BASIS Curriculum Schools

COURSE SYLLABUS 2021-2022

AP CS Principles

Basis International School Shenzhen

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Student Hours: Mon. & Tues. 4:30 – 5:30, 6005
Parent Hours: Fri. 4:30 – 5:30

COURSE DESCRIPTION

AP Computer Science Principles introduces students to the breadth of the field of computer science. In this course, students will learn to design and evaluate solutions and to apply computer science to solve problems through the development of algorithms and programs. They will incorporate abstraction into programs and use data to discover new knowledge. Students will also explain how computing innovations and computing systems, including the Internet, work, explore their potential impacts, and contribute to a computing culture that is collaborative and ethical

GRADING POLICY

General *(CJ completion/Following School Rules/Collaboration/Participation/Proof Reading Resources)*	**10%**
Minor: Classwork *(Reflections, Programs)*	**40%**
Major: Tests *(MCQs at the end of each unit)*	**50%**

GRADING SCALE

All grades will correspond to the following scale:

A =
A- =
B+ =
B =
B- =
C+ =
C =
C- =
D+ =
D =
D- =
F =

- Each program submitted will be graded as follows:
  - 1 mark per program requirement/specification.
  - 1 mark for elegant and efficient style.
    - Input data stored in variables which are then used in calculations (not contents of text boxes directly used in calculations).
    - Clear and organised code with related code blocks organized in groups (not scattered around and requiring unnecessary scrolling).
  - 1 mark for formatting:
    - Meaningful and correctly formatted names.
      - Variable & component names should begin with lower case letter and in case of multiple words each word after the 1st must begin with a capital letter.
        - e.g. costProd1, totalCost
      - Component names should also start with a 3 low case letter prefix indicating the component type.
        - e.g. txtCostProd1, butCalculateCost
      - Program & video names formatted as follows:
        - Unit Number.Section Number Meaningful Name Your Full English Name.
          - e.g. 2.7 I Have a Dream and Soundboard Projects Joe Bloggs
  - 1 mark for any comments if required.
  - 1 mark for your video content – organised and clearly understandable.
  - 1 mark for user friendly, clearly labelled and neat layout of components.
- Each Reflection will be marked as follows.
  - 1 mark per full answer.
  - 1 mark for work submitted as a pdf file with a meaningful name formatted as follows.
    - Unit Number.Section Number Meaningful Name Reflection Your Full English Name.
      - e.g. 2.8 What is Abstraction Reflection Joe Bloggs

- Final Course Grade-
  - Each Trimester @ 25%
  - Mock Exam/Practice Tests after finishing the syllabus in mid-February/Final Exam/Mock Create Performance Tasks* @ 25%
    - Final exam refers to the alternate exam for those who will not take an AP exam in May 2022.
    - The teacher will observe and evaluate your readiness for the AP exam and give his recommendation and communicate to the students.

Cumulative Course Grade (Prior to AP exam)

AP	F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A
5	B+	B+	A-	A-	A-	A	A	A	A	A	A	A
4	C+	C+	B-	B	B+	A-	A-	A	A	A	A	A
3	C	C	C	C+	B-	B	B+	A-	A-	A	A	A
2	F	D-	D	D+	C-	C-	C	C+	B-	B-	B	B
1	F	F	F	F	D-	D	D	D	D+	C-	C	C

INSTRUCTIONAL MATERIALS

- Mobile CSP
- App Inventor
- You will need one of the following combinations:
    1. A laptop and an iPad.
    2. A laptop and a phone *(Android or ios)*.
        - Recommended.
    3. An iPad and a phone *(Android or ios)*.
        - Not recommended as comments cannot be directly written into your code on a iPad so you will need to create screenshots and write comments in a word processor and then create a pdf *(basically more work for you)*.

