Sonoma State University  
School of Science and Technology  
Computer Science Department  
CS 242, Discrete Structures for CS, Spring 2013

Instructor: Tia Watts  
Office Location: Darwin 116 E  
Telephone: (707) 664-2807  
Email: tia.watts@sonoma.edu  
Office Hours: Monday 1:00 – 2:00 pm; Tuesday noon – 1:00 pm  
Class Days/Time: Lecture: Monday & Wednesday 2:00 pm – 3:50 pm  
Classroom: Lecture: Darwin 37  
Prerequisites: CS 115 and Math 161 with a C- or better (or consent of instructor) is required. CS 215 is a co-requisite.  
GE/SSU Studies Category: None

Course Description

Lecture, 4 hours. Coverage of fundamental mathematical concepts blended with their applications in computer science. Topics to include sets, functions and relations, Boolean algebra, normal forms, Karnaugh maps and other minimization techniques, predicate logic, formal and informal proof techniques, relational algebra, basic counting techniques, recurrence relations, introduction to graph theory with applications to computer science.  
Prerequisite: CS 115, or consent of instructor.

Prerequisite: CS 115 (CS 150) and Math 161 or instructor consent. CS 215 is a co-requisite. Basic programming skills are required. Students lacking a background in C/C++ will need to familiarize themselves with the language within the first two weeks of the course. Students who have not acquired a strong foundation in the fundamentals of procedural programming (i.e., earned a grade below a C- in CS 115) must retake CS 115 or its equivalent before taking this course.

Course Goals and Student Learning Objectives

Learning Outcomes (LO)

Upon successful completion of this course, the student will be familiar with the following concepts:

- Axioms for the Real Numbers and the Positive Integers
- Exponential and Logarithmic Functions
- Logic and Proofs
- Boolean Algebra and Karnaugh Maps
- Basic Structures: Sets, Functions, Sequences and Sums
- The Fundamentals: Algorithms, the Integers, and Matrices
- Induction and Recursion
- Counting
- Discrete Probability
- Graphs
- Trees
- Modeling Computation

and will be able to incorporate them into program design and implementation.

**Required Texts/Readings**

**Textbook** (Can be purchased at the SSU Bookstore, Northlight Books or on-line)
Discrete Mathematics and Its Applications (6th ed.) by Kenneth Rosen

**Other Readings**

Other readings and materials will be posted on the course website:
http://watts.cs.sonoma.edu/cs242s13

**Other equipment / material requirements**

Small stapler.
Paper. (For notes, homework, and printouts.)
Binder or folder for saving notes, homework and handouts.
A flash drive may also be useful.

**Recommended Resources**

**Textbooks**

You should have a C++ reference; your CS 215 text or one of the following will work:
- Practical C++ Programming (2nd Edition) by Steve Qualline
- Starting Out with C++: Early Objects (7th Edition) by Tony Gaddis, Judy Walters, & Godfrey Muganda
- Problem Solving, Abstraction, and Design using C++ (6th Edition) by Frank L. Friedman and Elliot B. Koffman
- Absolute C++ (4th Edition) by Walter Savitch
- Problem Solving with C++ (6th Edition) by Walter J. Savitch
- The C++ Language (Special Edition) by Bjarne Stroustrup

**Classroom Protocol**

**Lecture**

The proposed outline of the topics to be covered appears in the course schedule. Students are expected to attend all lectures and to read the relevant sections of the text prior to lecture.
Students are responsible for making up the missed work if they are absent. *All electronic devices must be turned off during lecture.*

**Labs**

The lab meetings provide an opportunity for students in the class to interact with each other and with the instructor, to get immediate solutions to coding problems, and to get advice on the process of programming. While we do not have an official lab for this class, we will meet in the lab at times.

**Homework and Programming Exercises**

Several homework assignments will be given during the semester. Some of these may require writing C++ programs. Students will be required to submit a key solution for several problems during the semester.

**Midterms and Final Exam**

The examinations are based on the assumption that each student is responsible for knowing the material covered in class (lecture and lab) and also material covered in relevant sections of the course text. All exams are closed book; however, one 8½ by 11 *handwritten* sheet of notes (front and back) will be allowed. The final exam will be comprehensive. There may be one or more unannounced quizzes given during the semester. Exams cannot be made up unless you have made arrangements with the instructor prior to the date of the exam. Quizzes cannot be made up.

**Dropping and Adding**

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops are available at [http://www.sonoma.edu/ar/registration/addclasses.shtml](http://www.sonoma.edu/ar/registration/addclasses.shtml). Students should be aware of the current deadlines and penalties for adding and dropping classes.

**Course Requirements**

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<tbody>
<tr>
<td>Homework and Programming Exercises</td>
<td>40%</td>
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<tr>
<td>Programming Projects</td>
<td>10%</td>
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<tr>
<td>Exams and Quizzes</td>
<td>50%</td>
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**Grading Policy**

Grading Scale:

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<tr>
<th>100 . . . 93 . . . 90 . . . 87 . . . 83 . . . 80 . . . 77 . . . 73 . . . 70 . . . 67 . . . 63 . . . 60 . . . 0</th>
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Note: You must separately earn a passing grade on the programming projects and the exams in order to pass the course. CS Majors must take this course for a letter grade. University guidelines regarding the grade of Incomplete will be strictly adhered to. Incomplete grades will only be given for circumstances beyond a student’s control; inability to keep up with the work due to an excessive course load, for example, is insufficient to warrant an Incomplete. The University also requires that, to be a candidate for an Incomplete grade, the student must currently be doing C (or better) work in the course.
University Policies

Academic integrity

Students should know that the University’s Cheating and Plagiarism policy is available at http://www.sonoma.edu/UAffairs/policies/cheating_plagiarism.htm. Your own commitment to learning, as evidenced by your enrollment at Sonoma State University and the University’s policy, require you to be honest in all your academic course work.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified.

