Comp 255Q - 1M: Principles of Computer Organization
Spring 2016
Course Syllabus

Instructor: Brian J. Shelburne
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Class Meetings: Lecture MWF 10:20 - 11:20 Rm 261 BDK Science
Lab Tuesday 9:30 - 11:00 Rm 261 BDK Science
Office Hours: See course web-site.

Texts: The Elements of Computing Systems: Building a Modern Computer from First Principles; N. Nisan & S. Schocken

Course Objectives: This course will study computer organization looking at digital logic, data representation, computer arithmetic, instruction set architecture, data-path and control, memory organization, I/O, assembly languages and networks. In addition we will build a virtual computer from basic gates up to a working architecture that can be programmed in machine code. The will be covered in the first five chapter chapters of Nisan & Schocken.

A good way to learn computer architecture is to do assembly language programming (assembly language is mnemonic machine code). Since computer architectures vary we will learn to write and execute assembly language programs for a number of different architectures: the PDP-8 which with its simple and clean architecture provides a good introduction to computer organization, a RISC-like architecture called the ARC (A RISC Computer), and the Intel 80x86 the forerunner of today’s Pentium & Core type architectures. We will use simulators to execute PDP-8 and ARC programs; Intel 80x86 programs will be run directly on the classroom PC’s.

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tr>
<td>Three In-Class Tests each 100 pts</td>
<td>300pts</td>
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<tr>
<td>Programming and Written Assignments</td>
<td>300pts</td>
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<tr>
<td>Comprehensive Final</td>
<td>200pts</td>
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<td>800pts</td>
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The course will be graded on the total number of points out of a possible 800 with the course letter grade determined by the following percentages: 

- >= 90% is an A
- >= 80 % is a B
- >= 70% is a C
- >= 60% is a D
- < 60% results in an F

Pluses and minuses are assigned using a 3% - 4% - 3% scale (i.e. 80.0+ is a B-, 83.0+ is a B and 87.0+ is a B+)

Tests are scheduled during the 90 minute Tuesday lab periods. Tests will consist of a closed book part and an open book on-line programming part.

Programming assignments which do not execute will not be graded.

Academic Integrity

Academic dishonesty of any kind on programming or written assignments or on an exam is not acceptable. This includes, but is not limited to, copying code in whole or part (even if the code is subsequently altered), plagiarism, and/or unauthorized collaboration with another individual on assignments or tests. The University Honor Code will be strictly followed.

All programming and written assignments must carry the following pledge which must be signed by the student.
I affirm that my work upholds the highest standards of honesty and academic integrity at Wittenberg and that I have neither given nor received unauthorized assistance.

Work on graded programming assignments must be your own. Although you may freely ask questions about the syntax of a computer language or about what an assignment calls for, you should not ask for help on the specifics of how it’s done. Note that distinction between what to do vs. how to do it. Proper judgment is called for but I trust all parties to make responsible decisions.

All legitimate help obtained from another student must be documented as part of the header comment block (see below)

It is your responsibility to ask about the propriety of any specific situations for which you are not sure. A good rule of thumb is, if you have any doubts about something, don’t do it. Seek clarification first. Ask before you begin doing anything that may be inappropriate.

As an added safeguard be sure to properly dispose of all program listings and notes from an assignment. Cases of academic dishonesty will result in a grade of 0 for all parties involved and will be reported to the Honor Council. A second allegation of a violation of academic integrity will automatically result in an Honor Board hearing. See your Student Handbook for additional details regarding academic dishonesty.

Header Comment Block:

All programming assignments must begin with the following header comment block which lists your name, the date, the file name of the program, a short description of what the program does, a list of people (if any) legitimate help was obtained from and the signed pledge.

```
# Name:
# Date:
# File:
#
# Desc:
#
# I Received Help From:
#
# I affirm that my work upholds the highest standards of honesty and academic integrity at Wittenberg and that I have neither given nor received unauthorized assistance.
#
```

All assignments must be handed by class time on the day they are due. A 10% per day penalty will be assessed against the grade for each day late (week-ends count as one day). Assignments handed in more than three days late in general will not be accepted. Exceptions may be made if I am contacted beforehand.

Important: Since collaboration is allowed and indeed is encouraged for in-class labs, the header comment block for labs need not list whom help was received from and should not carry the pledge.

Class and Lab Attendance: Since the most of the material you are responsible for is covered in class and labs, students are expected to attend all classes and labs. To encourage this, if no more than three lecture classes and no labs are missed, 20 extra points as extra credit will be added to the total number of points. Excused absences are allowed only in the case of illness, family emergency, or required attendance at a university-sanctioned event.
(athletic or academic) provided I’m contacted ahead of time.

**One-Time Test Retake:** If you do poorly on one test (< 70%) you can redo the *same* test as a take home. The test grade earned will be the *average* of the in-class test and the take home retake or 80% whichever is smaller. For example if you make a 50% on the in class test and a 100% on the take home retake, your grade for that test will be 75%.

1. You may only do this only once!
2. You are not allowed to consult with anyone on the retake. This especially applies to other class members and math workshop tutors. You may make free use of your text book, class notes, class handouts, course website materials and/or homework assignments but no other sources. Think serious about Wittenberg’s Code of Academic Integrity!
3. You will have one week to complete the take home test (but you may hand it in early). Do not need to hand in the original in-class test. I strongly suggest not looking at the old test but to treat the retake as a completely new test.
4. Since time is not a factor for the take-home retake, grading will be stricter. Therefore it is strongly suggested that you *do not copy correct answers* from the in-class test to your take home retake as grading will be stricter. Redo each question.
5. If you elect to retake a test you must contact me within 24 hours of the time a return the test so that I can give you a clean copy for the retake.
6. Obviously this offer is not valid for the final exam.

**Classroom Behavior:** Over the years a couple or three things began happening in class that really bug me! So I’m going to request that you do the following

1. Please - Switch off your cell phones and no texting in class!
2. No surfing the web!
3. Please - don't get up in the middle of class to visit the water fountain or the rest room - unless it is ABSOLUTELY NECESSARY

Thank you!

**Course Web Site (including Weekly Syllabus):** Go to

http://www4.wittenberg.edu/academics/mathcomp/shelburne/Comp255/

or go to the Computer Science Program: Department of Mathematics and Computer Science web site

http://www4.wittenberg.edu/academics/mathcomp/computer_science/

and click on the Resources: Course Web Sites link on the left panel to find links to course home pages for all Currently Offered Courses – Fall 2014.

**Finally:** Your learning in this course is important to me. I invite you to talk with me about ways to ensure your full participation in this course. Wittenberg University is committed to providing reasonable accommodations for eligible students with disabilities. If you are eligible for course accommodations due to a disability, please provide me with your self-identification letter from the Office of Academic Services (206 Recitation Hall), so that we may discuss your learning needs. Early identification at the start of the term is required to ensure timely provision of services. If you need to contact the Office of Academic Services, please contact Roberta Perry at 937-327-7891 or rperry@wittenberg.edu.