Course Information

1 Staff

Lecturers:	Erik Demaine `edemaine at mit.edu`	NE43-317	617-253-6871
	Shafi Goldwasser `shafi at mit.edu`	NE43-374	617-253-5914
Teaching Assistants:	Brian Dean `bdean at mit.edu`	NE43-311	617-253-2345
	Jennifer Mulligan `jenm at mit.edu`	NE43-338	617-253-7583
	Steve Weis `sweis at mit.edu`	NE43-334	617-253-5866
Course Assistants:	Kathleen Dickey `kvdickey at mit.edu`	NE43-330	617-253-3037
	Joanne Talbot Hanley `joanne at theory.lcs.mit.edu`	NE43-366	617-253-6054
World Wide Web:	`http://theory.lcs.mit.edu/classes/6.046`		
Email:	`6046-spring04 at theory.lcs.mit.edu`		

2 Prerequisites

A solid background in discrete mathematics, including probability, is a necessary prerequisite 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 and Recitations

Lectures will be held in Room 2-190 from 2:30 P.M. to 4:00 P.M. ET on Tuesdays and Thursdays. In addition, students must attend a one-hour recitation session each week. Material will be presented in recitations as well as in lectures. Attendance in recitation has been well correlated in the past with exam performance. Recitations also give you more opportunity to ask questions and interact with the course staff.

Recitations will be taught by the teaching assistants on Fridays. The online course registration asks you to indicate your preferences for recitation sections. Recitation assignments made by the registrar are inoperative. You are responsible for all material presented in lectures and recitations.

4 Handouts

Most handouts will be made available on the course web page in formats suitable for printing. 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.

5 Textbook

The primary reference for the course is the second edition of the textbook *Introduction to Algorithms* by Cormen, Leiserson, Rivest, and Stein.

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

6 Course Website

Please bookmark the course website:

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

It provides links to electronic copies 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.

7 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 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/www`.

8 Registration

The online registration form on the course web page asks you to fill out a sign-up sheet. The information you provide will help the course staff to get to know you better 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 12:00 P.M. on Wednesday, February 4. We will email your recitation assignment to you before noon on Thursday, February 4. If you do not receive this information from us by Thursday noon, please send email to Steve Weis (`sweis@mit.edu`).

9 Problem Sets

Eight problem sets will be assigned during the semester. The course calendar, available at the course web site, shows the tentative schedule of assignments and due dates, but the actual due date will always be on the problem set itself.

- Homework is due *before* lecture or recitation on the given due date. Problem sets will not be accepted after the start of class.

- Late homeworks will not be accepted. If there are extenuating circumstances, you should make *prior* arrangements with your recitation instructor at least 24 hours before the due date.

  An excuse from the Dean's Office or your doctor will be required if prior arrangements have not been made.

- Each problem must 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 12), or "Collaborators: none" if you solved the problem completely alone.

- 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 correct bugs.

- A LaTeX template is available on the course web site for students who wish to submit typewritten homework solutions.

- Problem set grades will be privately available to students through the course web site. Grading mistakes may happen. Students are encouraged to check their grades for correctness. You will have two weeks after grades are posted to notify your TA and correct any errors.

10 Describing Algorithms

You will often be called upon to "give an algorithm" to solve a certain problem. Giving an algorithm entails:

1. A description of the algorithm in English and, if helpful, pseudocode.

2. A proof (or argument) of the correctness of the algorithm.

3. An analysis of the running time of the algorithm.

It is also suggested that you include at least one worked example or diagram to show more precisely how your algorithm works. Remember, your goal is to communicate. Graders will be instructed to take off points for convoluted and obtuse descriptions. If you cannot solve a problem, give a brief summary of any partial results.

11 Grading Policy

The final grade will be based on problem sets, two evening quizzes, and a final, according to the following breakdown:

- Problem Sets - 20%
- Quizzes - 40%
- Final - 40%

Although the problem sets account for only 20% of your final grade, you are required to do them. To enforce this policy, *you will be penalized a full letter grade* for each 20% of problems you do not turn in.

The specifics of this grading policy are subject to change if the need arises.

12 Collaboration Policy

Students 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. However, it is recommended that students work individually on a problem for 30–45 minutes before consulting other students. If you do collaborate, you must abide by the following guidelines:

- Cite all collaborators or outside sources.
- You must write up each problem solution independently.
- No collaboration is allowed on exams.

This course has a no tolerance cheating policy.

Plagiarism and other unethical behavior cannot be tolerated in any academic environment that prides itself on individual accomplishment. Any student caught cheating on a quiz or exam will be turned over to student affairs and risks receiving a *failing grade* and possibly *expulsion*.

Any plagiarism or cheating on a problem set will result in a zero grade on that assignment, and potentially a drop in your final course grade. An individual homework assignment represents a small fraction of your final grade - *it is NOT worth cheating!* 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.

This course has great material, so HAVE FUN!