

- **Course:** Computational Models
 - **Time & Place:** Monday, Wednesday and Friday 2:00pm-3:10pm, Baskin 165.
 - **Discussion Section:**
 - **Time & Place:** Monday, 7:00pm-8:10pm, Baskin 165.
 - **Instructor:** Dean Bailey; office: E2 259; e-mail: dbailey@soe.ucsc.edu
 - **Teaching Assistant:** Lourdes Chang, e-mail: loichang@ucsc.edu
 - **Reader/Tutor:** tbd
 - **Office Hours:**
 - Bailey: tbd.
 - Chang: tbd.
 - **Prerequisites:** CMPS 101 or approval of instructor
 - **Textbook:** *Introduction to the Theory of Computation*, by Michael Sipser, 2nd Edition.
 - **Goal:** To cover most of the material contained in Chapters 0, 1, 2 and 3.
 - **Syllabus:** The following is a tentative syllabus for the course:
 - Overview
 - Tools: Mathematical Objects and Proof Techniques
 - Deterministic Finite Automata
 - Non-deterministic Finite Automata
 - Rabin-Scott Theorem
 - Regular Languages and Regular Expressions
 - Kleene's Theorem
 - Non-regular Languages
 - Pumping Lemma
 - Myhill Nerode Theorem
 - Minimizing States
 - Push Down Automata
 - Context-free Grammars and Languages
 - Normal forms
 - Non-context-free languages
 - Pumping Lemma for context-free languages
 - Turing Machines and Recursively Enumerable Languages
 - Church-Turing Thesis
 - **Evaluation:** The course work will be weighted as follows:

| | |
|-------------------------|-----|
| Final Examination | 40% |
| One Midterm Examination | 30% |
| Four in-class Quizzes | 20% |
| Homework Assignments | 10% |
- N.B. Passing grades in **all** four parts are required to pass the course.

- **Examination and Quiz Schedule:**

1. Final Examination, Monday, December 7, 7:00pm-10:30pm
2. Midterm Examination on Monday, November 2
3. Quizzes:
 - Quiz 1: Friday, October 9
 - Quiz 2: Friday, October 23
 - Quiz 3: Monday, November 16
 - Quiz 4: Monday, November 30

The examination and quiz schedule is fixed. In particular, requests for changes in the schedule will not be accommodated; if you have conflicts with this schedule, please do not enroll in the class. Also, *no* time extension will be given for late arrivals on quiz day or examination day.

- **Academic Integrity:** No form of academic dishonesty will be tolerated. Incidents of academic dishonesty will be reported according to UCSC's policy on academic integrity, the full text of which can be found at <http://oasas.ucsc.edu/avcue/integrity>. Specifically for this class, if you are caught turning in work as your own, that is not solely your own, or assisting others in doing so, a formal written report will be sent to your Department, the School of Engineering, and to your Provost and academic preceptor. Furthermore you will get a failing grade for the course and the incident will be noted in your evaluation.

- **Miscellanea**

- All homework assignments are to be handed in at the beginning of Class on due date.
- Solutions to homework problems will be presented in the discussion sections or class. They will not be posted.
- We will provide solutions to the problems in the quizzes and in the midterm examination, after the grading has been completed.
- We will *not* distribute or post “sample” examination problems or “sample” quiz problems.

- **Other interesting textbooks, NOT required:**

- *Introduction to Automata Theory, Languages, and Computation*, by Hopcroft and Ullman, 1st Edition, Addison Wesley, 1979.
- *Introduction to Automata Theory, Languages, and Computation*, by Hopcroft, Motwani and Ullman, 2nd Edition, Addison Wesley, 2001.
- *Automata and Computability*, by Kozen, 1st Edition, Springer-Verlag, 1997.
- *Elements of the Theory of Computation*, by Lewis and Papadimitriou, 2nd Edition, Prentice Hall, 1998.
- *Introduction to Languages, and the Theory of Computation*, by Martin, 3rd Edition, Mc Graw Hill, 2003.