stallings, Pearson. ISBN-13: 978-0-13-467095-9, ISBN-10: 0134670957

Learning Outcomes:

1. Be able to describe and discuss the basic components of a modern computer-based operating system.
2. Be able to define and explain the operating systems concepts of process, thread, deadlocks, synchronization, systems calls.
3. Be able to explain file systems, and file structure and organization in an operating system.
4. Learn how different CPU scheduling algorithms work, compare and explain their relative merits.
5. Understand memory organization, physical and virtual memory, and differences between segmented and paged memory, and be able to describe their usage and relative merits.
6. Understand I/O and I/O device behavior and be able to compare and explain the merits of interrupt-driven vs DMA access.
7. Describe and reason about the interactions among the various basic components of a computer-based operating system.

Topics (with references to designated textbook):

T01. Computer system overview (chap 1)
T02. Operating system overview (cahp 2)
T03. Processes (chap 3)
T04. Threads (chap 4)
T05. Process Synchronization (chap 5)
T06. Scheduling (chap 9)
T07. Multiprocessor scheduling (chap 10)
T08. Concurrency and deadlocks (chap 6)
T09. Memory management (chap 7)
T10. Virtual memory (chap 8)
T11. I/O Management and disk scheduling (chap 11)
T12. File management (chap 12)
T13. OS security (chap 13)

1.5 COURSE POLICIES

OARS: If you need special accommodations, contact the Office of Accessibility Resources and Services, KUPF 201, to discuss your specific needs. A Letter of Accommodation Eligibility from OARS authorizing your accommodations will be required.

MISSING: If you miss a class, you make up for lost time. If you miss an exam you MUST CONTACT the Dean of Students (DOS) within 2 working days from the day the reason for the absence is lifted with all necessary documentation and email the instructor of your intent and absence. The maximum accommodation period will be the number of missing days to the exam date: it is imperative then that you contact DOS even before the 2 working day period has expired if the accommodation period would be shorter. For Exam1, a DOS approval will get you a scaled Exam2 grade for Exam1. Likewise for Exam3. A makeup for Exam 2 will be given in the rarest of cases.

Grading: Do not use pencils to write down answers; if you do use a pencil do not complain about grading after an exam. Scratch paper is forbidden. Written work is graded for conciseness and correctness; be brief and to the point and write clearly. Check marks and report errors promptly. **Resolve any issues WITHIN 2 CALENDAR WEEKS and before the first Reading Day** starting from the day an exam is returned or homework graded. For Exam4, within 5 calendar days from the day grades ar posted on Banner. Talk to the grader first and then to the instructor (if different). The final grade is decided on a 0 to 1000 point scale. A 25% or less in the final will get you an F. If you get more than 25% in the final and collect at least 500 points you should expect a C or better. 900 points or more are usually needed for an A. (All these assuming no violation of the Collaboration policy.)

Incomplete: A grade of I(incomplete) is given in rare cases where work cannot be completed during the semester due to documented long-term illness or absence (e.g. unexpected national guard duty). A student needs to be in good standing (i.e. passing the course before the absence). An email with a timeline of what is needed to be done will be sent to the student and the Department Chairperson. Not showing up in the final will probably get you an F rather than an I.

Collaboration: Collaboration of any kind is PROHIBITED. Students must turn in work that has fully been written them and no-one else. Any information obtained through the Internet or otherwise, or is product of someone else's work, or is common with another student submission, in the same or other section/course risks punishment as outlined by the University. All parties of such interaction receive a 0 and letter grade is lowered by one or two levels. The work you submit must be the result of your own mental effort.

Email/SPAM: Use an NJIT email address or your email might not reach us. Send email to the designated course email address per Handout 0 instructions!

Devices: Power down and switch off (not just silence) mobile and other devices before class and place them in a bag or backpack or on the floor screen facing down. **IF A STUDENT GETS CAUGHT HAVING A DEVICE (on or off) ON HIM/HER DURING an exam, the exam receives a 0. DEVICES MUST BE OFF and NOT ON YOU.**

The NJIT Academic Integrity (Honor) Code will be upheld; violations will be reported to the Dean of Students (DOS). Read this handout carefully! ■.