



I'm not robot



**Next**

# Introduction to computer systems course

15-213/18-213: Lecture TR, 1:30-2:50, DH 2210 12 units 15-513: Videotaped lectures and recitations (These will appear within 24 hours guaranteed, but typically within a couple of hours.) 6 or 12 units The ICS course provides a programmer's view of how computer systems execute programs, store information, and communicate. It enables students to become more effective programmers, especially in dealing with issues of performance, portability and robustness. It also serves as a foundation for courses on compilers, networks, operating systems, and computer architecture, where a deeper understanding of systems-level issues is required. Topics covered include: machine-level code and its generation by optimizing compilers, performance evaluation and optimization, computer arithmetic, memory organization and management, networking technology and protocols, and supporting concurrent computation. Course Syllabus (includes important rules on cheating, late assignments, regrade requests, etc.) Thu, Oct 8: C Boot Camp. The staff will be offering a C Boot Camp on Saturday, October 10, 2-4pm, in Rashid Auditorium (GHC 4401) to all interested students in 15-213, 15-513, and 18-213. You'll want to attend if you had trouble with the C puzzles in Monday's recitation or do not have experience programming in C. Boot camp won't be videotaped, but the slides will be posted afterwards. Mon, Sep 14: Linux Boot Camp: The staff will be offering a Linux Boot Camp on Saturday, September 19, 2-4pm, in Rashid Auditorium (GHC 4401) to all interested students in 15-213, 15-513, and 18-213. You'll want to attend if you're not familiar with Linux or could use a refresher. We'll cover Linux basics such as using ssh and scp to login and copy files to the Shark machines, using vim to edit files, setting file permissions, the Linux file hierarchy, the Linux command line, and the distributed Andrew File system. Boot camp won't be videotaped, but the slides will be posted afterwards. Getting Help Email 15-213-staff@cs.cmu.edu TA Office Hours Sun, Mon, Tue, Wed, Thu (and Fridays following Thu due dates): 6:00-9pm (10:30 near due dates), WeH 5207, no appt needed. Here is the complete schedule. Walk-in Tutoring Mon and Wed, 8:30-11:00pm, Mudge Reading Room, no appt needed Course Materials Schedule Lecture schedule, slides, recitation notes, readings, and code Assignments Details of assignments, due dates, and policies Exams Information about quizzes, exams, and final Lab Machines Instructions for using the lab machines Resources Additional course resources Course Information For details See the course syllabus for details (below is just a few overview bits). Lectures TR 1:30-2:50 DH 2210 Recitation Sections Section A: Mon 10:30-11:20, GHC 5222, Jenna MacCarley Section B: Mon 10:30-11:20, PH 226B, Franz Franchetti Section C: Mon 11:30-12:20, WeH 5310, Karthic Palaniappan Section D: Mon 11:30-12:20, GHC 5222, Ben Spinelli (Lead TA - Recitations) Section E: Mon 12:30-1:20, WeH 5310, Isaac Manjares Section F: Mon 12:30-1:20, DH 2105, Jeffery Liu Section G: Mon 1:30-2:20, DH 2105, Aditya Shah Section H: Mon 1:30-2:20, WeH 5310, Celeste Neary Section I: Mon 2:30-3:20, WEH 5310, Ben Spinelli Section J: Mon 2:30-3:20, PH 226B, Shashank Goyal Section K: Mon 3:30-4:20, PH 226B, Monli Shah (Lead TA - Office Hours) Non-recitation TAs Dipayan Bhattacharya Debanshu Das Dhruven Shah Dhruv Saksena Ishant Dawer Kumar Vikramjeet (CMU-SV) Leelakrishna Nukala (CMU-SV) Peter Pearson (Lead TA - Exams) Shelton Dsouza Surbhi Motghare Yicheng Fang Textbooks Randal E. Bryant and David R. O'Hallaron, Computer Systems: A Programmer's Perspective, Third Edition, Pearson, 2016 Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Second Edition, Prentice Hall, 1988 Grading Composed from total lab performance (50%) and total exam performance (50%). Labs There are 7 labs, not evenly weighted. See the assignments page for the breakdown. Exams There is one midterm exam, online, proctored, closed book (20%). There is a final exam, online, proctored, closed book (30%). Course Outline School/School of Informatics College/College of Science and Engineering Credit level (Normal year taken)SCQF Level 8 (Year 2 Undergraduate) Availability Available to all students SCQF Credits 10 ECTS Credits 5 Summary This course is concerned with the design, implementation and engineering of digital computer systems. It offers an introduction to the internal structure of digital computers. Course description The primary aim of the course is to convey an understanding of the internal structure and implementation of digital computers. To impart this knowledge, we first explain how the interface between hardware and software is typically constructed. This interface consists of several key components: \* The binary representation and manipulation of atomic data. \* The structure of a typical instruction set. \* The environment in which a program executes, and the notion of processes and virtual memory. In addition to explaining the interface between hardware and software, this course introduces the ideas behind the hardware implementation of a processor. This consists of several further components: \* Combinational logic - how simple stateless building blocks such as adders, multiplexers and decoders can be