

Center for Communication Technology Magnet – **Software Engineering 1**

Course Description and Expectations

Instructor: Mr. Fornstrom

Credit: 5 credit hours each semester **Prerequisite:** Intro to CCTM

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INSTRUCTOR BIO

I have taught in the TJ Computer Magnet program for 17 years. I graduated from the University of Wyoming with a B.A. in Business Administration and from Texas A&M with a M.S. in Management Information Systems. Prior to teaching I worked as an accountant and a computer consultant for businesses.

COURSE DESCRIPTION

This course introduces students to the basics of computer programming. **GameMaker, Visual Basic.net, Java Script and Action Script in Adobe Animate** are used to teach programming basics. Topics include: definition of computer and programming terms, systems development life cycle, program design, program logic, program flow, designing and creating programs, forms, controls, properties, events, actions, data types, and variables. All students will create multiple interactive programs; and design and create their own software project.

Completion of both semesters with a grade of “C” or better qualifies the student for **concurrent enrollment credit** for **CSC126 – Game Design and Development** at **Arapahoe Community College**.

FEES

There is a \$50 fee for this class for software, student supplies and membership in the **TJ Skills USA** club. Fees cover both semester 1 and semester 2. Please turn the money in to Mr. Fornstrom by **Friday September 8, 2017**. Checks should be made payable to **Thomas Jefferson High School**.

CLASS RULES AND PROCEDURES

All Thomas Jefferson school rules are followed. Please refer to the CCT Magnet class rules for details of the behavior and procedures followed in class.

MAKE-UP and LATE WORK

Excused Absence: The student will be allowed one day for each day absent, plus one extra day to make up work and tests missed.

Unexcused Absence: The student receives a grade of **0** for any work missed as a result of an unexcused absence.

Late Work: I realize there will be times when unforeseen circumstances (particularly with computers) make it difficult for work to be completed on time. If the student attended class but was unprepared with their assignment, they can turn the work in the next day for a maximum of 50% credit. No credit will be given for work turned in more than 1 day late. Please plan for the unexpected when completing assignments so that there is ample time to complete all work on time.

LAB & OFFICE HOURS

The computer lab is open every day from 7am to 3pm for student project work. Mr. Fornstrom is available in the lab from 7am to 3pm. Please contact him to schedule an appointment or additional lab time.

GRADING

Grades are based upon assignments, programs, quizzes, tests and participation points. There will also be several group projects. Each team member will earn both an individual grade and a group grade on each group project.

PARTICIPATION POINTS

In order to become proficient with computers, students need to **work and practice** with computers. To encourage this, 3 participation points are available each class day for being here, on-time, and on task. If a student has an excused absence they may come in and make-up the computer work to receive the day’s participation points. Points lost for unexcused tardies or absences may not be made up. Points lost for inappropriate computer use (such as playing games or surfing the web during class time) may not be made up.

GRADING SCALE

- 90-100% = A
- 80-89% = B
- 70-79% = C
- 60-69% = D
- Below 60% = F

COURSE CONTENT

Course content will include, but is not limited to:

Personal & Project Management

- Introduce and practice techniques for individual and team planning.
- Use of a *Daily Planner* to organize personal responsibilities.
- Use of *Google Classroom* to organize course notes and project plans.
- Use of a *Project Management Worksheet* to plan and organize individual and group projects.

Software Engineering Basics

- Basics of using the Windows operating system.
- Programming terms and definitions.
- Programming basics – including organization and documentation.
- Flowcharting program logic.
- Using GameMaker software to program a basic game.
- Testing programs and pinpointing the causes of errors.

Programming with Visual Basic.net

- Visual Basic and programming terms.
- Program organization and documentation.
- Introduction to the Visual Basic programming language.
- Designing and creating Visual Basic programs.
- Forms, controls, and properties.
- Events and code.
- Data types.
- Variables.
- Loops and decisions statements in VB.

Programming with ActionScript in Adobe Animate

- Animate terminology and program basics.
- The Animate interface.
- Animate movies.
- Creating movie clips in Animate.
- ActionScript basics.
- Subroutines in ActionScript.
- Loops and decisions statements in ActionScript.
- Using ActionScript help features.

Software Project

- Brainstorm project ideas.
- Pick a project and define requirements.
- Choose a programming language appropriate to build the project.
- Build the project.
- Present project to the class.

Weekly Topics (subject to change)

| Wk# | Dates | Topics |
|--------------------|---|---|
| 1 | 8/22 to 8/25 | Course Intro, rules, logins Blog – Project ideas for computer program Begin using GameMaker |
| 2 | 8/28 to 9/1 | Basics of GameMaker |
| 3 | 9/5 to 9/8 | Character animations and movement in GameMaker; course fee due |
| 4 | 9/11 to 9/15 | Advance events and actions in GameMaker Start final GameMaker program |
| 5 | 9/18 to 9/22 | Final GameMaker program |
| 6 | 9/25 to 9/29 | Introduction to VB.net |
| End 6 Weeks | | |
| 7 | 10/2 to 10/6 | VB.net basics, state capital quiz |
| 8 | 10/9 to 10/13 | VB.net, start TicTacToe game |
| 9 | 10/16 to 10/20 | VB.net, finish TicTacToe game |
| 10 | 10/23 to 10/25 Fall Break & Conf. | VB.net – Ed Quiz Game program |
| 11 | 10/30 to 11/3 | VB.net – Ed Quiz Game program |
| End 6 Weeks | | |
| 12 | 11/6 to 11/10 | Animate Basics |
| 13 | 11/13 to 11/17 Thanksgiving | Animate – programming movie clips |
| 14 | 11/27 to 12/1 | Animate – Pong game |
| 15 | 12/4 to 12/8 | Start Final Project; plan DUE Tues. 12/5 Final Project Work |
| 16 | 12/11 to 12/15 | Final Project Due |
| | 12/18 to 12/20 | Final Project presentations Final Exam |