TERM: Spring, 2018

COURSE: CSCI 112 **CS2: Data Structures** - MTWRF 12-12:50 - WS120

TEXT: ***C++ Programming: Program Design Including Data Structures*** by DS Malik

# PROFESSOR: Dr. Payne

OFFICE: WS134K

OFFICE HOURS: M 1-2:50 TR 1-1:50, W 11– 11:50

TELEPHONE: 248-1906

GRADING STRUCTURE:

The grading in this course is based upon the following weighted percentages:

Programs & problems; Attendance/participation 40%

Quizzes 40%

Final Exam 20%

COURSE OBJECTIVES:

Catalog: Continuation of CSCI 111 with emphasis on algorithm design and analysis, procedural abstraction, data abstraction, and quality programming style. Topics covered include distinction between dynamic and static variables; various implementations of elementary stacks, queues, trees, and lists; comparison of recursive and iterative algorithms, program correctness, and hierarchical design principles. Programming exercises will focus on modularity of design and data abstraction.

Course Learning Objectives

By the end of the semester, the student will be able to:

* + Understand and code C++ programs using dynamic variables
  + Write algorithms for standard ADTs – lists, stacks, queues, trees
  + Identify and code dynamic or array versions of standard ADTs
  + Compare, contrast, and code common sort and search routines
  + Work with the STL
  + Create classes with overloaded operators, friend functions
  + Write a lexical scanner using finite state machines

CSCI 112 helps students to meet these **Student Learning Objectives** for the AS in Computer Science and the BS in Computer Science

Associate Level Students will be able to:

* Write programs in a general purpose programming language
* Develop a software solution to a problem given a technical specification

Baccalaureate Level Students will be able to:

* Write programs in multiple programming languages, and be able to translate concepts between languages.
* Develop the technical specification, and develop, design and test a software solution for a given problem.
* Analyze and measure competing hardware and software components and defend a choice for a given situation.

SPECIAL NOTES:

* No makeup tests or quizzes will be given in this class. If you miss a quiz for some reason, you must take that quiz before it is handed back to the class or it is too late!
* No late programs will be accepted. If your program has a bug, isolate the program section where the error occurred, get output from the rest and turn in the completed portion of the program for partial credit.
* Please be courteous to your classmates. Be on time for class. Be ready for that day's material. Do not play on the computer during lecture.
* FINAL EXAM: The final exam for this course is scheduled for **Monday, May 7, 2018 at 1:00 p.m.** You are expected to be here at that time.
* In coordination with Educational Access Services, reasonable accommodations will be provided for qualified students with disabilities. Please meet with the instructor the first week of class to make arrangements. Educational Access Services can be contacted at 248-1826 or in Houston Hall, Suite 108.
* An undergraduate student should expect to spend on this course a minimum of two hours outside the classroom for every hour in the classroom. More details are available from the faculty member or department head.
* **Tutorial Learning Center=TLC in HH 113** The TLC is a **FREE** academic service for all Colorado Mesa University students. Tutors are available on a walk-in basis for many courses. Do you have a quick question? Do you need homework clarification or feedback on a paper? Are you reviewing for a test? Help is available at the TLC!

At the main campus, come to Houston Hall 113 to meet with one of our friendly peer tutors. We are open on Monday through Thursday from 8am-6pm, and Fridays from 8am-5pm. We are also open Sundays from 1pm-6pm! Tutoring at branch campuses and distance tutoring is also available. Check out the website for schedules and locations at [www.coloradomesa.edu/tutoring](http://www.coloradomesa.edu/tutoring) or call 248-1392 with any questions.

**CS2: Data Structures**

## Schedule of Topics

## Spring, 2018

Tentative Dates Chapter Topics

Jan 16 - 19 9 Introduction and Goals, review of structs

Jan 22 - 26 Bits, Bytes, Storage and memory

Jan 25 – Feb 5 Pointers and Dynamic Lists

Feb 5 - 7 Lists with Array structures, O()

Feb 8 **Test I**

Feb 12 – 21 Stacks, RPN, and Queues

Feb 22 – Mar 7 Trees

Mar 8 **Test II**

Mar 12 – 15 **Spring Break**

Mar 19 – Apr 5 10 – 13, 21 Classes, Polymorphism, STL

April 9 – 18 Sorting & Searching Methods

Apr 19 **Test III**

Apr 23 – May 3 Lexical Analysis & Scanners

May 7 **Final Exam at 1:00 p.m.**