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Introduction to Computer Science

Computer Science 108

**Instructor Information: Dr. Nina Peterson**

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**Office hours: MLH 337 Monday 1:00-2:00pm, Tuesday 1:00-2:00pm, Wednesday 1:00 – 2:00pm and by appointment**

**Credits: 4**

**COURSE DESCRIPTION:** This course is an introduction to the basic concepts of Computer Science. You will learn how to program a computer using an object-oriented language, the basic capabilities of a computer system, how to form and validate a hypothesis in computer science, and how computer science relates to other scientific endeavors and society at large. Programming concepts include objects, functions, conditionals, and recursion.

**GENERAL EDUCATION LEARNING OUTCOMES:** Upon successful completion of this course, you should be able to demonstrate the following competencies:

1. Apply foundational knowledge and models of a natural or physical science to analyze and/or predict phenomena.
2. Understand the scientific method and apply scientific reasoning to critically evaluate arguments.
3. Interpret and communicate scientific information via written, spoken and/or visual representations.
4. Describe the relevance of specific scientific principles to the human experience.
5. Form and test a hypothesis in the laboratory or field using discipline-specific tools and techniques for data collection and/or analysis.

**LEARNING OUTCOMES:** Upon successful completion of this course, you should be able to demonstrate the following competencies:

1. Design and implement software programs and/or apps.
2. Implement lists, functions, methods and algorithms.
3. Implement control structures.
4. Analyze searching and sorting algorithms.
5. Design and implement simulations.

**Meeting Time:** M/W 10:30–11:45pm MLH 310

**Lab Time:** Friday 9:00-12:00pm (noon) MLH 310

**Office:** MLH 337

**Prerequisite:** None.

**Text:** None.

**Tentative Schedule:**

 **Week 1:** Introduction and App Inventor

Active Learning Week 1 Day 1 - Blockly

 Active Learning Week 1 Day 2 – My First App

**Week 2:**

Active Learning Week 2 Day 1 – Paint Pot Part 1

 Active Learning Week 2 Day 2 – Paint Pot Part 2

 Lab 1 – The Chicken Displayer

 **Week 3:**

Active Learning Week 3 Day 1 – I Have a Dream

 Active Learning Week 3 Day 2 – POGIL Activity & Mole Mash

 Lab 2 – Drawing and Timers

 **Week 4:**

Active Learning Week 4 Day 1 – Game, movement, and animation

 Active Learning Week 4 Day 2 – More animation, Variables and Timers

 Lab 3 – Creative Animated App

 **Week 5:**

Active Learning Week 5 Day 1 – Map Tour

 Active Learning Week 5 Day 2

 Lab 4 – Google Maps App

 **Week 6:** Lists and Loops

Active Learning Week 6 Day 1 – Lists and for loops

 Active Learning Week 6 Day 2 – More lists and loops

 Lab 5 – Prime numbers and optimizations

 **Week 7:**

Active Learning Week 7 Day 1 – TinyWebDB App

 Active Learning Week 7 Day 2 -

 Lab 6 – Hypothesis Testing

 **Week 8:**

Midterm Exam

 Active Learning Week 8 Day 2 – Caesar Cipher App

 Lab 7 – Search Algorithms and Guessing Game

 **Week 9:** Processing

Active Learning Week 9 Day 1 – Emoji face and body!

 Active Learning Week 9 Day 2 – Snowman with arms, suns, grass, and sky!

 Lab 8 – Processing and drawing

 **Week 10:**

Active Learning Week 10 Day 1 – Line face with gradient colors and comments!

 Active Learning Week 10 Day 2 – Gradebook calculator

 Lab 9 – Variables and mathematical calculations

 **Week 11:**

Active Learning Week 11 Day 1- Clickable smiley people

Active Learning Week 11 Day 2 – Conditionals worksheet and code. Nested if/else statements

 Lab 10 – Project 1

 **Week 12:**

Active Learning Week 12 Day 1 – Conditionals worksheet and programs

 Active Learning Week 12 Day 2 – Hour of Code Tynker Counter Hack

 Lab 11 – Nested for loops

 **Week 13:**

Active Learning Week 13 Day 1 – Conditionals 2

 Active Learning Week 13 Day 2 -

 Lab 12 – Project 2

 **Week 14:**

 Active Learning Week 14 Day 1

 Active Learning Week 14 Day 2 - Arrays

 Lab 13 – Project 2 Report

 **Week 15:**

Active Learning Week 15 Day 1 - Review

 Active Learning Week 15 Day 2 - Review

 Lab 14 – Project 3 Skin Cancer

 **Week 16: Final Exam**

**Grading:**

Your grade will be determined according to the following weights:

**Labs 20%**

**Projects 20%**

**Active Learning Activities 20%**

**Midterm Exam 20%**

**Final Exam 20%**

**Projects:** All projects must be submitted electronically through Canvas and must be timestamped prior to the due date/time. No late projects will be accepted.

**Labs:** All lab assignments must be submitted in class/lab. Your lowest lab grade will be dropped. No late lab assignments will be accepted.

**Active Learning Activities:** Active learning activities will be performed in lecture. These activities will be turned in at the end of the lecture period.

**Midterm/Final Exam:** The midterm and final exam are cumulative. No makeup exams will be given. ***You must pass the final exam with a minimum score of 50% in order to pass the class.***

**Grading Scale:** Final grades will be given according to the following scale:

A ≥ 92% A- ≥ 90% B+ ≥ 87% B ≥ 83% B- ≥ 80%

C+ ≥ 77% C ≥ 73% C ≥ 70% D ≥ 60% F ‹ 60%