Course Information

1 Staff

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2 Prerequisites

A strong understanding of programming and a solid background in discrete mathematics, including probability, are necessary prerequisites to this course.

This course is the header course for the MIT/EECS Engineering Concentration of Theory of Computation. You are expected to have taken 6.001 *Structure and Interpretation of Computer Programs* and 6.042J/18.062J *Mathematics for Computer Science*, and received a grade of C or higher in both classes. If you do not meet these requirements, you must talk to a TA before registering for the course.

3 Lectures

Lectures will be held in Room 2-190 from 2:30 P.M. to 4:00 P.M. on Tuesdays and Thursdays. You are responsible for material presented in lectures, including oral comments made by the lecturer.

4 Recitations

Students must attend a one-hour recitation session each week. The course staff will schedule recitations. You are responsible for material presented in recitation. Attendance in recitation has been well correlated in the past with exam performance. Recitations also give you a more intimate opportunity to ask questions and interact with the course staff. MIT recitations will be taught by the teaching assistants on Fridays. You need to sign up for a recitation using the signup form on the class website.

5 Handouts

Most handouts will be made available on the course web page in formats suitable for printing. This is one of the few handouts that will be available in lecture. Students should download and print out the handouts from the course web page. You will receive an email reminder when the handouts are available online. The email message will say where and when the few handouts that are not available from the web page can be obtained.

6 Textbook

The primary written reference for the course is the second edition of the textbook *Introduction to Algorithms* by Cormen, Leiserson, Rivest, and Stein. In previous semesters the course has used the first edition of this text. The second edition is a substantial revision of the first, making the first edition unsuitable as a substitute.

The textbook can be obtained from Quantum Books, the MIT Press Bookstore (a 20% discount coupon can be found in the MIT Student Telephone Directory), and at various other local and online bookstores.

7 Course website

Please bookmark the course website:

`http://theory.lcs.mit.edu/classes/6.046`

It provides a complete list of handouts, corrections made to the course materials, and special announcements. You should visit this site regularly to be aware of any changes in the course schedule, updates to your instructors' office hours, etc.

8 Extra help

Each Teaching Assistant will post his or her weekly office hours on the course website.

In addition, as a free service to its students, the MIT Department of Electrical Engineering and Computer Science provides one-on-one peer assistance in many basic undergraduate Course VI classes. During the first nine weeks of the term, you may request a tutor who will meet with you for a few hours a week to aid in your understanding of course material. You and your tutor arrange the hours that you meet, for your mutual convenience. More information is available on the HKN web page:

`http://hkn.mit.edu/act-tutoring.html`.

Tutoring is also available for all students from the Tutorial Services Room (TSR) sponsored by the Office of Minority Education. The tutors are undergraduate and graduate students, and all tutoring sessions take place in the TSR (Room 12-124) or the nearby classrooms. For further information, go to

`http://web.mit.edu/tsr`.

9 Registration

You need to sign up for the class on our course homepage. The information you provide will help the course staff to get to know you better, to assign students to recitations, and create a mailing list and a course directory. Signing up is a requirement of the course. You will find it difficult to pass the course if you aren't in the class! You should notify your TA immediately if you drop the course after having registered. Listeners should also register for the course in order to be on the mailing list.

You must register before 8:00 A.M. on Wednesday, February 5th (i.e., do it tonight!). We will email your recitation assignment to you before noon on Thursday, February 6th. If you do not receive this information from us by Thursday noon, please send email to `yoav@mit.edu`, or talk to us after the lecture on February 6th.

10 Problem sets

Roughly seven problem sets will be assigned during the semester. The course calendar (on the course website) shows the tentative schedule of assignments and due dates, but the actual due date will always be on the problem set itself.

- Late homeworks will generally not be accepted. If there are extenuating circumstances, you should make **prior** arrangements with your recitation instructor. An excuse from the Dean's Office will be required if prior arrangements have not been made.

- Problem sets will be collected at the **BEGINNING** of lecture on the day they are due.
- Each problem should be written up on a **separate sheet** (or sheets) of paper, since problems will be graded by separate graders. Mark the top of each sheet with the following:
  - your name,
  - the name of your recitation instructor,
  - the problem number,
  - the people you worked with on the problem (see Section 13), or "Collaborators: none" if you solved the problem completely alone.
- You should be as clear and precise as possible in your write-up of solutions. Understandability of your answer is as desirable as correctness, because communication of technical material is an important skill.

  A simple, direct analysis is worth more points than a convoluted one, both because it is simpler and less prone to error and because it is easier to read and understand. *Sloppy* answers will receive *fewer* points, even if they are correct, so make sure that your handwriting is legible. It is a good idea to copy over your solutions to hand in, which will make your work neater and give you a chance to do sanity checks and to correct bugs.
- The problem sets may include exercises that should be solved but not handed in. These questions are intended to help you master the course material and will be useful in solving the assigned problems. Material covered in exercises will be tested on exams.

11 Describing algorithms

You will often be called upon to "give an algorithm" to solve a certain problem. Your write-up should take the form of a short essay. A topic paragraph should summarize the problem you are solving and what your results are. The body of your essay should provide the following:

1. A description of the algorithm in English and, if helpful, pseudocode.
2. At least one worked example or diagram to show more precisely how your algorithm works.
3. A proof (or indication) of the correctness of the algorithm.
4. An analysis of the running time of the algorithm.

Remember, your goal is to communicate. Graders will be instructed to take off points for convoluted and obtuse descriptions.

12 Grading policy

The final grade will be primarily based on problem sets (P), two in-class quizes (Q_1 and Q_2), and a final (F). The problem sets will together be worth 25% of the final grade, each quiz 22.5%, and the final exam 30%. You must do the problem sets; if you don't do a significant number of them, do not expect to pass.

13 Collaboration policy

The goal of homework is to give you practice in mastering the course material. Consequently, you are encouraged to collaborate on problem sets. In fact, students who form study groups generally do better on exams than do students who work alone. If you do work in a study group, however, you owe it to yourself and your group to be prepared for your study group meeting. Specifically, you should spend at least 30–45 minutes trying to solve each problem beforehand. If your group is unable to solve a problem, talk to other groups or ask your recitation instructor.

You must write up each problem solution by yourself without assistance, however, even if you collaborate with others to solve the problem. You are asked on problem sets to identify your collaborators. If you did not work with anyone, you should write "Collaborators: none." If you obtain a solution through research (e.g., on the web), acknowledge your source, but write up the solution in your own words.

No collaboration whatsoever is permitted on exams.

Plagiarism and other anti-intellectual behavior cannot be tolerated at MIT and in any academic environment that prides itself on individual accomplishment. If you have any questions about the collaboration policy, or if you feel that you may have violated the policy, please talk to one of the course staff. Although the course staff is obligated to deal with cheating appropriately, we are more understanding and lenient if we find out from the transgressor himself or herself rather than from a third party.