1 Instructor[s]

<table>
<thead>
<tr>
<th>Lecturer</th>
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<tbody>
<tr>
<td>Jason Bacon</td>
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<tr>
<td><a href="mailto:bacon@uwm.edu">bacon@uwm.edu</a></td>
</tr>
<tr>
<td>EMS 942, 229-4557</td>
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<tr>
<td>Office: TR 10:00 - 11:00, 3:00 - ??</td>
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You may also contact instructors via email to schedule an appointment outside regular office hours.

2 Preparation and Thoroughness

1. Attend all classes.
2. Take thorough notes. (Write down EVERYTHING that’s discussed!)
3. Study your notes carefully before trying to apply the knowledge.
4. Read the appropriate material in your textbook. Read the book thoroughly, but as an overview; don’t try to absorb every detail. The details come from practice.
5. Do all of your homework individually.
6. If all of the above fail, ask for help well before deadlines.

Quizzes and exams are based on what is covered in class. This may include topics and/or details that are not in the book or online notes. Being present for every class and taking detailed notes is the only way to ensure that you’ll be prepared for exams.

If you have to miss a class (this should only happen if there is a true emergency), get a copy of the lecture notes from a classmate, review them, and discuss them with your instructor.

3 Grading

Grading is done on a flat scale. Bell curves are statistically nonsense for a sample size of less than several hundred students, and they make each student’s grade dependent on the average ability of the students in the class they happened to join.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90 - 100</td>
</tr>
<tr>
<td>A-</td>
<td>85 - 89</td>
</tr>
<tr>
<td>B+</td>
<td>82 - 84</td>
</tr>
<tr>
<td>B</td>
<td>78 - 81</td>
</tr>
<tr>
<td>B-</td>
<td>75 - 77</td>
</tr>
<tr>
<td>C+</td>
<td>72 - 74</td>
</tr>
<tr>
<td>C</td>
<td>68 - 71</td>
</tr>
<tr>
<td>C-</td>
<td>65 - 67</td>
</tr>
<tr>
<td>D+</td>
<td>62 - 64</td>
</tr>
<tr>
<td>D</td>
<td>58 - 61</td>
</tr>
<tr>
<td>D-</td>
<td>55 - 57</td>
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</table>

Homework is about 25% of the final grade, and exams/quizzes are about 75%.

There will be ten 10-point quizzes during the semester, and three 100-point exams, so plan for an exam or quiz every week. Some weeks may require a double quiz to remain on schedule.
Exams and quizzes will cover everything discussed in lecture through the previous week (previous lecture in summer sessions), and will test in-depth knowledge of concepts covered in programming assignments. All CS courses by nature build on material from previous weeks. Hence, all quizzes and exams throughout the semester should be regarded as comprehensive.

All programs will be graded on how they perform on miller.cs.uwm.edu. I advise against doing programming on any other computer. If you do programming on your own computer, it is your responsibility to retest the program on miller or weise before turning it in.

Grades are posted on D2L throughout the semester. Be sure to review them periodically and report any apparent discrepancies. Challenges to grades posted on D2L must be raised within two weeks after the individual grade item was posted.

4 Late/Makeup Policy

There are no makeup exams or quizzes, except in the case of a documented emergency. You will need a note from your doctor, employer, or other authority, with contact information, to verify the reason for your absence. In rare circumstances, a makeup exam may be given without documentation. The exam must be taken within 24 hours of the scheduled time, and the score will be reduced by 25%. This exception is only available for exams, not quizzes.

Late assignments are not accepted. You will be given ample time to complete assignments (assuming you have allocated sufficient time for the course), and should aim to complete them well before the due date in case you run into trouble. Extensions are not given due to system outages unless the systems were down for a significant portion of the assignment period.

5 Computer Accounts

Students must use their class account on miller/weise for all programming assignments. The program submittal tool will not work from other accounts.

Privacy notes: CS department computers are public property. Instructors and other staff members can access your files on them. Do not store any private information on these computers. They are to be used only for academic purposes.

