



# COSC 1337 881: Programming Fundamentals II (Online)

## Course Syllabus: Summer 2021

“Northeast Texas Community College exists to provide personal, dynamic learning experiences empowering students to succeed.”

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	Online Only	Online Only	Online Only	Online Only	Online Only	Online Only

*This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities.*

*Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified.*

### **Catalog Course Description:** (3 Semester Credit Hours)

This course focuses on the object-oriented programming paradigm, emphasizing the definition and use of classes along with fundamentals of object-oriented design. The course includes basic analysis of algorithms, searching and sorting techniques, and an introduction to software engineering processes. Students will apply techniques for testing and debugging software. (This course is included in the Field of Study Curriculum for Computer Science.)

**Prerequisite(s):** COSC 1336

### **Student Learning Outcomes:**

- Identify and explain a programming development lifecycle, including planning, analysis, design, development, and maintenance.
- Demonstrate a basic understanding of object-oriented programming by using structs and classes in software projects.
- Use object-oriented programming techniques to develop executable programs that include elements such as inheritance and polymorphism.
- Document and format code in a consistent manner.
- Apply basic searching and sorting algorithms in software design.

- Apply single- and multi-dimensional arrays in software.
- Use a symbolic debugger to find and fix runtime and logical errors in software.
- Demonstrate a basic understanding of programming methodologies, including object-oriented, structured, and procedural programming.
- Describe the phases of program translation from source code to executable code.

### **Evaluation/Grading Policy:**

Programming Assignments: 25%

Chapter Quizzes: 25%

Midterm Exam: 20%

Final Exam: 20%

Class Participation / Homework / Practice Assignments: 10%

#### *Programming Assignments*

There will be 4-6 main programming assignments during the semester. Each of these program assignments will require hands-on demonstration of lecture concepts. Each student is required to complete their own program code. Helping other students figure out compile and logic errors is acceptable but sharing of files between students is not allowed and will be considered cheating.

#### *Chapter Quizzes*

There will be a quiz over each chapter of the book covered in the course. NOTE: The same textbook is used for Programming Fundamentals I and III so we will NOT be covering the entire book in this course.

#### *Midterm Exam*

The Midterm Exam will consist of two parts. There will be a multiple choice part that will be similar to the chapter quizzes in format. There will also be a programming section in which students will be required to complete a coding activity to demonstrate the ability to implement relevant concepts. One class meeting period will be provided for each part of the exam.

#### *Final Exam*

The Final Exam will consist of two parts. There will be a multiple choice part that will be similar to the chapter quizzes in format. There will also be a programming section in which students will be required to complete a coding activity to demonstrate the ability to implement relevant concepts. One class meeting period will be provided for each part of the exam.

#### *Class Participation / Homework / Practice Assignments*

Example programs will be written during class to illustrate the course lectures. In order to gain experience with writing code, students should write the programs at the same time as the instructor. Activities such as these will count towards class participation. Other course assignments such as review questions may also be covered in class.

## **Required Instructional Materials:**

### *Required Textbook*

Title: C++ Programming: Program Design Including Data Structures, 8<sup>th</sup> edition

Author: Malik, D.S.

**Publisher:** Course Technology / Cengage

### **ISBN Number:**

ISBN-13: 978-1337117562

ISBN-10: 1337117560

## **Optional Instructional Materials:**

C++ Tutorials and YouTube Videos

## **Minimum Technology Requirements:**

You will need to have a dependable personal computer (preferably running Windows) to complete the programming assignments for this course. You will also need a C++ Compiler for your programming assignments. A free Dev C++ compiler is available. I will give you more information on this later. The Orwell Dev C++ is an updated version of the Dev C++ compiler and is the best choice for Windows 8 and later operating systems. For MAC OS users, the Codeblocks IDE is a good alternative. There is also a version of Codeblocks for Windows and Linux.

**Required Computer Literacy Skills:** Basic computer literacy skills and abilities such as typing, copy / paste, file management are required in order to be successful in this course.

## **Course Structure and Overview:**

This course will be structured as a traditional face to face course. Class meetings will consist of lectures and example program activities. Some lecture videos have been recorded from previous semesters and will be available to watch outside of class if needed for additional instruction. The following general course information provides additional detail regarding expectations for the course.

Several elements are essential for your success in this course. You will need to be aware and understand these fully prior to starting the course.

- Assignments are due by the posted due dates so keeping up with the schedule is essential to your success. Your personal schedule must allow you to keep up with the due dates for the readings, assignments, quizzes, and exams.
- You must have access to a working and dependable computer. The course will be held in a classroom with computers but some computer work will be required outside of class time.
- A USB flash drive for file storage and transport as well as headphones for listening to online lectures and other videos is recommended.

- Be prepared and read the appropriate material in the textbook as well as view the related course videos.
- You are expected to turn in completed assignments through Blackboard. Any assignments marked late by the interface may receive up to a 10% late penalty.
- No assignments will be accepted unreasonably late.
- Unless specifically indicated by the instructor, collaboration on assignments among students is not intended or allowed. Assignments are to be performed individually, and any material handed in by a student should represent that student's own work.
- If two students turn in assignments that are identical or very nearly identical, BOTH students will be given a 0 for that assignment. Don't copy another student's work, and don't let someone else copy yours.

### **Communications:**

While most questions can be answered during, before, or after class with the course instructor, some students might need to communicate outside of class. The best method for communication with the instructor is through email [wmcwhorter@ntcc.edu](mailto:wmcwhorter@ntcc.edu) Every effort will be made to respond within 24 hours to student emails. It might take up to 48 hours on weekends. Students can also communicate in person outside of class by visiting the instructor during official office hours.

