



Programming Syllabus CHS Business Department

Contact Information: Parents may contact me by phone, email, or visiting the school.

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CCSD Vision Statement: The Chillicothe City School District will provide tomorrow's leaders with a high quality education by developing high expectations and positive personal relationships among students, staff, and community members.

CCSD Mission Statement: The Chillicothe City School District empowers students to learn, to lead, and to serve.

Course Description and Prerequisite(s) from Course Handbook:

Programming – 418 CTAG (potential for college credit) course

State Course#: 145060

Prerequisite: None

Elective

Grade: 10-12

Graded: Conventionally

Credit: 1

CTAG alignment: CTPROG001 - Computer Logic

College Credits: 3 Semester Hours

In this course, students will learn the basics of building simple interactive applications. Students will learn the basic units of logic: sequence, selection, and loop. Students will apply algorithmic solutions to problem domain scenarios. Students will gain experience in using commercial and open source languages, programs, and applications.

Required: 120 – 150 hours

Course Fee: Students will have the opportunity to be a part of a Career Tech Student Organization (Business Professionals of America) as part of this course. Students who choose to be a part of the program's respective Career Tech Student Organization will have

opportunities to be student officers, attend leadership activities, and participate in various leadership and skill competitions. Students who wish to be a part of the program's respective Career Tech Student Organization will be required to pay the dues associated with the organization prior to participation in activities outside the normal classroom. \$40 for BPA Membership.

Learning Targets: Defined below for clarity are the Unit Titles, Big Ideas of every Unit taught during this course, and the Essential Questions to be answered to better understand the Big Ideas. A student's ability to grasp and answer the Essential Questions will define whether or not he or she adequately learns and can apply the skills found in Big Ideas. This will ultimately define whether or not a student scores well on assessments administered for this course.

- **1st Quarter**

- **Unit I Title: Developer Environment**

- **Big Idea #1:** I can explain the history of programming.
 - *Essential Question #1: Who invented modern programming?*
 - *Essential Question #2: Explain how programming has changed over the years.*
 - *Essential Question #3: Identify the major classifications of program languages.*
- **Big Idea #2:** I can avoid illegal use of other people's works while utilizing my resources.
 - *Essential Question #1: What is DMCA and how does it affect what can be used in your project?*
 - *Essential Question #2: Explain the differences between creative commons, open source, and public domain.*
 - *Essential Question #3: Identify the consequences of not following DMCA regulations.*
- **Big Idea #3:** I can set up and follow a development plan based off the SDLC.
 - *Essential Question #1: Identify and describe the 5 typical phases of developing a game.*
 - *Essential Question #2: Define feature creep and explain why it is dangerous.*
 - *Essential Question #3: Explain why design documents and prototypes are important.*

- **Unit II Title: Programming Basics**

- **Big Idea #1:** I can build and use classes.
 - *Essential Question #1: Explain what a class is.*
 - *Essential Question #2: What is the standard formatting of a class?*
 - *Essential Question #3: Explain what a library is and what it means to include one.*
- **Big Idea #2:** I can declare and use appropriate variables.
 - *Essential Question #1: Identify the most common types of variables.*
 - *Essential Question #2: Explain the difference between variables and classes.*
 - *Essential Question #3: Explain what it means to declare a variable.*
- **Big Idea #3:** I can create functions that use and manipulate my variables.
 - *Essential Question #1: Describe the structure of a function.*
 - *Essential Question #2: Explain what conditions are and how you add them to functions.*
 - *Essential Question #3: Identify common operators and utilize them to assign values.*
- **2nd Quarter**
 - **Unit III Title: Calculator**
 - **Big Idea #1:** I can use the .NET framework with Visual Studio to build programs.
 - *Essential Question #1: Determine the relationship between .NET and C#.*
 - *Essential Question #2: Describe the significance of .NET Core to software development.*
 - *Essential Question #3: Explain what the purpose of Visual Studio is as it relates to programming.*
 - **Big Idea #2:** I can utilize controls.
 - *Essential Question #1: Explain what controls are and how they relate to the design of the program.*
 - *Essential Question #2: How are controls defined?*
 - *Essential Question #3: Describe how you target a control.*
 - **Big Idea #3:** I can manipulate control properties.
 - *Essential Question #1: Explain what a control property is.*
 - *Essential Question #2: Describe what happens when you change the properties of controls.*

