Computer Science 341 deals with mathematical models of computation: automata, which are idealized machines for manipulating strings of symbols, and grammars, which are collections of rules for transforming strings of symbols—and with the characteristics of the classes of functions that can be defined and computed within these models. By abstracting from all attributes of real-world computation that are not readily formalized, automata theorists have been able to establish quite general results about the capabilities and efficiencies of several methods and models of computation. In this course, we shall study the results that they have obtained and the mathematical techniques they use.

The class meets in a Blackboard Discussion Board on Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays, from 7:00 to 8:05 p.m. Central Time (UTC −06:00 through March 13; UTC −05:00 from March 14). Participants may also contribute to the discussions at other times but should expect the resulting interactions to be fewer and slower.

Course Web site
https://reseda.sites.grinnell.edu/automata/

The Textbook


Michael Sipser’s Web page at MIT
http://www-math.mit.edu/~sipser/

Introduction to the Theory of Computation

errata for third edition

Class Attendance

I expect you to attend every session of the class and to participate actively. It is especially helpful if you raise for discussion any questions you may have about the day’s topic, the assigned reading, or the exercises. I suggest that you write out such questions as part of your preparation for class sessions and pose them as opportunities arise.

Notwithstanding that general expectation, class attendance is optional. If you miss a class session, you can make it up afterwards by reading the Discussion Board for that session and appending your questions and comments. Please make up your absences as promptly as possible.

Grading Policy

For the benefit of students who wish to track their estimated grades day by day through the course, I have designed a system of points: I will award up to eight points for participation in each class session, for a total of 280 class-participation points. In
addition, I will award points for homework exercises, variously rated from twenty to thirty points amounting together to 720 points over the entire term. Thus one thousand points will be available overall.

Students’ point totals will establish lower bounds for their final course grades, as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range of Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>950–1000</td>
</tr>
<tr>
<td>A−</td>
<td>925–949</td>
</tr>
<tr>
<td>B+</td>
<td>900–924</td>
</tr>
<tr>
<td>B</td>
<td>850–899</td>
</tr>
<tr>
<td>B−</td>
<td>825–849</td>
</tr>
<tr>
<td>C+</td>
<td>800–824</td>
</tr>
<tr>
<td>C</td>
<td>750–799</td>
</tr>
<tr>
<td>D</td>
<td>700–749</td>
</tr>
</tbody>
</table>

Section IV.A.4 of the Faculty Handbook specifies that the course grades that I actually report “shall have been determined, in the final analysis, on the basis of the faculty member’s own professional evaluation of each individual student’s work.” Accordingly, in cases where I believe that students’ respective point totals do not adequately reflect my professional evaluation of their work, I may award a higher grade than the one specified in the table above. But students may rely on those point totals as lower bounds: I will not report any grade lower than the one that corresponds in that table to the student’s point total.

**Late Work**

I am willing to accept solutions to exercises that are submitted after their nominal due dates, provided that I have not yet returned graded submissions to students in the class and that we have not discussed those exercises in class. If you submit an exercise after its due date, and your solution is correct, then I judge that you have put the extra time to good use, and there is no penalty. On the other hand, if your solution is both late and deficient, I will judge it more harshly than if it had been submitted on time.

If you submit an exercise that has already been discussed in class or one for which I have already started to return other students’ submissions, I will still read it and make comments and suggestions about it, but I cannot award credit for it.

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“Grinnell College Copyright Policy”
https://www.grinnell.edu/sites/default/files/documents/copyright_0.pdf

Collaboration and Plagiarism

Since you will receive credit as an individual on the basis of your performance in this course, it would be unethical to submit a solution to any of the exercises that is not entirely your own work. To borrow other people’s solutions without acknowledgement is improper in any case; but on exercises it is also improper to take answers or partial answers from others, even if their contributions are explicitly acknowledged.

If I encounter clear indications of plagiarism or academic dishonesty, the Committee on Academic Standing will deal with them. The College’s policies for faculty members prohibit me from trying to investigate such offenses on my own. For the same reason, I impose penalties for academic dishonesty only as directed by the Committee on Academic Standing.