

# COM 451, Parallel and Distributed Programming

American University of Central Asia  
Department of Software Engineering

## 1 Course Information

### Course ID

COM 451, 3708

### Course Repository

<https://github.com/auca/com.451>

### Class Discussions

<https://piazza.com/class/j6tftykciix26>

### Place

AUCA, laboratory G31

### Time

Monday 14:10–15:25

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## 2 Prerequisites

- COM-324, Algorithm Analysis
- COM-341, Operating systems

## 3 Contact Information

### Instructor

Toksaitov Dmitrii Alexandrovich  
[toksaitov\\_d@auca.kg](mailto:toksaitov_d@auca.kg)

### Office

AUCA, room 315

### Office Hours

Monday 15:25–17:00

Tuesday 15:25–17:00

Wednesday 10:00–17:00

Thursday 15:25–17:00

Friday 15:25–17:00

## 4 Course Overview

The course introduces students to the topic of programming multi-core multi-processor systems with data-parallel facilities of various hardware on a single machine or in a distributed system connected to a high-performance network.

## 5 Topics Covered

- Threading with *pthread*s
- Synchronization
- Data-parallelism with SIMD instructions
- Distributed programming with *OpenMPI*

## 6 Examinations

Students will get midterm and final examinations in the form of two quizzes with multiple choice questions.

## 7 Course Projects

Throughout the course, students will have to work on two major projects to accelerate programs for image processing and astronomy simulation.

## 8 Reading

An Introduction to Parallel Programming by Peter Pacheco (ISBN: 978-0123742605)

## 9 Grading

- Class participation (through Piazza) (5%)
- Midterm (15%)
- Final (20%)
- Course projects (60%)
  - 90%–100%: A
  - 80%–89%: A-
  - 70%–79%: B+
  - 65%–69%: B

- 60%–64%: B-
- 56%–59%: C+
- 53%–55%: C
- 50%–52%: C-
- 46%–49%: D+
- 43%–45%: D
- 40%–42%: D-
- Less than 39%: F

## 10 Rules

Students are required to follow the rules of conduct of the Software Engineering Department and American University of Central Asia.

Team work is NOT encouraged. The same blocks of code or similar structural pieces in separate works will be considered as academic dishonesty and all parties will get zero for the task.