Computer Science 30 AP
Queen Elizabeth High School

Teacher: Mr. Mercer
Rm: Innovate Lab
Phone: 780-476-8671, ext. 241
Email: Mark.Mercer@epsb.ca
Cloud Platform Connections

- School Zone: Gmail
- Google Classroom
- GitHub, GitHub Classroom

Textbooks (Other Texts are available, see Mr. Mercer)

- Headfirst Java, 2nd Edition, Kathy Sierra & Bert Bates (O'Reilly)
- Barron's Computer Science A, Roselyn Teukolsky
- AP Computer Science Principles
  Available in Google Books
- Blown to Bits (eBook), Click Here
  See: http://www.niemanlab.org/pdfs/blowntobits.pdf

Course Description

Advanced Placement Computer Science 30 is a five-credit course using courses from Computer Science Education (Career and Technology Studies). Students will use their experience from CS10, CS20 and/or CS30 and prepare for the Advanced Placement exams in Computer Science Principles and Computer Science A. These exams are accepted at Post-secondary Institutions throughout North America.

Advanced Placement Computer Science Principals Exam Date: May 10, 2019
Advanced Placement Computer Science A Exam Date: May 17, 2019

Courses from CSE (Alberta Program of Studies) maybe be used for this 5 credit course and the specific choice will depend on the students experience.

Students are expected to develop Computer Literacy:

1. Classroom Environment
   - Maintain a seating plan to facilitate collaboration: conversation, virtual, real-time
   - Create a workstation to manage a developer's tasks between planning, software lifecycles, and compiling-executing feedback
   - Create workflow between compilers, runtime events, locally hosted servers
2. Computer Environment
   - Learn how to develop in a Windows Environment, or an operating system of their choice, and use cloud-based services for workflow on different machines
     Note: this might mean using their own computer, using their Raspberry Pi, or using a school's computer

- Download, install, and maintain a language's IDE (Integrated Development Environment)

3. Applied Computational Problem Solving (Computational Thinking)
    - Given a problem, create an advanced-level algorithm mimicking "behaviors" in a program, use developmental processes increasing the algorithms complexity, and effectively translate that algorithm into source code
    - Use mathematical algorithms for data processing
    - Translate an algorithm into source code for a given a development language
    - Critically evaluate their algorithm and coded translation using input-processing-output (IPO) tests and related computer tools
4. Programming Methodologies (coding)
    - Demonstrate object-orientated programming approaches and classes and objects as part of algorithmic planning
    - Use more sophisticated data types and their associated algorithms
    - Include algorithms utilizing various data sets, performing data manipulations
    - Include error trapping mechanisms related to classes and objects as algorithmic planning to eliminate logic errors

For Further Computer Literacy details, project expectations, and assessment explanations, see the GitHub Account "Mercer's Kitchen" and follow the hyperlinks.

Assessment

Assessment Note: All students will be assessed according to the Alberta Curriculum of Studies for the courses they choose. Instruction will consider Advanced Placement Computer Science Principal's Digital Portfolio, Computer Science A's Labs and both final exams. In this way, students who want to prepare for Advanced Placement assessment have that opportunity.

For Edmonton Public Schools and Queen Elizabeth High School Assessment Policy, please refer to Reference Guide to Student Assessment, Achievement & Growth 2017-2018 (on School Zone and Website).

Assessment will be experienced in three general ways named "as", "for", and "of" learning. Each method focuses students learning with reflection, review, practice, correction, and many opportunities for students to demonstrate their learning. Both "as" and "for" learning include tasks, activities, practice problems, challenges, and reflection that includes interaction with the teacher. These methods are understood as low-risk in terms of grading practice. "Of" learning includes timed challenges where students demonstrate their learning at that point, summatively. These are mandatory assessments that evaluate computational thinking with technical reading and writing. Please see Mr. Mercer if you have further questions.

This course consists of the five 1 credit courses. Each one credit course will have its own final grade determined through a combination of classroom observation, interviews, and items

submitted for grading. While Mr. Mercer will be grading for certain items please remember, what seems like an “epic fail” can demonstrate an extraordinary amount of learning. Students are responsible for assisting Mr. Mercer in understanding this.

Graduation Course Credit, for Post-Secondary

Most post-secondary schools in Alberta accept Computer Science 30 as a science option. Ensure you check with your post-secondary school for specific admission details. Also, notice that Computer Science 30 does not have a Diploma Exam like other Science Courses.

All North American post-secondary institutions accept Advanced Placement Computer Science courses for credit (“save money by earning course credit in high school”) when you earn an Advanced Placement grade of four or five. Ensure you double check with the post-secondary institution you enroll with for course equivalencies. Examples of equivalent post-secondary courses are below.

University of Alberta

- Computer Science A: Comput 174
- Computer Science Principles: Comput 101

School Resources

- Windows Computer or Linux Computer
- Internet & infrastructure, cables, and other hardware to create a computer lab
- Resources to understand Computer Literacy needed for course completion
  Note: additional resources available based on student interest

Student Resources

- Raspberry Pi Computer Development Kit (See Mr. Mercer for specific details)
  Note: this resource is intended for an entire high school experience through Computer Science, Robotics, Networking, Project-based learning, and other disciplines
- Earphones or earbuds (for listening to audio of tutorials or projects)
  Note: this is not meant for entertainment purposes, discuss options with Mr. Mercer
- Virtual or Physical binder, paper (lined and blank), pens, pencils, highlighter

Computers and School Technology, Calculator, Cell Phone, & Other Device Policy

- On-task engagement is mandatory. Be engaged with your tasks at all times.
  Discuss all time & attention management issues with Mr. Mercer
- No devices are allowed during timed assessments unless the student is complete
- Cell Phones will not be visible in the Computer Lab unless use is directed by Mr. Mercer
  For Example, Mr. Mercer does not text during class and makes all communication before class, during breaks, and at the end of the school day. Any exceptions are discussed with the class.
- Any device to bring computational knowledge and other associated computer science ideas is welcome, especially when it is shared! Discuss this use with Mr. Mercer first.

Classroom Behavior Expectations

- Arrive prepared to learn with all materials on time; Mr. Mercer will be ready to teach.
- Engage with all activities trusting you will benefit from the lesson;
  Mr. Mercer will engage with your questions, misunderstandings, & success.
- Persevere with the entire lesson, everyday; Mr. Mercer will and desires your success.

Welcome to
Advanced Placement Computer Science