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Introduction to Computer Science

Computer Science 108

**Instructor Information Lecture: Dr. Nina Peterson**

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**Office hours: MLH 312 Monday 9:00-10:30am, Wednesday 9:00 – 10:30am and by appointment**

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**Office hours: SGC 125A Tuesday 9:00-11:00am, Thursday 9:00 – 11:00am 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. Additional information focuses on adapting content to high school courses. Registration will be restricted to students admitted to the Secondary Education Program and/or students who are Secondary Education Certified.

**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 Section 01:** M/W 1:30–2:45pm Lab T 1:30-3:30pm (MLH 310)

**Meeting Time Section 02:** T/TH 10:30–11:45pm Lab TH 1:30-3:30pm (MLH 310)

**Office:** MLH 312

**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 BlackBoard 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+ ≥ 88% B ≥ 83% B- ≥ 80%

C+ ≥ 78% C ≥ 70% D ≥ 65% F ‹ 65%