- *Essential Question #3: Explain why you would want to change the properties of a control.*
 - **Unit IV Title: Robotics**
 - **Big Idea #1:** I can use code to create a physical response in machines.
 - *Essential Question #1: Explain how to activate a motor and explain what is physically happening.*
 - *Essential Question #2: Describe the process for making most motors turn the other direction.*
 - *Essential Question #3: Define axis and explain how it relates to motor speed.*
 - **Big Idea #2:** I can create a sequence of instructions for a robot to follow.
 - *Essential Question #1: How do you determine how long a robot will follow an action?*
 - *Essential Question #2: Describe how you can make multiple motors work in unison.*
 - *Essential Question #3: Assuming there are no syntax or logic errors, what can cause a robot to fail to follow out its instructions?*
 - **Big Idea #3:** I can create triggers to cause a change in the robot's course of action.
 - *Essential Question #1: Explain what a trigger is and what they are used for.*
 - *Essential Question #2: How are loops related to triggers?*
 - *Essential Question #3: Explain what a break is and what happens when you fail to use a break?*
- **MID-TERM EXAM**
- **3rd Quarter**
 - **Unit V Title: Plump Plumbers and AI**
 - **Big Idea #1:** I can set up a scene.
 - *Essential Question #1: What is a scene?*
 - *Essential Question #2: Define entity and explain how it relates to game objects.*
 - *Essential Question #3: Explain how scripts are attached to entities and how they relate to controls.*
 - **Big Idea #2:** I can use proper syntax and logic in my code.
 - *Essential Question #1: Define syntax.*

- *Essential Question #2: Explain how syntax errors occur and how they can affect programs.*
 - *Essential Question #3: Compare and contrast syntax errors and logic errors.*
 - **Big Idea #3:** I can create a basic artificial intelligence.
 - *Essential Question #1: Define 'artificial intelligence.'*
 - *Essential Question #2: Explain how AI's determine what course of action to take.*
 - *Essential Question #3: Explain the benefit to using multiple functions for AIs over a single procedure.*
- **Unit VI Title: Data Management**
 - **Big Idea #1:** I can use XML to store information.
 - *Essential Question #1: Define XML.*
 - *Essential Question #2: What makes XML an ideal medium for storing unencrypted information?*
 - *Essential Question #3: Define the terms 'root,' 'node,' 'parent,' and 'child.'*
 - **Big Idea #2:** I can search files to retrieve only the information I want.
 - *Essential Question #1: Define 'tag,' 'attribute,' and 'content.'*
 - *Essential Question #2: Describe the difference between tags, attributes, and content.*
 - *Essential Question #3: Explain why nesting is important.*
 - **Big Idea #3:** I can modify the contents of a file with only the changes I want to make.
 - *Essential Question #1: Explain why it is misleading to say, "Edit a file."*
 - *Essential Question #2: Describe how you target specific content to change in a file.*
 - *Essential Question #3: Explain how you remove specific information from a file.*
- **4th Quarter**
 - **Unit VII Title: Publication**
 - **Big Idea #1:** I can run appropriate functionality and market tests.
 - *Essential Question #1: Describe the purpose of beta testing.*
 - *Essential Question #2: Explain why benchmark tests are important to run before publication.*

- *Essential Question #3: Explain why you should conduct market tests.*
 - **Big Idea #2:** I can isolate issues with my program and fix them.
 - *Essential Question #1: Compare and contrast the difference between a bug and a design error.*
 - *Essential Question #2: Explain how user expectations can affect troubleshooting.*
 - *Essential Question #3: Evaluate why the phrase, "It's not a bug, it's a feature," is so commonly known.*
 - **Big Idea #3:** I can push software patches to client devices.
 - *Essential Question #1: Determine the effects different methods of pushing patches may have on end users.*
 - *Essential Question #2: Consider when a new version install is more appropriate than a simple patch.*
 - *Essential Question #3: Develop a system of pushing patches.*
- **Unit VIII Title: Advanced Concepts**
 - **Big Idea #1:** I can deploy my software on multiple platforms.
 - *Essential Question #1: What does cross platform development mean?*
 - *Essential Question #2: Consider what impact a target platform may have on your final product.*
 - *Essential Question #3: Identify the drawbacks of cross platform deployment.*
 - **Big Idea #2:** I can market my software.
 - *Essential Question #1: Define publisher and explain how they relate to the SDLC.*
 - *Essential Question #2: Evaluate the impact of conferences and conventions to marketing.*
 - *Essential Question #3: Identify the role of DLC and initial price points.*
 - **Big Idea #3:** I can evaluate the impact of my program on users.
 - *Essential Question #1: Determine the social responsibilities of developers.*
 - *Essential Question #2: Evaluate the importance of user experience designers.*