Class Attendance

Class attendance is an important part of a student’s university experience. However, there are legitimate reasons for missing class, such as illness, accidents, death of a close family member, jury duty, religious observance or representing the University at officially approved University activities. Students should be cautioned that even though absences may be for legitimate reasons, such absences can impair performance and result in a lower grade. Faculty have primary authority for setting class attendance policy according to discipline standards. There are class activities, such as labs, assignments and discussions that cannot reasonably be made up.

When students are absent from classes, it is their responsibility to provide the instructor with due notice and documentation when possible, and to inform the instructor of the reason for absence. Students are also responsible for requesting, in a timely manner, to make up missed assignments and class work if these are reasonably able to be provided.

Instructors are responsible for providing a clear statement on the course outline about the impact of attendance on students’ grades. For students who have missed classes for legitimate reasons, instructors are also responsible for providing an opportunity to complete make-up work or grade substitution, if the instructor determines that such is reasonably able to be provided.

Campus Policy on Disability Access for Students (Optional/suggested statement)

"If you are a student with a disability and you think you may require accommodations, please register with the campus office of Disability Services for Students (DSS), located in Salazar Hall - Room 1049, Phone: (707) 664-2677, TTY/TDD: (707) 664-2958. DSS will provide you with written confirmation of your verified disability and authorize recommended accommodations. This authorization must be presented to the instructor before any accommodations can be made.”. The policy can be found at http://www.sonoma.edu/uaaffairs/policies/disabilitypolicy.htm

Emergency Evacuation (Optional/suggested statement)

If you are a student with a disability and you think you may require assistance evacuating a building in the event of a disaster, you should inform your instructor about the type of assistance you may require. You and your instructor should discuss your specific needs and the type of precautions that should be made in advance of such an event (i.e. assigning a buddy to guide you down the stairway). We encourage you to take advantage of these preventative measures as soon as possible and contact the Disability Services for Students office if other classroom accommodations are needed.
Departmental Policies

Academic integrity

You are encouraged to discuss course material with other students. Don't be shy about consulting with anyone, but please understand that you, and only you, bear the responsibility for solving the problems associated with producing a successful project or solving a lab assignment. Please read the CS Department policy on plagiarism and keep the following in mind.

All material turned in for credit must be your own work (team assignments are an exception to this). You may discuss ideas and approaches but you should work out all details and write up all solutions on your own. Copying part or all of another student's assignment, with or without the student's knowledge, is prohibited. Similarly, copying old or published solutions is prohibited.

Receive help with care. Avoid working too closely with another student. Otherwise, you can unwittingly become dependent on that student's help and fool yourself into thinking that you understand things better than you really do. Always attempt to do as much as you can on your own. Then, after you do seek help, be sure to work through similar problems on your own. Also, don't forget other sources of programming help such as the your textbook, http://www.cplusplus.com, the debugger, and CodeWarrior and Visual C++ documentation.

Give help with care. Don't help too much. When you understand something, you may be tempted to show someone the complete solution. However, if you do this, you will rob them of the learning experience of reaching the solution on their own. Try giving a hint that will help them get "unstuck" Although you are allowed to help other students, you are never under any obligation to do so.

Violations of these restrictions carry severe penalties. Remember that you are ultimately (i.e., during an exam or quiz) responsible for understanding the material.

Incomplete grades

It is the policy of the Computer Science Department that a grade of Incomplete (I) shall be assigned only when the instructor concludes that a clearly identifiable portion of course requirements cannot be met within the academic term for unforeseen, but fully justified, reasons; and that there is still a possibility of earning credit.

An incomplete shall NOT be assigned when:
• the request is made before the thirteenth week of instruction
• it is necessary for the student to attend a major portion of the class when it is next offered (i.e., if a student needs to repeat a class, an incomplete should not be given)
• the student is not passing the course with a C- or better at the time of the request
• the student is unable to keep up with course work due to an excessive course load

The condition for removal of the Incomplete shall be entered on the "Request for Incomplete" form and a copy filed in the department office prior to listing an "I" on the Grade Roster. The student must retain the grades for any coursework that was due prior to the incomplete being assigned. The incomplete cannot be removed on the basis of work taken at another institution nor by re-enrolling in the course.
An incomplete must be made up within one calendar year immediately following the end of the term in which it was assigned. This limitation prevails whether or not the student maintains continuous enrollment. Failure to complete the assigned work will result in an incomplete "I" being converted to a "NC" which will affect the grade point average.

SSU Writing Center

The SSU Writing Center is located in Schulz 1103. The Writing Center helps SSU students, faculty, and staff members (as well as members of the wider community) become better writers and produce better written documents. The Writing Center website is located at http://www.sonoma.edu/programs/writingcenter/default.html.

Other Useful Links

Sonoma State Department of Computer Science
http://www.cs.sonoma.edu/

Sonoma State University Academic Calendar
http://sonoma.edu/ar/calendars/index.shtml

Sonoma State University Final Exams Schedule
http://sonoma.edu/university/classsched-finals_sched.pdf