### **Course Policies:**

#### *Student Conduct in Class Policy*

Any acts of classroom disruption that go beyond the normal rights of students to question and discuss with instructors the educational process relative to subject content will not be tolerated, in accordance with the Academic Code of Conduct described in the Student Handbook.

#### *Attendance*

Students are expected to attend all class meetings. The student is responsible for obtaining material distributed on class days when he/she was absent. This can be done through contacting a classmate who was present or by contacting the instructor during her office hours or other times. Contact your instructor by phone or email should you not be able to attend class. Please see the schedule of classes for the last day to withdraw. Religious Holy Days: please refer to the current Northeast Texas Community College Student Handbook.

#### *Electronic Devices in Class Policy*

Cell phones should be placed on silent or vibrate in the classroom. In emergency situations, if not during lecture, the student may ask permission to step outside the classroom and take their calls. Text messaging during class is a distraction for the completion of work. The first time a student is caught interacting with the phone rather than working, the phone will be taken from them until the end of the period. After the second time, the student will be asked not to bring the cell phone to class. If these

guidelines are not followed, further disciplinary action will be taken which could include reduction in overall grade. Reasonable laptop-size computers may be used in lecture for the purpose of taking notes or completing assignments.

### *Withdrawal*

Students who wish to drop the course must do so by the deadline for student-initiated withdrawal. If circumstances cause you to stop attending classes, then you must still officially withdraw or expect to receive an F in the course. In addition, the instructor may withdraw a student from the course if the student fails to attend three consecutive class meetings.

### **NTCC Academic Honesty/Ethics Statement:**

NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook. Refer to the student handbook for more information on these subjects.

### **ADA Statement:**

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the Request for Accommodations, please refer to the special populations page on the NTCC website.

### **Family Educational Rights and Privacy Act (FERPA):**

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

**Tentative Course Timeline (NOTE: instructor reserves the right to make adjustments to this timeline at any point in the term):** See Attached Pages for Schedule Summary and Detailed Schedule

## TENTATIVE SCHEDULE

Week beginning (Monday)	Topic
(1) June 7	Introduction Review of selected COSC 1336 topics Arrays, Searching, Sorting, Vectors
(2) June 14	Structures (Structs)
(3) June 21	Classes and Data Abstraction Midterm Exam
(4) June 28	Operator Overloading Inheritance and Composition
(5) July 5	More Inheritance, Virtual Functions, Multiple Inheritance Final Exam

# COSC 1337 Detailed Plan and Schedule

## Five Week Summer Session

### Week One

#### **Videos to Watch (Videos Folder)**

Review Topics from COSC 1336 (If Needed)

Searching and Sorting Videos (I put them all in a separate folder)

Lecture: Introduction to C++ Structs

#### **Book Reading**

Related Sorting and Searching Concepts in Chapters 8 and 18

Chapter 9: Records (Structs)

NOTE: This course covers Linear (Sequential) Search, Binary Search, Selection Sort, Bubble Sort, and Insertion Sort. (Other Sorting Algorithms including Merge, Quick, and Heap sorts will be covered in COSC 2336 Programming Fundamentals III.)

#### **Things to Complete**

Program 1 (Mountain Program)

Searching and Sorting Quiz

Strings and Vectors Quiz

### Week Two

#### **Videos to Watch (Videos Folder)**

Activity: Vehicle Program Using Structs Parts 1, 2, 3

Karaoke Program Assignment Introduction

Lecture: Introduction to C++ Classes Part 1

Lecture: Introduction to C++ Classes Part 2

#### **Book Reading**

Chapter 9: Records (structs)

Chapter 10: Classes and Data Abstraction

#### **Things to Complete**

Program 2 (Karaoke Contest using Structs)

Structs Quiz

## **Week Three**

### **Videos to Watch**

Lecture: Operator Overloading in C++  
Cat Program Spring 2019 Videos  
Introduction to UML and How to Install Umbrello  
Cat Class Creation Part 1 (Introduction to Umbrello and Class Diagrams)  
Cat Class Creation Part 2  
Cat Class Operator Overloading Part 1  
Cat Class Operator Overloading Part 2

### **Book Reading**

Chapter 13: Overloading and Templates (focus on overloading...We will cover templates in COSC 2336)

### **Things to Complete**

Midterm Exam Multiple Choice Section  
Midterm Exam Programming Section  
Basic Classes Quiz  
Program 3: Cat Fight Program Phase One (Don't turn this in yet.)  
Program 3: Cat Fight Program Phase Two (Don't turn this in yet.)

## **Week Four**

### **Videos to Watch**

Cat Program Spring 2019 Videos  
Cat Program Composition Part 1  
Cat Program Composition Part 2  
Cat Program Composition Part 3  
Lecture: Naval Battle Example Parts 1, 2, and 3

### **Book Reading**

Chapter 11: Inheritance and Composition  
Chapter 12: Pointers, Classes, Virtual Functions, Abstract Classes, and Lists

### **Things to Complete**

Program 3: Cat Fight Program Phase Two  
Program 3: Cat Fight Program Phase Three (Turn in program after this)  
Operator Overloading Quiz



## **Week Five**

### **Videos to Watch**

Room Program with Inheritance and Polymorphism Videos (I put all of these in one folder)

Activity: Room Program Part 1

Activity: Room Program Part 2

Activity: Room Program Part 3

Activity: Room Program Part 4

### **Things to Complete**

Composition, Inheritance, and Polymorphism Quiz

Program 4: Room Program using Inheritance and Polymorphism (Follow along with the videos)

Final Exam Short Answer Section

Final Exam Programming Section