

**Columbus State Community College**  
**Mathematics Department Course Syllabus**

**COURSE NUMBER:** MATH 1111

**COURSE TITLE:** Discrete Mathematics for Computing

**INSTRUCTOR:**

**CONTACT:**

**CREDITS:** 3

**CLASS HOURS PER WEEK:** 4 (2 lecture, 2 lab)

**PREREQUISITES:** MATH 1025 or MATH 1050 with a grade of C or better, or MATH 1099 -1050 Module or placement equivalent

**DESCRIPTION OF COURSE**

This college level mathematics course is designed for students seeking degrees in Computer Science (CSCI), Information Technology Support Technician (ITST), and Geographic Information Systems (GIS), and introduces students to the logic and mathematical structures required for computer programming. Elementary logic, set theory and Boolean algebra are introduced. Functions and relations are emphasized, along with types of functions common in business or scientific applications, properties of functions such as domain, range, and one-to-one functions, and recursion. Mathematical structures like summations and sequences, elementary probability and vectors are also introduced. Data types, number systems such as binary and hexadecimal, right angle trigonometry, and applications of algebra are introduced in a contextualized framework that emphasizes collaborative problem-solving and applications to branches of programming practice.

**COURSE STUDENT LEARNING OUTCOMES**

Students will demonstrate the ability to apply critical and creative reasoning to address complex problems. Students will also be able to demonstrate mathematical and statistical knowledge through solving equations, interpreting graphs, as well as work with other numerical data.

**OUTCOMES BASED ASSESSMENT OF STUDENT LEARNING**

This course addresses the following Columbus State general education goals:

- ILG #1 Critical Thinking
- ILG #3 Quantitative Skills

In class students are assessed on their achievement of these outcomes. Names will not be used when reporting results. Outcomes-based assessment is used to improve instructional planning and design and the quality of student learning throughout the college.

### **COURSE MATERIALS REQUIRED**

A basic scientific calculator or graphing calculator is REQUIRED. The Texas Instruments' TI-84 (regular, Plus, Silver, etc.) graphing calculator is the department standard calculator, and is recommended, fully supported, and approved for use during proctored assessments. However, any basic scientific calculator or other graphing calculator (such as the CASIO-FX-9750GII, TI-Nspire (non-CAS version), or TI-83) is sufficient for use in this course.

### **TEXTBOOK(S), MANUALS, REFERENCES, AND OTHER READINGS**

There is a textbook for this course. It is available as a PDF document within the Blackboard course classroom or as a printed document from the CSCC Bookstore.

Other materials are provided in class or in the Blackboard course.

### **GENERAL INSTRUCTIONAL METHODS**

Instructional methods may include face-to-face or video lectures or demonstrations, face-to-face or virtual discussion, individual or group activities including the use of visual aids, calculators, computers and/or other technologies. Students may be expected to participate in these activities during class and/or outside of class. Instructors may require class participation, collaborative learning, and peer review.

### **STANDARDS AND METHODS OF EVALUATION**

The grades will be determined by the total number of points accumulated at the end of the semester. There will be a total of 1000 possible points given as follows:

Test	40%
Labs	25%
Quizzes	5%
Homework	20%
Final Exam	10%

It is expected that 900 points (90%) will be an A, 800 points (80%) a B, 700 points (70%) a C, 600 points (60%) a D, and anything less is failing.

### **GRADING SCALE**

90% - 100% = A

80% - 89% = B

70% - 79% = C

60% - 69% = D

0% - 59% = E/EN

**\*\*E:** Student earned less than 60% average and attempted a significant portion of the assignments.

**\*\*EN:** Student earned less than 60% average and did NOT attempt a significant portion of the assignments.

### **SPECIAL COURSE REQUIREMENTS**

Other than the materials listed above, there are no additional special course requirements.

### **ATTENDANCE POLICY**

Attendance and active participation in this course are required. This course is very hands-on and so much of the course is experienced through the in-class labs. The specific policy for this course is listed on your blackboard shell and course contract.

