

**Instructor:** Dr. Erin C. Carson  
**Email:** [carson@karlin.mff.cuni.cz](mailto:carson@karlin.mff.cuni.cz)  
**Office:** Karlín building, 4<sup>th</sup> Floor

**Due to maternity leave of the instructor, the course is exceptionally planned to be held entirely asynchronously for the Winter 2023/2024 semester. Students will be provided with video recordings of lectures and materials for exercises via the course Moodle site. Final exams will be held either in-person or via Zoom.**

**Course Description:** The main goal of the course is to introduce students to concepts and tools for high-performance computing. A special focus will be on aspects of modern supercomputers, including heterogeneous systems, accelerators, and evaluating the time and energy cost of a specific implementation. Students will gain hands-on experience in parallel programming and be introduced to current research challenges.

**Final Exam and Grading:**

The final grade will be determined entirely by the score on the final exam, which is given orally. The final exam will consist of 4 topics for discussion, from which the student must choose 3. A sample list of potential topics will be distributed in advance.

Each of the three questions will be graded on a scale from 0-3, so the total possible is 9 points.

If taken pass/fail, a grade of 6 is required to pass.

If taken for a numeric grade, the distribution will be the following. For a final exam score of  $X$ ,

- $X \geq 7$ : 1
- $6 \leq X < 7$ : 2
- $5 \leq X < 6$ : 3
- $X < 5$ : 4

Each exam timeslot is 1 hour. Assignment of students to timeslots will occur during the last week of teaching.

**Course Website:**

The primary means of communication for this course will be through the course Moodle site:

<https://dl1.cuni.cz/course/view.php?id=15102>. Students should check this site for up-to-date assignments, revised schedule, announcements, lecture material, etc.

**Exercises:**

Students should spend approximately 90 minutes on the exercises portion of the course each week, and it is recommended that this is done immediately after watching the lecture. Learning high performance computing and parallel programming cannot be done passively; students are expected to complete the tutorials and activities during exercises. To complete the exercises, open the relevant exercises PDF and follow along with the instructions.

Some exercises will require use of the Karlín cluster. Information about the cluster can be found here: <https://cluster.karlin.mff.cuni.cz/>

During the first week of the semester, students that do not have an account should sign up for one according to the instructions here: <https://cluster.karlin.mff.cuni.cz/jak-se-stat-uzivatelem/>. Please list the instructor's name as the "Doporučující osoba"/ "recommending person".

The student should also have access to MATLAB; access details can be found here: <https://uvt.cuni.cz/UVT-920.html>