    - The phone/iPad will need the following installed:
        - **MIT AI2 Companion App** *(to test your apps)*:
            - iOS - Install from App Store.
            - Android - Install from Play Store.
                - Download .apk to sideload directly.
        - A Screen Recorder *(to record your apps)*:
            - iOS:
                - Use **iOS native Screen Recorder** *(preinstalled)*.
            - Android:
                - Install **AZ Screen Recorder** from Play Store.
                    - Download .apk to sideload directly.
            - AZ Screen Recorder Instructions
            - How To Create an App Video
                - If you don't have access to a phone or other device, install the emulator on your laptop *(at the time of writing there is no working iOS emulator though, so Windows only at the moment)* and record videos using any video recording app e.g. OBS, etc..
        - **Flipgrid app** *(to upload videos)*:
            - iOS - Install from App Store.
            - Android - Install from Play Store.
                - Download .apk to sideload directly.

- Join Code: 8ff93c98
  - You will then be asked for a unique Student ID which will be given to you individually.

- **Teams**:
  - Download .apk to sideload directly.

4. A Google account.
5. Headphones
6. AP Computer Science Principles
   - Textbooks will not generally be used but if you require some recommendations:
     - https://apcentral.collegeboard.org/courses/ap-computer-science-principles/course-audit

CLASSROOM POLICIES

- Late work policy:1 letter grade lower for each day late.
- You can only resubmit work under the following conditions:
  - You can ONLY resubmit once, and your 2nd score will be recorded as a new score (your original score will not be changed).
    - Therefore, your final score will be an average of your original & 2nd scores.
    - You must explain your original logic, why your answer/code is incorrect and why the correct answer/corrected code is correct.
    - Your file name should have word “Corrections” before your name.
- Positive Collaboration:
  - Showing and explaining your work (code/questions) to your peers.
  - Advising your peers.
  - Using and adapting code from the web, acknowledging its use and explaining in detail how it works.
- Plagiarism:
  - Sending your work (code/questions) to your peers.
  - Copying code solutions from the web without adaptation and passing it off as your own (not acknowledging its use) and/or not explaining in detail how it works.
- Units/Programs to submit/Reflection Questions/Resources/Quizzes/Tests are planned out in the Teams Calendar which uses units from Mobile CSP.
  - All work should be submitted in private chat in Teams *(not through use of assignment “hand in”)*.
    - Answers to questions should be submitted as a pdf file with a name in the following format:

        - Unit Number.Section Unit Name Full English name
            - e.g. 2.8. What is Abstraction Joe Blogs.
        - Programs should be submitted in the following format:
            - How to submit programs
    - MCQ Tests:
        - Online MCQs which will automatically submit your answers to me and your email address.
- Homework:
    - I don't intend to formally set separate work as homework.
    - Generally homework will be to finish what you can't complete in class – see Teams Calendar.

COURSE OUTLINE

- 1. Getting Started: Preview & Setup
    - 1.1. Welcome to Mobile CSP
    - 1.2. Mazes Algorithms and Programs
    - 1.3. Google Account and Portfolio Setup
    - 1.4. App Inventor Setup
    - 1.5. Impacts of CS Blown to Bits BB
    - 1.6. Successful Learning in Mobile CSP
    - 1.7. Wrap Up
- 2. Introduction to Mobile Apps & Pair Programming
    - 2.1. Unit Overview
    - 2.2. I Have a Dream Tutorial
    - 2.3. Algorithm Basics
    - 2.4. I Have a Dream Part 2 Explore Curricular Activity
    - 2.5. Mobile Devices and Apps Hardware and Software
    - 2.6. The Internet and the Cloud Explore Curricular Activity
    - 2.7. I Have a Dream and Soundboard Projects
    - 2.8. What is Abstraction
    - 2.9. Binary Numbers
    - 2.10. Hardware Abstractions Logic Gates
    - 2.11. Impacts of CS The Digital Explosion
    - 2.12. Wrap Up
- 3. Creating Graphics & Images Bit by Bit
    - 3.1. Unit Overview
    - 3.2. Paint Pot Tutorial
    - 3.3. Representing Images
    - 3.4. Paint Pot Projects
    - 3.5. Paint Pot Refactoring and Procedural Abstraction