constructed from logic elements. \* Sequential logic - how components with state, such as latches, registers, register files and memories can be constructed from logic elements. \* Processor structure - how a simple instruction set can be implemented using combinational and sequential logic components. This material is prefaced by a brief introduction to the C programming language, which is widely used as a systems programming language. Information for Visiting Students Pre-requisites none High Demand Course? Yes Course Delivery Information Academic year 2017/18, Available to all students (SV1) Quota: None Course Start Semester 1 Timetable Timetable Learning and Teaching activities (Further Info) Total Hours: 100 ( Lecture Hours 15, Seminar/Tutorial Hours 5, Supervised Practical/Workshop/Studio Hours 10, Summative Assessment Hours 1, Programme Level Learning and Teaching Hours 2, Directed Learning and Independent Learning Hours 67 ) Assessment (Further Info) Written Exam 60 %, Coursework 40 %, Practical Exam 0 % Additional Information (Assessment) In order to pass the course you must satisfy all of the following requirements: \* achieve at least 40% in the examination; \* obtain a combined total mark of at least 40% There will be at least two assessed courses/works. You should expect to spend approximately 30 hours on the coursework for this course. Feedback Not entered Exam Information Exam Diet Paper Name Hours & Minutes Main Exam Diet S1 (December)1:00Resit Exam Diet (August)1:00 Learning Outcomes On completion of this course, the student will be able to: Demonstrate an understanding of key concepts in computer architecture, including binary representation, exceptions, interrupts, virtual memory, processes and pipelined execution Sketch the design of a simple processor and explain how it operates Demonstrate knowledge of I/O devices and the means by which they interface to a processor and its memory system Demonstrate an understanding of the design and operation of important combinational and sequential components within a processor, such as adders, registers, and state machines Demonstrate understanding of an execution pipeline, based on the MIPS architecture Reading List \* D.A. Patterson and J.L. Hennessy, Computer Organisation and Design: The Hardware/Software Interface, 4th or 5th Edition, Morgan Kaufmann \* A. Silberschatz and P.B. Galvin, Operating Systems Concepts, 5/e, Wiley, 1998 \* B.W. Kernighan and D.M. Ritchie, The C Programming Language, 2/e, Prentice Hall PTR, 1998 Contacts Course organiser: Dr Boris Grot Tel: Email: Boris.Grot@ed.ac.uk Course secretary: Ms Kendal Reid Tel: (0131) 6151 3249 Email: kr@inf.ed.ac.uk Page 2 Click on a course code to view course details Informatics SCQF Level 08 (13 courses) Code Availability Course Name Period Credits INFR08022 SV1 Computer Programming Skills and Concepts Semester 1 20 INFR08024 Data, Design and Society Not delivered this year 20 INFR08023 SV1 Discrete Mathematics and Mathematical Reasoning Semester 1 20 INFR08020 SV1 Informatics 1 - Cognitive Science Semester 2 20 INFR08012 SV1 Informatics 1 - Computation and Logic Semester 1 10 INFR08015 SV1 Informatics 1 - Data and Analysis Semester 2 10 INFR08013 SV1 Informatics 1 - Functional Programming Semester 1 10 INFR08014 SV1 Informatics 1 - Object-Oriented Programming Semester 2 10 INFR08008 SV1 Informatics 2A - Processing Formal and Natural Languages Semester 1 20 INFR08009 SV1 Informatics 2B - Algorithms, Data Structures, Learning Semester 2 20 INFR08018 SV1 Informatics 2C - Introduction to Computer Systems Semester 1 10 INFR08019 SV1 Informatics 2C - Introduction to Software Engineering Semester 1 10 INFR08010 SV1 Informatics 2D - Reasoning and Agents Semester 2 20 Page 3 Click on a subject to view courses in that subject area Edinburgh School of Art (Schedule A) School of Divinity (Schedule B) Moray House School of Education (Schedule C) Education Research (EDU) Sport School of Health in Social Science (Schedule D) School of History, Classics and Archaeology (Schedule E) School of Law (Schedule F) School of Literatures, Languages and Cultures (Schedule G) Business School (Schedule H) Accounting Business Studies Common Courses (Management School) School of Philosophy, Psychology and Language Sciences (Schedule I) School of Social and Political Science (Schedule J) School of Economics (Schedule K) Centre for Open Learning (Schedule L) School of Biological Sciences (Schedule M) School of Chemistry (Schedule N) Chemistry Chemical Physics Service Courses for Biology School of Engineering (Schedule O) School of Geosciences (Schedule P) School of Informatics (Schedule Q) School of Mathematics (Schedule R) School of Physics and Astronomy (Schedule S) College of Medicine and Veterinary Medicine (Schedule T) Transkils PGR (Medicine) Edinburgh Medical School (Schedule R) Royal (Dick) School of Veterinary Studies (Schedule S) Deanery of Biomedical Sciences (Schedule T) Deanery of Clinical Sciences (Schedule U) Deanery of Molecular, Genetic and Population Health Sciences (Schedule V) Page 4 If you are searching for a specific course enter 'Course' and part of the course name and/or code. If you are searching for a specific programme or Degree Programme Table (DPT) then enter 'DPT' and part of the programme name and/or code.





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