

CS 403/534 - Distributed Systems

Fall 2020

This is a 3-credit course that focuses on the fundamentals of distributed systems. It mainly concentrates on the layer of software that needs to be built on top of computer networks to enable the development of distributed applications.

Catalogue Data: This course focuses on the design, implementation and management of distributed systems. Topics include: communication, processes, naming, synchronization, consistency and replication, fault tolerance, security, resource sharing, and remote procedure call and remote method invocation; distributed object-based systems, distributed file systems, and distributed document-based systems; handling transactions and coordination of multiple machines, peer-to-peer systems.

Prerequisite: The class is open to any graduate and undergraduate students, who have previously taken CS 307 – Operation Systems (or an equivalent course) and scored minimum grade of D (or who have convinced and got the consent of the instructor).

Instructor: Süha Orhun Mutluergil
FENS 1098, x9606, suha.mutluergil@sabanciuniv.edu
Zoom Link (for courses and office hours): <https://sabanciuniv.zoom.us/j/9894421535>

Schedule: Tuesday 16:40 – 17:30, [Zoom](#) (online)
Friday 16:40 – 19:30, [Zoom](#) (online)
Monday 14:40 – 16:30 or by appointment, FENS 1098 / [Zoom](#) (Office Hours)

TA: Oğuz Özsaygın
oguzozsaygin@sabanciuniv.edu
Office Hour, Monday 10:40 – 12:30 or by appointment, [Google Meet](#)

Schedule: Thursday 08:40 – 10:30, [Google Meet](#) (Lab/Recitation Session)
Office Hour, Monday 10:40 – 12:30 or by appointment, [Google Meet](#)

Textbook: Andrew S. Tanenbaum and Maarten van Steen. [Distributed Systems: Principles and Paradigms](#), Edition 3.01, Published by Maarten van Steen, 2017, ISBN: 978-15-430573-8-6 (printed version) and 978-90-815406-2-9 (online version) (not required to buy one, see IC reserve options).

Tentative Outline

- Introduction
- Architectures (tentative)
- Concurrency
- Processes
- Communication
- Naming
- Coordination
- Consistency and Replication
- Fault Tolerance
- Security

Student Responsibilities (tentative)

- **Homework/Lab assignments:** There will be 4-5 homework/lab assignments. You will be required to write computer programs in **Python** programming language, write reports, solve problems or prove theorems.
- **CS 403 class projects:** In addition to homework assignments, undergraduate students are required to work on a big development project. Students may propose a project topic subject to the instructor's approval. Otherwise, students will work on the project offered by the instructor.
- **CS 534 research and development projects:** Graduate students may propose a project topic, which requires both research and development and subject to the instructor's approval. They will be assisted in choosing the project topics if necessary. Otherwise, students will work on the project offered by the instructor.
- Students may work in groups for the class projects. It is essential for students to meet the project time schedule.

Grading

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| Midterm exam | 20% |
| Final exam | 25% |
| HW Assignments | 25% |
| Project | 15% |
| Participation & Quiz | 15% |

Note: The instructor holds the right to decide a policy concerning issues not already covered here.

Academic Integrity / Plagiarism: Cheating and plagiarism will not be tolerated, see [Sabanci University's statement on academic integrity](#) for more information.