

## Syllabus

### Instructor

Dr. Konstantinos Kalpakis  
Computer Science & Electrical Engineering Department  
Office: ECS 233A  
Phone: (410) 455-3143  
Email: kalpakis@csee.umbc.edu  
Class homepage: <http://www.csee.umbc.edu/~kalpakis/Courses/451/>  
Office Hours: Monday 1:00-2:00pm, Wednesday, 3:30pm-4:30pm, and by appointment.

### Meeting Time and Place

Monday and Wednesday 2:00pm-3:15pm  
Room FH 224

### Teaching Assistant: Ripin Natani

Room ECS 334, Phone: 410-455-2862, Email: ripin1@csee.umbc.edu.  
Office hours: Monday and Wednesday, 1:00-2:00pm, and by appointment.

### Important Dates

- Midterm Exam 1, October 9, 2002, 2:00pm-3:15pm.
- Midterm Exam 2, November 4, 2002, 2:00pm-3:15pm.
- Final Exam, December 16, 2002, 1:00am-3:00pm.

**Prerequisites** CMSC-202 and CMSC-203, or permission of the instructor.

**Text.** The required text is: Michael Sipser, "Introduction to the Theory of Computation", PWS Publishing Company, 1997.

### Tentative List of Topics.

- Introduction to Automata, Computability, and Complexity (Section 0.1) Proof Techniques and Basic Mathematical Concepts (Sections 0.2-0-4)
- Finite Automata (Sections 1.1 and 1.2)
- Regular Expressions (Section 1.3)

- Pumping lemma for Regular Languages (Section 1.4)
- Context-Free Grammars (Section 2.1)
- Pushdown Automata (Section 2.2)
- Pumping Lemma for Context-Free Languages (Section 2.3)
- Turing Machines (Sections 3.1–3.2)
- Decidability and Reducibility (Sections 4.1, 4.2, and 5.1)

### Required Work

Required work consists of (1) taking the two midterm exams and the final exam, (2) homework assignments. Further, you are expected to actively participate in class discussions. Academic dishonesty will be dealt severely according to University Policy.

### Homework

There will be at least four homework assignments. Some may require use of computer systems. Homework assignments are to be done and written individually by each student. **Each homework assignment will be due at the beginning of class, within the first 15 minutes of class, on the date specified. No late homeworks will be accepted, unless University Policy states otherwise.**

### Exams

There will be two midterm exams and a comprehensive final exam. All the exams will take place in class and will be closed-book and closed-notes. Make-up exams are possible only under University Policy. You should make prior arrangements with the instructor if you expect to miss an exam.

### Grading Policy

The course grades will be determined as follows. For each course activity in Table 1, each student will receive an activity score, which will be the average of the student's scores on the assignments for that activity. An activity score is a number in the range  $0 \dots 100$ . A term score will be computed by taking the weighted sum of the activity scores, using the relative weights given in Table 1. The instructor will convert term scores into letter grades by using the following mapping:  $[90, 100] \Rightarrow A$ ,  $[80, 90) \Rightarrow B$ ,  $[70, 80) \Rightarrow C$ ,  $[60, 70) \Rightarrow D$ ,  $[60, 100] \Rightarrow P$ ,  $[0, 60) \Rightarrow F$ .

Incomplete grades will issued only under those extreme situations described by University Policy for granting incompletes. Failure to complete assignments on time is not a sufficient reason for an incomplete.

**Necessary but not sufficient conditions to pass the course are as follows: you must have a homework activity score of at least 50 points, and at least 30 points**

| Activity       | Weight |
|----------------|--------|
| Homework       | 15%    |
| Midterm Exam 1 | 25%    |
| Midterm Exam 2 | 25%    |
| Final Exam     | 35%    |
| Total          | 100%   |

Table 1: Course Activities and their relative weights.

**for each exam, including the final exam.** For example, if you score below 30% on any of the midterm exams or the final exam, or if you score less than 50% on the total of all the homework, then you will not receive a passing grade. Note that you will need to score at least 60% of the total weighted score for the course in order to receive a passing letter grade (i.e. P or D and above).