6 Communication

All students must check their PantherLINK email and email in their class account on miller on a regular basis. (The latter can be read using pine, or forwarded to another account.) Program examples and other materials will be made available in /home/CS/cs458/pub.

7 Required Course Materials


8 Course Overview

The aim of CS 458 is to develop an understanding of computer hardware design. Computer architecture lies on the boundary between computer science and electrical engineering, and at the heart
of computer engineering. This course is intended to serve CE, CS and EE students by exploring the hardware side of the CS/EE boundary in detail.

8.1 Prerequisites

Junior standing; CompSci 354(P); CompSci 315(P) or ElecEng 367(P). Consent required to audit.

8.2 Topics Covered (Order may vary)

1. Digital Logic Review
2. Register Transfer and Microoperations
3. Basic Computer Organization and Design
4. Programming the Basic Computer
5. Microprogrammed Control (Optional)
6. CPU Design
7. Pipeline and Vector Processing
8. Computer Arithmetic
9. Input-Output Organization
10. Memory Organization
11. Multiprocessors

8.3 Requirements for Graduate Students

The college requires that graduate students taking U/G courses do additional work beyond the basic course requirements.

30% of the course grade for graduate students will come from a project to design a new processor. The project will be due on the last day of classes.

Each graduate student should write a short proposal for their processor design project, and make an appointment to discuss it with the instructor as early in the semester as possible.

8.4 Exam Schedule

There will be an exam or quiz almost every week throughout the semester.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date/Time</th>
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<tbody>
<tr>
<td>Exam1</td>
<td>Thu Oct 7 in lecture</td>
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<tr>
<td>Exam2</td>
<td>Tue Nov 9 in lecture</td>
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<tr>
<td>Exam3</td>
<td>Wed Dec 22 10:00 - 12:00</td>
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9 Academic Conduct

Note: Any questions regarding course policies should be directed to the lecturer, not to the TAs.
I teach with the assumption that every student is eager to learn and understand. I can’t think of any other reason to invest the time, effort and money it takes to complete any college course.
Discussing subject matter with other students for the purpose of understanding is helpful, and encouraged. However, all homework assignments are to be done individually. If a friend asks for help, help them understand by explaining concepts and providing hints, but do not give away answers. No other student should ever see your class work. Doing so denies them the opportunity to learn, and cheats other students who have done their own work.
Cheating on exams or plagiarism are violations of the academic honor code and carry severe sanctions, including a failing grade and/or expulsion from the University. However, I would hope that fear of disciplinary action is not the major motivation for honest, hard work.
A detailed description of Student Academic Disciplinary Procedures may be found in Regents Policy Statements, UWS Chapter 14 and UWM Faculty Document #1686.

10 Students with Disabilities

If you need special accommodations in order to meet any of the requirements of this course, please contact the instructor as soon as possible.

11 Accommodation for Religious Observances

Students will be allowed to reschedule examinations or other work around religious observance, provided that the instructor is given reasonable advanced notice.

12 Military Duty

Reasonable accommodations will be made for students called for active military service during the semester, such that the student may complete the course work at an earlier or later date.

13 Incompletes

A notation of ”incomplete” may be given in lieu of a final grade to student who has carried a subject successfully until the end of a semester but who because of illness or other unusual and substantiated cause beyond the student’s control, has been unable to take or complete the final examination or to complete some limited amount of term work.

14 Complaint Procedures

Students may direct complaints to the instructor or the chairman of the Computer Science Program. If the complaint regards an alleged violation a specific university policy, it may be directed to the chairman of the Computer Science Program or to the appropriate university office responsible for enforcing the policy.
15 Discriminatory Conduct

Discriminatory conduct (such as sexual harassment) will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the careers, educational experience, and well-being of students, faculty, and staff.

16 Grade Appeal Procedures

A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the instructor. Such an appeal shall follow the procedures adopted by the College of Engineering and Applied Science (CEAS). These procedures are available in writing from the chairman of the Computer Science Program or the Dean of CEAS.

17 Additional Information

More on UWM policies can be found at http://www.uwm.edu/Dept/SecU/SyllabusLinks.pdf.