To achieve a mastery of the course material, the Ohio Board of Regents expects that the average student should be prepared to spend an average of 144 hours (9 hours per week for 16 weeks) on this course to receive an average grade.

### **COLLEGE SYLLABUS STATEMENTS**

Columbus State Community College required College Syllabus Statements on College Policies and Student Support Services can be found at [www.cscs.edu/syllabus](http://www.cscs.edu/syllabus) or on the College website Quick links "Syllabus Statements."

### **WEATHER CONDITIONS**

In the event of severe weather or other emergencies which could force the college to close or to cancel classes, please refer to the college's severe weather policy, which is posted at

<http://www.cscs.edu/weather>

### **UNITS OF INSTRUCTION**

- Algorithms & Flowcharts
- A First Look at Functions
- Function Composition
- The Monitor/Screen
- Decisions
- Position
- Movement
- Decisions Again
- Organizing Actions
- Decisions Once More
- Computer Numbers
- Describing Data

#### **Week 1**

- **Unit of Instruction:** Introduction, Chapter 1 Algorithms and Flowcharts
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 1, Lab 1.1, HW 1
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 1

#### **Week 2**

- **Unit of Instruction:** Chapter 1 Algorithms and Flowcharts & Chapter 2 A First Look at Functions
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 2, Lab 1.2, Lab 2.1, HW 2
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 2

#### **Week 3**

- **Unit of Instruction:** Chapter 2 A First Look at Functions & Chapter 3 Function Composition
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 3, Lab 2.2, Lab 3.1 and HW 3
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 3

#### **Week 4**

- **Unit of Instruction:** Chapter 3 Function Composition
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Lab 3.2, Lab 3.3

- **Assessment Methods:** Group activities/Labs & Homework Completion

#### Week 5

- **Unit of Instruction:** Chapter 4 Computer Monitor/Screen
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 4, Lab 4.1, HW 4
- **Assessment Methods:** Group activities/Labs, Homework Completion, Quiz 4, & **TEST 1**

#### Week 6

- **Unit of Instruction:** Chapter 4 Computer Monitor/Screen
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Lab 4.2, Lab 4.3
- **Assessment Methods:** Group activities/Labs & Homework Completion

#### Week 7

- **Unit of Instruction:** Chapter 4 Computer Monitor/Screen & Chapter 5 Decisions
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 5, Lab 4.4, Lab 5.2, HW 4
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 5

#### Week 8

- **Unit of Instruction:** Chapter 5 Decisions
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 6, Lab 5.2
- **Assessment Methods:** Group activities/Labs, Homework Completion, Quiz 6, & **TEST 2**

#### Week 9

- **Unit of Instruction:** Chapter 6 Positions
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Lab 6.1, Lab 6.2, HW 6
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 6

#### Week 10

- **Unit of Instruction:** Chapter 6 Positions & Chapter 7 Movement
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 7, Lab 6.3, Lab 7.1, HW 7
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 7

#### Week 11

- **Unit of Instruction:** Chapter 7 Movement
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Lab 7.2, Lab 7.3
- **Assessment Methods:** Group activities/Labs & Homework Completion

#### Week 12

- **Unit of Instruction:** Chapter 8 Does it Work?
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 8, Lab 8.1, HW 8, Read Chapter 9
- **Assessment Methods:** Group activities/Labs, Homework Completion, Quiz 8, & **TEST 3**

### **Week 13**

- **Unit of Instruction:** Chapter 9 Simulations/Explorations
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Lab 9.1, HW 9
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 9

### **Week 14**

- **Unit of Instruction:** Chapter 9 Simulations/Explorations
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Lab 9.2, Lab 9.3
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 1

### **Week 15**

- **Unit of Instruction:** Chapter 10 Computer Numbers
- **Learning Objective/Goals:** Critical Thinking & Quantitative Skills
- **Assignment:** Read Chapter 10, Lab 9.4, Lab 10.4
- **Assessment Methods:** Group activities/Labs, Homework Completion, & Quiz 10

### **Week 16 – Final Exam**