- *Essential Question #3: Explain why psychology is important to software development.*

- **END OF COURSE EXAM**

Course Materials:

- Google Chromebook
- Flash Drive, 16 GB or greater (Optional)
- Computer lab access
- Project files
- Unity3D
- Visual Studio
- Vex Robotics Kit

Textbook:

- None

Electronic Resources:

- <https://unity3d.com/learn>
- <https://docs.microsoft.com/en-us/dotnet/csharp/>

Course Expectations:

- **Respect your fellow classmates and community.** We practice unconditional positive regard in the classroom.
- **Obey all faculty instructions.**
- **Follow along with lessons during lecture time.** Not paying attention robs yourself and those around you of time for questions and clarifications which goes back to the first item, be respectful.
- **Don't be afraid to be wrong**, especially during lecture/discussion time. The best lectures and usually most rewarding lectures happen when you're brave enough to give an answer that may not be right. This opens up opportunity to learn more and shows that you're taking the time to think about the course content.
- **Complete your classroom projects on time and in the classroom** (they all build upon each other). There will be plenty of opportunity to complete in class work in class. If you have the ability to work on projects at home, then more power to you, but that does not excuse you from using the classroom time to work.
- Begin work on bell ringers before the bell rings and have try to finish it before attendance is complete. You may use Google to help find the answer for bell ringers. This is a tech class and the answers tend to change over the course of a few short years so

it's more important that you know how to find and apply the answers than memorizing the answers.

- **Do not give textbook definitions.** Tell us what the definition actually means in your own words. If you provide a textbook definition during discussions, you will be asked to explain your definition as they tend to carry little meaning to most people.
- Respect the lab. **Do not deface or damage any equipment or furniture within it.** Not only is it criminal, but as you are NOT the only person using the equipment, it is disrespectful to the other students. This also means that you should make sure to keep your workspace clean and orderly.

Grading:

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| Unit Exams | 50% |
| Assessments (Including: Quizzes, Essays, Labs, and Projects) | 30% |
| Class work/Homework | 20% |

- Each nine week's grade comprises 20% of a student's final grade.
- The Mid-Term Exam and End of Course Exam each comprise 10% of a student's final grade.

Grading Scale:

The grading scale for Chillicothe High School can be found in the student handbook or online at

<http://www.chillicothe.k12.oh.us/1/Content2/studenthandbook>.

Late Work: Late work will be subject to the Board-adopted policy on assignments that are submitted late (to be reviewed in class).

- Regardless of the absence type (excused, unexcused, OSS, etc.), students are expected to make up work and be held accountable for learning all material they missed.
- Any student who is absent from school will receive one (1) additional day for every day he/she missed to make up his/her work for full credit (100%).
- Any student who exceeds the allotted time to turn in an assignment for full credit may still submit work late for partial credit.
 - Any student who turns in work up to 1 week late must at least be given the opportunity to earn 75% on that assignment.
 - Any student who turns in work between 1 and 2 weeks late must at least be given the opportunity to earn 60% on that assignment.

- The end of the 9 weeks is the cut off point for teachers to accept late work from students for full or partial credit unless the teacher decides to give the student an incomplete for the 9 weeks due to extenuating circumstances.

Performance Based Section: Writing Assignments/Exams/Presentations/Technology

One or more of the End of Unit Exams may be Performance Based. According to the Ohio Department of Education, "Performance Based Assessments (PBA) provides authentic ways for students to demonstrate and apply their understanding of the content and skills within the standards. The performance based assessments will provide formative and summative information to inform instructional decision-making and help students move forward on their trajectory of learning." Some examples of Performance Based Assessments include but are not limited to portfolios, experiments, group projects, demonstrations, essays, and presentations.

CHS Programming Course Syllabus

After you have reviewed the preceding packet of information with your parent(s) or guardian(s), please sign this sheet and return it to me so that I can verify you understand what I expect out of each and every one of my students.

Student Name (please print):

Student Signature:

Parent/Guardian Name (please print):

Parent/Guardian Signature:

Date:
