Exploring Computer Science
Canyon Crest Academy

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Course Description:
This course will provide students with foundational knowledge of computer science. Students will explore topics in human computer interaction, web design, problem solving, programming, data modeling, and robotics. Throughout the course students will understand algorithm development related to computer applications and gain technical expertise using computational tools.

Recommended Materials:
- DropBox Account – Free (https://www.dropbox.com)

Grading:
Scale: {A(100-90), B(89-80), C(79-70), D(69-60), F(59-0)}
Round-Up for Quarter Grade Only: {A(90-89.5), B(80-79.5), C(70-69.5), D(60-59.5)}

Incomplete quarter grades will not be given. Students are expected to follow the Late Assignment policy listed below.

Grades should be available online through Aries. Grades evaluated in the following categories and weights; **Projects** (40%), **Participation** (15%), and **Lab Assignments & Quizzes** (30%), **Final Exam** (15%). Rubrics will be provided in class and on Blackboard

Academic Honesty:
Students must complete their own work for all assignments. If a student is found to have copied or turned in work that is not theirs a grade of Zero will be given.

Late Assignment Policies:
Any assignment not turned in during your class period on the due date will be considered late.

- Students must complete and turn in a Late Assignment Grade Request Form in order for that assignment to be graded.
- A grade of 0(zero) will be given for assignments not turned in or attempted.

- Partial credit may be given for Late Assignments turned in within a week of the due date.

- Full credit may be given for Late Assignments due to an **Excused Absence** within a week of the due date.

ATTENDANCE:
You are responsible for making up work missed due to excused absences. You must make arrangements with me immediately upon returning to class. I will not remind you to make up missed assignments.

Regular on time attendance and active positive participation are essential in order to understand and appreciate the topics covered in this class. It is also a critical life-long work skill. Irregular attendance and/or excessive tardiness will seriously affect your achievement in this class and consequently your grade.

TARDIES: {Over the duration of the class – 2 Quarters}
- 1 tardy: Verbal Warning
- 2 tardies: Conference with student and phone call home
- 3 tardies: Referral

School related tardies are not to be counted as tardies for this policy

Class Rules:
- No Food or Drinks
  - Bottled water is okay
- Get to class On-Time
  - In your seat logging in
- No Disrespectful Behavior
  - Do not be mean or insulting
  - Do not alter or break the equipment

Class Procedures

Beginning of class:
- Be in your seat and start logging in before the bell rings.
- Log in to Blackboard and Read the daily agenda (Also posted on the whiteboard)
- Complete the daily Journal response, turn-in assignments, review instructional videos.

Instruction Time/Homework:
- Most days there will be a short lesson to introduce new topics and demonstrate how the assignments need to be completed. These lessons may be presented on the class YouTube channel (remingtoncca) and in that case students should **review the videos before class (Homework).**
- If we are working on a long-term project the teacher will review where you should be and check your progress

Lab Time:
- Stay in your seats and work on your assignments and projects. If you have a question raise your hand and the teacher will assist you as soon as possible.
- If the teacher is busy write your name on the white board and the teacher will see in the order as your name is listed.

- If you finish the activities listed for the day check with the teacher. There will always be an assignment or project coming up that you can work on (Check Blackboard). Do not work on assignments from other classes.

Turning In Assignments and Projects:

- Most assignments and projects will be graded at your desk; others will be collected from Google Drive or DropBox http://www.dropitto.me/mremington.

Leaving the Classroom:

- If you need to use the bathroom just let the teacher know before you leave.
- If you have a pass to leave early or you are playing a sport, it is your responsibility to let the teacher before you leave. Please do not expect the teacher to remind you that you have an appointment.

Lab Computer Policies:

Not following the policies listed will result in disciplinary action listed below

- Students are not allowed to unplug cables and move the computers and/or monitors
- Removing and/or rearranging the keys on any keyboard is not allowed
- Students will be held responsible for any equipment that they damage and the right to use the equipment may be revoked as a result
- All students must follow the district Acceptable Use policies

DISCIPLINARY ACTION:

A sequence of steps will be followed for any circumstance or situation that interrupts or interferes with the learning/teaching atmosphere in the classroom or any other learning/teaching environment.

1. Visual warning
2. Student moved from computer and given written assignment
3. Phone call home and/or referral

Key Assignments:

Unit Projects & Final Exam

1. **Unit Project: Human Computer Interaction**
   Using the Internet as a research tool, students will explore purchasing a computer and corresponding software packages. They will use critical search skills to examine the validity and reliability of computer reviews, specification pages, and price comparisons. They will also analyze the level of computational power, memory, input devices and peripheral devices needed for a specific type of computing purpose or population (i.e. data analysis, gaming, college studies, person with visual impairments, etc.), and list the necessary software required to meet this the specific needs of the population. The final product will be a research report, including Excel tables and graphs, recommending the hardware, software, and pricing for the assigned purpose.

2. **Unit Project: Problem Solving**
   Students will be presented a unique computing-related problem and develop a strategy for solving this problem. As part of this problem-solving process, students will need to write algorithms that use simple and complex logic statements, including relational operators and Boolean operators. These algorithms must include a specification of a step-by-step process that produces a desired result, must specify each step unambiguously, must have a clear starting point, and must have a clear stopping point. Students will also need to consider social and ethical issues for solving a particular problem. Examples of problems might include a) designing a medical database for patients that includes pertinent medical information for each patient but also considers privacy issues and conflicts of interest between medical practitioners and insurance companies; b) creating the best route from destination A to B using subway and bus schedules for a minimal cost; or c) using police data to analyze claims of racial profiling in particular communities.

3. **Unit Project: Web Design**
   Students will create user-friendly and functional Web sites that apply good Human Computer Interface practices. These Web sites should also recognize hardware and software constraints of potential client machines and/or environments. Students will also be required to apply good code documentation that follows professional standards. The final product will be the working Web site accessible on the Internet.

4. **Unit Project: Programming**
   Students will code, text, and execute a computer program that corresponds to a set of specifications. Using Alice software, they will use a programming language to tell a story that makes use of data types, loops, conditional statements, and other fundamental programming concepts. They will conclude the project by presenting their "story" to the class and describing the coding methodology used to enact this narrative.

5. **Unit Project: Data Modeling**
   Using a large-scale set of real-world environmental data, students will create algorithms to analyze the data and arrive at conclusions about the implications of this data. Students will be provided data from the Center for Embedded Network Sensing (CENS) concerning seismic activity, animal behavior, and pollution data in which they will create new knowledge and conclusions about environmental phenomenon. They will present their findings to the class in PowerPoint presentations.

6. **Unit Project: Robotics**
   Students will work in pairs to build and program a robot to perform a required task (i.e. kick a ball into a goal). They will make use of a programming language to control the behavior of these robots in dynamic environments. As a class (or a district) they will test out their robots under a specific set of circumstances in a robotics competition.

7. **Final Exam**
   Students will be tested on the major objectives of the course twice a year – at the end of each semester. They will be assessed on computing terminology, technical skills, foundational knowledge of algorithms and computer programming, web design knowledge, understanding of problem solving strategies, connections to mathematics, and use of appropriate presentation formats to communicate information.

Welcome to the class! I look forward to working with you