1 Prerequisite

Math Placement Level 40; grade of C or better in CS 250.

2 Instructor Info

Instructor: Christine Cheng, EMS 1011, 414.229.5170, ccheng@uwm.edu.
Office Hours: MW 9:30-10:30 AM or by appointment.

3 Discussion Sections

You must be enrolled in one of these discussion sections:

- DIS 601 1:00 PM-2:45 PM W PHY 152 TA: Ritankar Mandal
- DIS 602 3:00 PM-4:45 PM W HLT G90 TA: John Ziman
- DIS 603 12:00 PM-1:45 PM R CHM 197 TA: Ritankar Mandal

4 Textbook


[ Instructions for getting a copy of the main textbook: Sign in or create an account at learn.zybooks.com. Enter the code UWMCOMPSCI317ChengFall2019. Subscribe. The cost to acquire the textbook is $58. ]

5 Objectives

CS 317 is one of the foundational classes in your CS curriculum. It is a direct or indirect prerequisite to courses in Algorithms, Theory of Computation, Compilers, Artificial Intelligence, Data Security, Computer Graphics, Operating Systems, etc. The class has three major themes:

1. *Mathematical Reasoning.* You will learn logic and proof techniques so you can show that a mathematical statement is true.

2. *Discrete Structures.* You will learn important mathematical structures – used to represent objects and their relationships – in Computer Science. These discrete structures include sets, functions and relations, graphs, etc.

3. *Counting and Probability.* Yes, you will learn how to count! Once you know how, you will be able to compute the probabilities of many events. Both skills are important for designing algorithms.
6 An Outline

• LOGIC
  Propositions and logical operations, Evaluating compound propositions, Conditional statements, Logical equivalence, Laws of propositional logic, Predicates and quantifiers, Quantified statements, De Morgan’s law for quantified statements, Nested quantifiers, More nested quantified statements, Logical reasoning, Rules of inference with propositions, Rules of inference with quantifiers.

• SETS and FUNCTIONS
  Sets and subsets, Set of sets, Cartesian products, Union and intersection, More set operations, Set identities. Definition of functions, Properties of functions, The inverse of a function, Composition of functions.

• PROOFS

• BASIC COUNTING

• DISCRETE PROBABILITY
  Probability of an event, Unions and complements of events, Conditional probability and independence, Bayes’ theorem, Random variables, Expectation of a random variable, Linearity of expectations, Bernoulli trials and the binomial distribution.

• GRAPHS
  Introduction to graphs, Graph representations, Graph isomorphism, Walks, trails, circuits, paths and cycles, Graph connectivity, Euler circuits and trails.

7 Canvas page of CS 317

Check the Canvas page of CS 317 regularly. (To login to Canvas, go to www.uwm.edu/canvas.) All material for the class – handouts, homework assignments, sample exams, etc. – will be posted on the page. After every lecture, I will also record a brief summary of the topics covered in class. All your grades will be found on the appropriate section of the Canvas page.

8 Grading

The grade for the course will be computed as follows:

4% Participation Activities
  Every week, participation activities from your textbook will be assigned on a Monday and due on Friday.

22% Homeworks
  A homework assignment consisting of about five problems will be assigned each week. It will be due the following week in class. No late homeworks will be accepted. But the lowest two homework scores will be dropped when the final homework average is computed.

It is best that you do the homeworks early (i.e., not just the night before or the morning of the submission date) and on your own. If you’re stuck, email the instructor or your TA for clarification or hints. Most of your learning occurs when you answer the problems on your own.
If you choose to collaborate with your peers, we will not stop you. If you choose to consult other books, websites, etc., we will not stop you. However, you must (1) write up the solutions in your own words and (2) cite your collaborators or the books and websites you consulted. In other words, do not plagiarize by submitting other people's work as your own. There will be a penalty if this policy is violated.

4% Quizzes during Discussion Sections
Your TAs will discuss solutions to some of the previous week’s homework problems and prepare you for the new problem set. During most sections, there will also be a short quiz at the end of class on the material just covered – so pay attention and ask questions! Missed quizzes will be recorded as a zero unless you have a valid excuse. Two of your lowest quiz scores will be dropped when the final quiz average is computed.

45% Exams
Two in-class exams will be held during the semester, each worth 22.5% of the grade. The first one covers the first third of the material, the second exam covers the second third of the material.

25% Final Exam
The final exam is on December 20, 2018 (Thursday) from 10 am to noon in the same room. The coverage is cumulative.

The tentative grading scale for this class is given by the table below.

<table>
<thead>
<tr>
<th>Class Grade</th>
<th>90 – 100</th>
<th>86.66 – 89.99</th>
<th>83.33 – 86.65</th>
<th>80 – 83.32</th>
<th>76.66 – 79.99</th>
<th>73.33 – 76.65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Grade</td>
<td>A</td>
<td>A –</td>
<td>B+</td>
<td>B</td>
<td>B–</td>
<td>C+</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class Grade</th>
<th>70 – 73.32</th>
<th>65 – 69.99</th>
<th>60 – 64.99</th>
<th>55 – 59.99</th>
<th>50 – 54.99</th>
<th>&lt; 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Grade</td>
<td>C</td>
<td>C –</td>
<td>D+</td>
<td>D</td>
<td>D –</td>
<td>F</td>
</tr>
</tbody>
</table>

Other than the quizzes, attendance is not checked. However, active participation in class will be taken into account when the final score is in between two letter grades (e.g., between a B and a B-, etc.).

9 Expected Workload
CS 317 is a 3-credit class. Although the time spent in this class varies by student and by week, I expect the average workload to be as follows:

- In class and discussion section: 3.4 hours × 14 weeks = 46.6 hours
- Reviewing material and working on homework problems: 6 hours × 12 homeworks = 72 hours
- Preparing for two in-class exams: 6 hours × 2 = 12 hours
- Reviewing and taking the final exam: 10 hours
Total time spent on this class: 145.6 hours

10 Academic Misconduct
UW-Milwaukee defines academic misconduct as “an act in which a student seeks to claim credit for the work or efforts of another without authorization or citation, uses unauthorized materials or fabricated data in any academic exercise, forges or falsifies academic documents or records, intentionally impedes or damages the academic work of others, engages in conduct aimed at making false representation of a student’s academic performance, or assists other students in any of these acts.”

A more detailed description of academic misconduct and the disciplinary procedures that accompany it can be found on this page: https://uwm.edu/academicaffairs/facultystaff/policies/academic-misconduct/
11 Accommodations for Students with Disabilities

UW-Milwaukee supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility.

If you need instructional accommodations, you are expected to inform me within the first three weeks of the semester, or as soon as possible after a disability has been incurred or recognized. I will work either directly with you or in coordination with the Accessibility Resource Center to identify and provide reasonable instructional accommodations.

Disability information, including instructional accommodations as part of a student’s educational record, is confidential and protected under FERPA.

12 Accommodation of Religious Observances

It is the policy of the University of Wisconsin Board of Regents that students’ sincerely held religious beliefs shall be reasonably accommodated with respect to all examinations and other academic requirements. Please inform me within the first three weeks of the semester of the specific dates on which there is a scheduling conflict between a religious holiday you wish to observe and a potential homework due date or exam. I will work with you on how to make up the homework and/or exam.

Student notification of instructors and requests for relief under the conditions described above shall be kept confidential.

13 Emergencies Prior to Exams

In case of an emergency, contact the instructor at the earliest possible opportunity via e-mail or phone. No arrangements will be made for missed exams unless these rules are followed, and an acceptable evidence of legitimate emergency is submitted.