

# CS307 Operating Systems

## Syllabus

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# What is this course about?

- Getting you familiar with the operating system concepts and design principles
- Have some experience through theoretical lectures and practical projects.

# Course Material

- Course slides can be reached through sucourse+
- I will upload the slides and some video lectures to sucourse+
- I will use Zoom and offline video lectures to teach the course material
- All discussions that may interest the other students should be done through sucourse+
- Text book:
  - Modern Operating systems, 3rd edition
  - Andrew S. Tanenbaum

# Grading (Midterms)

- 12 Mini Exams (5% each)
  - Attending at least 10 of them is required, total  $10 \times 5 = 50\%$
  - If you attend more than 10, we will consider your 10 best scores for your overall grade
  - No makeup for the mini exams
  - Duration 20-30 minutes
  - One exam each week starting from the second week. Exact dates will be announced one week in advance.
- Final
  - 30%

# Grading (Projects)

- 20%
- 4 programming assignments (5% each)
- You may have to do an online demo and answer questions in some of the assignments
- Since we are designing new assignments each year, there maybe +/-1pt change in points allocated.

# Your TAs

- To be announced
- My Office Hours:
  - Email me for an appointment

# Some policies

- I will know you better if you attend the lectures
- Knowing you better means being a reference for finding internship, grad applications, job applications etc

# Some motivation for you

- Students need to:
  - contribute to the course (by attending and asking questions)
  - Show their abilities in exams and projects



# Threshold for passing the course

- You have to collect 45 points overall to pass the course
- Try to collect as many points as possible from the mini exams and programming assignments
- Final will be a little more challenging

# Points to Grades

[90-100]	A
[85-90)	A-
[80-85)	B+
[75-80)	B
[70-75)	B-
[65-70)	C+
[60-65)	C
[55-60)	C-
[50-55)	D+
[45-50)	D
[0-45)	F

# List of Topics

- Introduction Computer Systems
- Processes and threads : process and thread models, management, and implementation
- Interprocess Communication: race conditions, critical regions, mutual exclusion

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- Interprocess Communication: race conditions, critical regions, mutual exclusion
- Interprocess communication: sleep and wakeup, semaphores, mutexes, monitors, message passing, and barriers.

# List of Topics

- Classical interprocess communication problems: The dining philosophers problem, readers and writers problem, the sleeping barber problem.
- Scheduling: batch, interactive, and real-time.
- Deadlock Detection, recovery, and avoidance

# List of Topics

- Memory management : basics, swapping, virtual memory
- Page replacement algorithms Design and implementation issues of paging systems, segmentation
- Segmentation with paging
- Files directories and file system implementation.

# List of Topics

- Security issues: cryptography, authentication, attacks, and protection mechanisms, trusted systems
- UNIX, LINUX, and WINDOS Operating Systems