# Sonoma State University
# School of Science and Technology
# Computer Science Department
# CS 215, Programming II, Spring 2017

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| **Instructor:** | Dr. Tia Watts |
| **Office Location:** | Darwin 116 E |
| **Telephone:** | (707) 664-2807 |
| **Email:** | tia.watts@sonoma.edu |
| **Office Hours:** | Monday 4 – 5 pm; Tuesday noon – 1 pm; Thursday 2 – 3 pm |
| **Class Days/Time:** | Lecture: Monday & Wednesday 9:20 am – 10:35 am<br>Labs: Tuesday 9:00 am – 11:50 am  & Tuesday 2:00 pm – 4:50 pm |
| **Classroom:** | Lecture : Darwin 37; Lab : Stevenson 1034 |
| **Prerequisites:** | CS 115 with a C- or better (or consent of instructor) is required. |
| **GE/SSU Studies Category:** | None |

## Course Description

Lecture, 3 hours; laboratory, 3 hours. Pointers and dynamic allocation of storage; linked lists; an introduction to the object oriented programming (OOP) paradigm; classes and objects; encapsulation; member variables and member functions; inheritance and polymorphism; scoping; templates; iterators error handling techniques. This course is currently taught using C++.
**Prerequisite:** CS 115 (CS 150) or instructor consent. Basic C/C++ 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 able to:
- Use predefined classes to declare objects in a C++ program.
- Design, implement, and use new C++ classes.
- Employ operator overloading in C++ classes.
- Design, implement, and use template classes.
- Use single and multi-dimensional arrays in a C++ class/program.
- Use static and dynamic arrays in a C++ class/program.
- Develop and implement recursive algorithms
- Design, implement, and use linked lists in a C++ class/program.

- Use container classes from the Standard Template Library (STL).
- Employ inheritance and polymorphism in C++ classes.
- Design and implement applications using a library of application development classes

## Required Texts/Readings

**Textbooks** (Can be purchased at the SSU Bookstore, Northlight Books or on-line)

C++ for Everyone - 2nd Edition
> by Cay S. Horstmann
> ISBN-13: 978-0470927137
> ISBN-10: 0470927135

Getting Started with Visual C++ 6 with an Introduction to MFC
> by P. J. Deitel, T. R. Nieto, and E. T. Strassberger
> ISBN-10: 0130161470
> ISBN-13: 978-0130161475

**Other Readings**

Other readings and materials will be posted on the course website:
> http://watts.cs.sonoma.edu/cs215s17

**Other equipment / material requirements**

Small stapler.
Paper. (You may need to print pages from the course website.)
Binder or folder for saving handouts.
A flash drive.

## Recommended Resources

**Textbooks**

The following is a list of useful C++ and Data Structure references:
- Practical C++ Programming (2nd Edition) by Steve Qualline
- Data Structures and Algorithms Using Python and C++—Chapter 8 by David M. Reed, John Zelle
- 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 and to review the material afterwards. Students are responsible for making up the missed work if they are absent. ***All electronic devices must be turned off during lecture***.

### *Homework*

Homework will be assigned as needed through out the semester. Due dates will be given when the homework is assigned. *Late assignments will not be accepted.*

### *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. The labs for this course are designed to give the student an opportunity to work with a variety of programming concepts. Lab exercises are due at the end of the lab period; an extension (until the beginning of the next lab) will automatically be given *only* to students who have not completed the assignment but have attended the full lab. Labs are graded on a 10 point scale. Some labs will be graded electronically; others will be graded by the instructor after you demonstrate that you have completed the lab. Electronic grades will be assigned based on the following rules:

> 10 points for a perfect submission
> 8 points for a solution that compiles and executes but does not produce perfect output
> 6 points for a solution that compiles but produces a segmentation fault or some other run time error
> 5 points for a solution that does not compile
> 0 points if you are not in lab when attendance is taken, for no submission, or for a late submission.

### *Programming Projects*

Several programming projects will be assigned during the semester. Each project will require that you write one or more C++ program modules. Project due dates and times will be stated on the project assignment handout. Projects must be submitted by the due date and time. Submission times will be based on the UNIX date/time stamp on the file(s). There will be a check point date and a due date for each project. Only projects submitted for the check point may be submitted for grading. No projects will be accepted after the due date and time. There will be an automatic submission and response system for all Linux based projects. Projects are graded on a 50 point scale; projects that do not compile will receive, at most, 15 points for style, format, and documentation. Initial project grading will be done automatically; further grading of style, format, and documentation will be done by your instructor when time is available.

### *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 8 ½ 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 procedures for adding or dropping classes 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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| Homework, Lab Attendance, and Exercises | 20% |
| Programming Projects | 30% |
| Exams and Quizzes | 50% |

## Grading Policy

Grading Scale:
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100...93...90...87...83...80...77...73...70...67...63...60...0
|  A   | A- | B+ | B  | B- | C+ | C  | C- | D+ | D  | D- | F |
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Note: You must separately earn a passing grade (60% or better) on the homework and labs, 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.

## Computer Use Policies

Computer Science Department: http://www.cs.sonoma.edu/computing-facilities/policies.html

SSU IT: http://www.sonoma.edu/it/about/policies/responsible-use.html

CSU: http://calstate.edu/icsuam/documents/Section8000.pdf#page=106

## University Policies

### Academic integrity

Students should know that the University's [Cheating and Plagarism policy is available at http://www.sonoma.edu/UAffairs/policies/cheating_plagiarism.htm](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. In addition, the California State University Standards for Student Conduct can be view at: [https://www.sonoma.edu/studentaffairs/docs/title_V.pdf](https://www.sonoma.edu/studentaffairs/docs/title_V.pdf).

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/uaffairs/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
https://www.sonoma.edu/academics/calendar.html

Sonoma State University Final Exams Schedule
https://www.sonoma.edu/academics/finals.html

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## Homework 1

Please print this page, complete section A and either section B or C and turn it in at the next lecture meeting. Your 4 character Personal Identification Word should consist of 4 non-blank characters; *it should not be easily identified as belonging to you*, and, even thought it is a 4 letter word, keep it clean!

**Section A**

I, _____, have completely read and understand the

course syllabus.

Signature:_____

Date:_____

**Section B**

I, _____, give permission for my grades to be

posted on the course "grades" web page using the 4 character Personal Identification Word:

_____.

Signature:_____

Date:_____

**Section C**

I, _____, DO NOT give permission for my grades to

be posted on the course "grades" web page.

Signature:_____

Date:_____