**EASTERN MEDITERRANEAN UNIVERSITY  
CMPE 523 Fall 2025 COURSE OUTLINE**

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| **COURSE CODE** | CMPE 523 | **COURSE LEVEL** | | Graduate | |
| **COURSE TITLE** | Parallel and Distributed Programming | | | | |
| **COURSE TYPE** |  | | | | |
| **LECTURER(S)** | Prof. Alexander Chefranov | | | | |
| **ASSISTANTS** |  | | | | |
| **CREDIT VALUE** | 3 | | **ECTS VALUE** | |  |
| **PREREQUISITES** |  | | | | |
| **COREQUISITES** | None | | | | |
| **DURATION OF COURSE** | 1 Semester | | | | |
| **WEB LINK** | <https://staff.emu.edu.tr/alexanderchefranov/en/teaching/cmpe523/home> | | | | |
| **CATALOGUE DESCRIPTION** Types of parallel systems and their peculiarities, approaches for programming supercomputers using various versions of the FORTRAN language, OCCAM and ANSI C languages for transputer systems, C and Assembler for parallel neuroprocessor, using of parallel programming in the distributed environment on the base of CORBA, DCOM approaches for Win32 and PVM for Unix. | | | | | |
| **AIMS & OBJECTIVES** The aim of the course is to introduce the student to the fundamentals of parallel and distributed programming. | | | | | |
| **GENERAL LEARNING OUTCOMES (COMPETENCES)** On successful completion of this course, all students will have developed knowledge and understanding of: Parallel machines and computations concepts; Potential for parallel computations; Parameters characterizing algorithm parallelism; Vector algorithms and architectures; SIMD instruction set and SIMD language constructs; FORTRAN-90 constructs; MIMD computers or multiprocessors concepts; Shared memory multiprocessor programming language  OpenMP concepts; Distributed memory multiprocessors concepts;  Communicating sequential processes language Occam concepts; Message passing interface (MPI), CORBA, DCOM, PVM, Parallel programming in Win32 concepts; Parallel input/output concepts.    On successful completion of this course, all students will have developed their skills in: the design of parallel algorithms and their implantation in some parallel programming environment.  On successful completion of this course, all students will have developed their appreciation of and respect for values and attitudes regarding the issues of: Parallel and distributed computer systems; Parallel algorithm and parallel programming concepts; Cooperation and teamwork ; Unsupervised learning | | | | | |
| **GRADING CRITERIA** Will be decided according to student performance. | | | | | |
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| **RELATIONSHIP WITH OTHER COURSES** The course is based on the majority of the undergraduate courses related to algorithms, programming, computer organization, and networking |
| **LEARNING / TEACHING METHOD** Mainly through lectures, using Powerpoint slides and the whiteboard, and labs and term project for getting experience. |
| **ASSIGNMENTS** There will be a term project. |
| **METHOD OF ASSESSMENT** •**30% Midterm exam** •**50% Final (Comprehensive)** •20**% Assignment** |
| **ATTENDANCE** Attendanceis must, and will be checked every lecture |
| **TEXTBOOK** Fundamentals of Parallel Processing, Harry F. Jordan, Gita Alaghband, Prentice Hall, 2003, ISBN 0-13-901158-7  Fundamentals of Parallel Computing, Sanjay Razdan, Alpha Science, Oxford, UK, 2014, SBN 978-1-84265-880-2, 230 p. |
| **INDICATIVE BASIC READING LIST** None |
| **EXTENDED READING LIST** None |
| **SEMESTER OFFERRED** 2025-26 Fall Semester |

**CONTENT & SCHEDULE**

         Parallel machines and computations concepts;

         Potential for parallel computations;

         Vector algorithms and architectures; SIMD instruction set and SIMD language constructs; FORTRAN-90 constructs;

         MIMD computers or multiprocessors concepts; Shared memory multiprocessor programming language  OpenMP concepts;

         Distributed memory multiprocessors concepts;  Communicating sequential processes language Occam concepts; Message passing interface (MPI), CORBA, DCOM, PVM, Parallel programming in Win32 concepts;

         Parallel input/output concepts.

**PLAGIARISM AND OTHER FORMS OF CHEATING**

Plagiarism is intentionally failing to give credit to sources used in writing regardless of whether they are published or unpublished. Plagiarism (which also includes any kind of cheating in exams) is a disciplinary offence and will be dealt with accordingly. Copying will also be dealt with similarly.

**DEPARTMENTAL POLICY ON TAKING MAKEUP EXAMS**

You can take a make-up (comprehensive) for a midterm/final exam *if* you have valid excuses (e.g., you are sick) and provide material evidence for it (e.g., a doctor’s report which must be issued/approved by EMU Health Center) within 3 working days of the exam.

**ANY OTHER USEFUL INFORMATION**

Please check course web site http://cmpe.emu.edu.tr/courses/cmpe523for slides, lecture notes, study materials, and announcements regarding assignments and grades.

 Lecturer Alexander Chefranov

23.09.2025