

# CSE 1342 – Programming Concepts

*Summer 2018 – SMU in Germany*

## Introduction:

Welcome to CSE 1342. This course will introduce the programming constructs provided in the C/C++ programming language for procedural and object oriented programming. We will focus on developing good program development skills, understanding memory management, grasping the differences between Java and C++, and implementing a great deal of C++ code. To get the most out of this class and ultimately to be successful, you must be willing to work hard.

## Instructor:

Mark Fontenot, Ph.D.

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## Course Information:

*Catalog Description:* Introduction to the constructs provided in the C/C++ programming language for procedural and object-oriented programming. Computation, input and output, flow of control, functions, arrays and pointers, linked structures, use of dynamic storage, and implementation of abstract data types. Prerequisites: A grade of C- or better in CSE 1341 or equivalent, a grade of at least a 4 on the AP Computer Science exam or departmental consent.

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## Textbook/Materials:

Textbooks for programming languages are expensive and heavy. Let's use our inner-Google to find the materials we need. I'll be pointing you to a number of tutorials and resources easily and freely found on the web in lieu of asking you to purchase a textbook.

## Software Needed:

The CSE 1342 Virtual Machine Running Ubuntu. More to come about this

## Method of Evaluation:

Learning C++ is about being able to program in C++ in large part. Therefore, we will focus on writing code. There will be homework assignments and quizzes, but no lengthy exams. The majority of your grade will come from programming assignments. The breakdown is as follows:

Quizzes:	30%
Homework Assignments:	20%
Programming Projects:	40%
Participation:	10%

Final grades in the course are determined as follows:

90 - 100 : A	87 - 89 : B+
80 - 86 : B	77 - 79 : C+
70 - 76 : C	67 - 69 : D+
60 - 66 : D	0 - 60 : F

### **Why this course is special:**

This offering of CSE 1342 is unique because of it is offered abroad. There will be a number of things that vie for your attention on this trip. However, I know that you all have the ability to make the right decisions to prioritize academics when needed. Success will require:

- » dedication and time on your part,
- » willingness to work independently,
- » willingness to ask questions when you're lost, and
- » openness to new information at a "fire hose" pace.

### **University Curriculum Learning Outcomes:**

- » Students will demonstrate an understanding of how a symbolic system communicates meaningfully within its language community.
- » Students will analyze and produce meaningful computer code or proofs in symbolic logic.

### **Planned Schedule of Topics:**

#### **Week 1:**

- » Intro to C++ and how it differs from Java
- » C++ basics (console input/output, control structures, includes)
- » Functions and Parameters (pass by value, pass by reference)
- » File Input/Output
- » UML Activity Diagrams

#### **Week 2:**

- » 1D arrays
- » Coding patterns with Arrays
- » Algorithms on Arrays including searching and sorting
- » 2D arrays

#### **Week 3:**

- » How memory works in C++
- » Pointers and relationship to Arrays
- » Memory Diagrams
- » Dynamic Memory Allocation
- » Challenges with Dynamic Memory Allocation (Dangling pointers, memory leaks, etc.)

#### **Week 4:**

- » Linked Structures (Linked Lists)
- » Object Oriented Programming in C++
- » Constructor/Destructors
- » Operator Overloading

## **Week 5:**

- » Object composition
- » Inheritance
- » Polymorphism
- » Project Time!

## **Academic Ethics and Collaboration**

You are expected to create, edit and print your own assignments and take tests without outside assistance. All work is expected to be your own. In particular:

- » You should never look at or review another person's work for any given assignment. This includes looking at papers, solutions, or computer screens where another student's work is displayed.
- » You should never give or receive solutions/answers to any questions or projects or any parts or questions or projects. This includes but is not limited to source code, design documents, homework, etc.
- » In the header comments of your source code, you must reference online sources you consulted to complete the project. This is especially important if you've "quoted" source code.

If you collaborate on any assignment for any reason unless specifically permitted by the instructor, ***you will receive an F in the course*** and may be brought in front of the SMU Honor Council. The presumption should be that collaboration is not permitted and collaboration should only take place subsequent to explicit instructions by the course instructor. It is your responsibility to know and understand the University's Honor Code and the expectations for collaboration in this course. The instructor of this course reserves the right to impose less severe penalties as he sees fit.

## **Disability Accommodations**

Students needing academic accommodations for a disability must first contact Disability Accommodations & Success Strategies (DASS) at 214-768-1470 or [www.smu.edu/alec/dass.asp](http://www.smu.edu/alec/dass.asp) to verify the disability and to establish eligibility for accommodations. They should then schedule an appointment with the professor to make appropriate arrangements.

## **Religious Observance:**

Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

## **Excused Absences for University Extracurricular Activities:**

Students participating in an officially sanctioned, scheduled University extracurricular activity will be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalog)