

Computer Science CS 10051-020 Intro to Computer Science

Call Number 11707

SYLLABUS

Summer, 2008

Time and Place: Monday, Tuesday and Thursday, 12:00 - 1:40 in room 121 MCS aka MSB; Lab TR, 2:00-4:00, room 139.

Instructor: Michael Rothstein, 268 MSB, phone 330-672-9065. Email addresses: either mrothste@kent.edu or rothstei@cs.kent.edu (both addresses go to the same place, so if you send a message to both places, I will simply get it twice).

Web address: <http://www.cs.kent.edu/~rothstei>

Office Hours: MTR 10:30 to 11:30. Also, you can always send email with questions and/or to set up an appointment. Usual turnaround will be a few hours during the day. Email use is to be preferred over voicemail, which will not be checked as often.

Textbooks: Judith Gersting, G. Michael Schneider, *Invitation to Computer Science, C++ edition*, 4th ed., Thomson/Course Technology, 2004, ISBN: 1-4188-3653-2, and
Kenneth Lambert & Thomas Whaley, *Invitation to Computer Science Laboratory Manual*, Thomson/Course Technology, 2007, ISBN 1-4188-3754-7

Computer Science Departmental Office: 241 MSB (after you exit the elevator, turn right, walk to the corridor, turn right again, the CS office entrance is at the end of the corridor.)
Phone 330-672-9980

Course Goals: As indicated by the name, this course is an introduction to the discipline of computer science or the study of algorithms. The goal of the course is an awareness of the concept of algorithm and of its use in computer science.

Course Description: This course explores topics of computer science within a framework of a six-layer hierarchy of abstractions. The course begins by showing that computer science is the study of algorithms, the central theme of the textbook, and then addresses the next levels of the hierarchy: hardware, virtual machine, software, and applications: some applications and ethics will be covered if there is enough

time. Each layer in the hierarchy builds upon the ideas and concepts presented in the layer before it. In addition to some motivational applications, such as Web page design and interactive graphics, the course covers the fundamental issues of algorithms, hardware design, computer organization, system software, and language models, with theory of computation, and social and ethical issues of computing included if time allows. Exposure to these complex core ideas introduces students to the richness and beauty of the field and helps them appreciate the principles behind its creation and implementation. While experiencing the excitement of computer science, students receive a solid foundation in the central concepts as well as in important uses of computing and information technology. Note that the course involves some introductory programming in C++.

Material to be covered: CS 10051 is a broad introduction to computer science. Many important concepts underlying computer science are covered. The course includes a weekly 2 hour lab that provides experience with the concepts covered in the lectures.

The material covered in CS 10051 is broken into 3 groups of approximately 2 1/2 weeks each:

Weeks 1-3 :Algorithm related concepts are covered including: the definition of computer science, the nature of algorithms, the algorithmic foundations of computer science, computing agent, the expression of algorithms as pseudo-code, and variables. A number of algorithms are examined including sequential search, find greatest, selection sort, and binary search. The time efficiency and Big-O classification of algorithms are discussed along with algorithms illustrating the concepts.

weeks 3-5 Computer hardware concepts are studied including: binary numbers, Boolean logic, bits, bytes, gates, circuit construction, circuit construction algorithm, circuits such as compare for equality and addition circuits, the Von Neumann Architecture in detail, caching, the construction of a CPU from basic circuits, machine language, assembly language, the basic pseudo-code/programming language control structures in assembly language, system software, and operating system concepts.

weeks 6-8 : A variety of higher-level concepts are looked at: computer networks, the Internet, the world wide web, programming languages, introduction to high-level language programming, the re-

relationship between programs, pseudo-code, and hardware, compilers and language translation, software development, applications, simulation and modeling, electronic commerce and information security, artificial intelligence, social issues in computing, and making decisions about computers, information, and society.

Prerequisite: Prerequisites for this class are 2 years of high school algebra or the equivalent in college credit (e.g. MATH 11011 (College Algebra), or MATH 12001 (Algebra and Trigonometry)).

