1. Course Goals

This course provides you with an introduction to computer architecture and its implementation. While not every Computer Science major will need to be able to design a computer from scratch, some understanding of the organization and construction of the processor will significantly help you understand why software operates as it does (both its capabilities and its limitations).

We will study information representation, Boolean algebra and its application to both combinational and sequential circuit design, and design and implementation of memory. To explore these topics, we will use a variety of techniques, including hands-on experiments to help you understand the inner workings of digital components.

2. Document Conventions

All course documents have a common “look and feel”, so you need to learn only one set of typographic and organizational conventions. We use different fonts to emphasize meaning; the mapping is given below:

<table>
<thead>
<tr>
<th>Font Example</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>important</td>
<td>emphasizes a phrase or word</td>
</tr>
<tr>
<td>very important</td>
<td>something we really want to make sure you see</td>
</tr>
<tr>
<td>new term</td>
<td>introduces new terminology for the first time</td>
</tr>
<tr>
<td>file name</td>
<td>a file name to use</td>
</tr>
<tr>
<td>document</td>
<td>name of a book, document or section of a document</td>
</tr>
</tbody>
</table>

Some fonts are the same, but the meaning should be obvious from the context in which it is used.

3. Texts

*Computer Engineering: Hardware Design* by M. Morris Mano.

Assorted documents produced by the faculty of the Department of Computer Science (part of your document packet, or handed out in class).

4. Grading Policy

The course consists of the activities shown below, which are weighted as indicated to compute the final grade:
5. Course Format

This course has no formal lab period associated with it; the lecture meets for three hours each week. If you have any questions regarding your registration, consult your instructor or the staff in the Computer Science office (Ross A221) immediately. Finally, while there may be other sections of lecture, it is not a smorgasbord. You must attend the section for which you are registered or you will not get credit for your work.

Although there are no formally-scheduled lab sessions, there will be out-of-class experiments for you to complete.

Lectures are held in the classrooms shown on your schedule. Experiments will require the use of the hardware simulator Digital WorkShop v 1.01; Adapted by: Deborah Lynch; Adapted from: DigSim v1.01 b3; Copyright (c) 1996 Iwan van Rienen The simulator is available for downloading at http://www.cs.rit.edu/~icss351/ (the home page for this course). This simulator is java based, so it can be used on any platform that has an available java runtime environment.

6. Experiments

You will perform a series of six experiments. Your grades on these experiments will be weighted equally; collectively, they will make up 40% of your final grade.

7. Tests

There will be two tests during the quarter; see the course calendar for specific dates. Each will take 50 minutes of lecture time. Calculators will not be allowed during the tests or final exam.

Your test grade is computed by comparing the percentages scores on your tests, and then weighting your best test at 20% and your other test at 15% of your grade.

You are expected to take exams during the scheduled period; in general, we will not give make-up exams. However, we realize that some situations might arise that would prevent you from taking an exam: severe illness, accidents, etc. Should this occur, you must inform your lecture instructor prior to the exam; you can either call him/her or leave a message with the staff in the Computer Science Department office (10-A221, telephone 475-2995 or 475-6179). Once you return, we will make specific arrangements regarding the missed exam.

Please note that oversleeping, cars that don’t start, and other excuses of this ilk are not generally valid. It is your responsibility to get to class on time for exams. If you miss an exam and did not make prior arrangements for a makeup, you will receive a zero for it.

8. Final Exam

A common final exam will be given to all day sections at the same time during the regularly scheduled final exam period. The date of the final will be announced as soon as we get the information, typically in the sixth or seventh week of the quarter. Evening sections will have their final exam during the first regularly-scheduled class meeting after the tenth
week of the quarter.

You must take the final exam at the time scheduled for your section; finals are not given early, nor will there be any makeup exam. The final will be comprehensive and will cover material from the entire course, including lecture and assigned readings in the text books.

9. Academic Honesty

It is a shame that this must be stated at all, but there are always a few students who do not abide by the rules of proper academic conduct. For the record:

• Unless otherwise stated on the assignment handout, experiments are intended to be completed by you alone.
• No assistance from others (beyond general concepts) is acceptable.

Those who behave in a dishonest or unethical manner in computer science courses, or in their dealings with the Computer Science Department, are subject to disciplinary action. In particular, dishonest or unethical behavior in the execution of assigned work in a computer science course will be treated as follows:

1. For a first offense the student involved will receive a grade of zero on the assignment. [A stronger penalty may be exacted, if, in the judgement of the instructor, the offense involves a flagrant violation of basical ethical standards.]
2. For a second offense, in the same or a different course, the student will receive a failing grade for that course.
3. A third offense will be referred to judicial affairs.

Furthermore, the following action will be taken for each person involved in the incident, whether currently enrolled in the course or not:

If the student is a computer science major, a letter recording the incident will be placed in the student's departmental file; otherwise, the letter will be forwarded to the student's department chair or program coordinator.

• Violations of the Code of Conduct... can also result in suspension, expulsion and even criminal charges.

For most of you, such warnings are unnecessary. We have to mention this because otherwise some students would say, “but you never said I couldn't just copy Johnny’s work and turn it in as my own.”

10. Tentative Schedule

You will receive a weekly schedule and a course calendar from your instructor. They reflect our best estimate of the timing of the topics covered in this course. Any changes to this schedule will be announced in advance by your instructor, or via e-mail.

We will cover Chapters 1 through 6 of Computer Engineering: Hardware Design in this course; some chapters will be covered in the succeeding course, Computer Organization. There will be some class handouts on materials not covered in the text. Detailed reading assignments are shown in the weekly schedule.

We cannot stress strongly enough that you are expected to have read assigned portions of the texts before class, as some of the material will not be covered in class unless questions arise. You are responsible for everything in the assigned readings whether covered in class or not, as well as lecture material whether covered in the readings or not.
questions are always welcome.

11. Getting Help

There are many people on campus who are both able and willing to help you when you have trouble understanding something. Resources for this course include your lecture instructor and the lab assistants.

11.1. Instructors

Your lecture instructor has an office in the same building as the computer labs. Instructors have regularly scheduled office hours, which are times when they are committed to being available to students for any questions or problems that they may have. No matter how busy someone appears to be, their office hours are there for you and you are welcome. Most faculty are also available by prior appointment if you can’t come during an office hour. We ask that you be on time for your appointments and you notify the person if you can’t come as planned.

11.2. Teaching Assistants

Unlike earlier courses, there are no teaching assistants available to support this course.

11.3. Lab Assistants

A lab assistant is on duty whenever the hardware lab is open. The lab assistant monitors the lab and can provide assistance for hardware problems.

12. General Conduct

Student conduct will be evaluated in accordance with the Policy on Academic Dishonesty and Code of Conduct for Computer Use found in RIT’s Educational Policies and Procedures Manual. You should also have two related documents, the Code of Conduct for the Use of Department of Computer Science Facilities and the Policy on the Use of Computer Games on Department of Computer Science Facilities, which are refinements of the general Institute policies.

13. Policy on W and I Grades

RIT policy allows you to withdraw from a course with a grade of W on or before the Friday of the sixth week in the quarter. After this date, your instructor cannot give you a W, but must assign you a grade based on your work.

This course has been designed so that you can complete all the work in one quarter. Thus incomplete grades will be given only in the most exceptional circumstances, and then only by prior arrangement with your lecture instructor. Your lecture instructor has the final say in this matter.

14. Disclaimer

Every effort has been made to provide accurate information in this document. We reserve the right, however, to make changes to any facet of the course should circumstances warrant it. Any such changes will be announced both in lecture and via electronic mail.