Important note: Introduction to Computer Science, CS 10051, with a grade of C (2.0) or better is a prerequisite for Computer Science I, CS 23021. Note that a grade of C- (1.7) will not meet this requirement. See:

<http://www.cs.kent.edu/programs/ugrad/planner.html>

Attendance policy Attendance is necessary and expected. It is up to the student to make up any missed material. If class is missed it is best to get notes from a fellow student (who has taken good notes). This will be the best record of what transpired during the class meeting. Sometimes, in response to questions or as seems beneficial, further explanation will spontaneously be created by the instructor and written on the board. The instructor may retain no written record of this.

Read the text. Only general reading assignments will be given. The class will mostly cover material in the same order as the text book, there may be exceptions however. It is the student's responsibility to maintain an awareness of the material in the text that is currently being covered. Ask the instructor if you are unsure of the text material currently being covered.

The syllabus may be changed during the semester if necessary: changes will be announced in class; they might also show up on the instructor's website.

Some good hints about studying computer science are available at the website:

<http://www.educ.kent.edu/community/docwhiz/rdng.html>

I recommend you read it and follow its advice: notice what it says about exercises: DO them; at least try; they illustrate a lot of the concepts from the class.

Class disruptions Disruptions should be kept to a minimum; these include (in increasing order of seriousness):

1. Early departure (if announced and done discreetly: please sit near the door so that as few people as possible notice.)
2. Late arrival
3. Use of electronic devices or other devices which may interfere with your or other student's participation. Laptops are acceptable for taking notes, however, please sit in the last row of the room so that your screen does not distract/block other students.
4. Conversation among students.
5. Aiding and/or abetting these or any other student's disruptive behaviors.

Guidelines pertaining to class disruptions are outlined in the University Rules and Regulations, available through:

<http://www.kent.edu/policyreg/chap4/4-02-2.cfm>

Lab: This course has a mandatory lab associated with it. *Lab attendance is required.* The lab has a different instructor and details on how the lab is conducted will be given in the lab meetings. The lab instructor gives the lab scores to the lecture instructor. You must pass both the lab and the lecture part of the course to pass the course.

The lab grade is worth 30% of the total grade

Grading: Your grade will depend on the quizzes, midterms and the final; no homework will be collected: this does not mean there is no homework: as mentioned before, ALL exercises should be attempted as homework; a sampling will be given in the quizzes and the exams. There will also be a grade participation grade, based on the number of relevant questions asked: though I don't believe there are any dumb questions, questions like "What day is it?" do not qualify; specially good questions or catching my mistakes get extra points. The weights are:

Quizzes and Class Participation	10%
Midterm 1 (June 26)	15%
Midterm 2 (July 17)	20%
Final (July 31)	25%
Lab	30%

All quizzes and exams will be comprehensive. This includes the final.

Test make-up policy: I will need signed documentation to verify *each* individual absence in order to provide make-ups; only university accepted reasons will be honored.

Grading scale: I will assign number grades during the session and only convert them to letter grades when I turn them in at the end of the session. No decision can be made regarding a conversion table until the very last minute due to such imponderables as test difficulty, class attendance and participation, etc. which will influence the grade. However, I guarantee the following, worst case, table:

97-100	will convert into an A
94-96	will convert into at least an A-
91-93	will convert into at least a B+
88-90	will convert into at least a B
85-87	will convert into at least a B-
82-84	will convert into at least a C+
79-81	will convert into at least a C
76-78	will convert into at least a C-
73-75	will convert into at least a D+
66-72	will convert into at least a D

Special accommodations for Students with Disabilities: University policy 3342-3-18 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through Student Disability Services (contact 330-672-3391 or visit: <http://www.registrars.kent.edu/disability/default.htm> for more information on registration procedures).

On cheating, plagiarism and other unethical behavior You are encouraged to discuss class problems with other students but required to work independently of anybody else except the instructors and/or tutor, unless otherwise indicated. Copying other people's work and plagiarizing work will not be tolerated and will be dealt with according to University regulations, as described in the *Digest of Rules and Regulations*, available through: <http://www.kent.edu/policyreg/chap3/3-01-8.cfm>

In any case, the sanction for any ethical violation or other such misconduct will consist of getting a grade of F for the course. In addition, *IN ALL CASES*, the Office of Student Conduct/Judicial Affairs will be notified of the incident; if that office receives enough notifications, the student may face harsher penalties, including (but not limited to) probation, suspension or dismissal.