# AP Computer Science A

## TEACHER INFORMATION

| Teacher | Email | Phone | Location |
|---|---|---|---|
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## GENERAL INFORMATION

**Course Description**
The AP Computer Science A course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object-oriented and imperative problem solving and design. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems. It is both a college-prep course for potential computer science majors and a foundation course for students planning to study in other technical fields such as mathematics, engineering, physics, and chemistry. Even some "non-technical" fields such as business and psychology require students to take an entry-level programming course.

**Standards**
The AP Computer Science A course description and standards will be provided to each student in PDF format through itsLearning, including a detailed list of objectives and topics within each objective. The standards are also located at:
https://www.georgiastandards.org/standards/Georgia%20Performance%20Standards%20CTAE/AP-Computer-Science-A.pdf

**Java Development Environment**
We will use BlueJ as our Integrated Development Environment. Students will need to download and install BlueJ Combined Installer appropriate for the operation system and type of computer. BlueJ is free and available from: http://www.bluej.org/

**Learning Resources/Textbook(s)**
- *Java Software Solutions*, Lewis, Loftus, & Cocking, 3rd Edition, 2010, Pearson Education, Inc. (provided by the school); students must bring to class with them every day

- *Barron's AP Computer Science A*, Roselyn Teukolsky, (current edition), Barron's Educational Series, Inc. (recommended that each student purchase their own copy; $30 list price, but discounters usually sell for under $20; version without the CD is OK)

**Supplies**
- Something to write with and paper (not all of the work is done on a computer)
- USB jump drive (so files can be carried between home and school)
- Access to a computer and the Internet away from school (there WILL NOT be enough time to get programming assignments completed with only class time) Students with laptop computers are welcome to use them in class for programming assignments and note taking, as long as they do not become a distraction. Convenient access to power is not guaranteed.

**Course Fee**
- $30.00 for FBLA Membership

**AP Test Information**
You can receive college credit for AP Computer Science A by taking the AP CSA test. The score you need to achieve and whether you receive credit depends upon the individual college. The test is broken into two parts: Multiple Choice Questions = 50% and Free Response Questions = 50%. Details and deadlines for registration and payment will be shared throughout the year. It is the expectation that all students take the AP test and students with financial concerns should speak with their teacher.

- The AP test fee is ~$123.00. More details will be provided in December.

**Nature of the Work in AP Computer Science**
AP Computer Science is a college-level course. Students who pass the AP exam in May often earn college credit in Computer Science (requirements for credit vary by college). As such, students should not expect to have prepared reviews handed to them prior to quizzes and tests, and they should also not expect their tests to be essentially identical to their practice problems. Computer Science requires different types of critical thinking and problem solving skills than other high school courses. There is also much reading in the course and a great demand for a high level of reading comprehension. Regular daily reading and programming practice is necessary to excel in this course. In order to prepare students for the AP exam, it is important that parents and students understand that we cannot lower our expectations for the course. Consistent practice and willingness to seek help early when they don't understand is by far the most effective way for students to adjust and thrive at this new level of rigor.

- Students who are not prepared to make the commitment required for the elements mentioned above and whose primary motivation in taking the course is for AP recognition/college admissions are generally not successful in this course.

- Students with poor attendance and/or poor study habits are generally not successful in this course.

**Industry Credentialing/End of Pathway Assessments**
Students are encouraged to select a career pathway beginning in the ninth grade that is connected to college and career goals. This course is one of three courses in the career pathway chosen by a student. At the conclusion of the third pathway course, students will be required to take an industry credentialing End of Pathway Assessment. This assessment provides students an opportunity to demonstrate what they have learned by completing an online, nationally recognized exam. Students who complete a pathway and earn an industry credential by passing the assessment will receive a graduation cord to signify their achievement.

AP Computer Science A is the third class in the Computer Science pathway. Students in the Computer Science pathway will take the following EOPA: ***Microsoft: Software Development Fundamentals***.

College Majors Computer Science, Information Technology, Software Engineering, Computer Game Design and Development, etc.

Professions: Software Engineer, Computer Programmer, Computer Network Engineer, Database Administrator, Game Designer, Information Security, etc.

**Dress for Success:** Career and technical education pathways in Forsyth County incorporate Dress for Success Days throughout the school year. These experiences allow students to foster confidence and continue to develop a positive self-image, while understanding the importance of dressing well for their future profession. At certain intervals throughout the course, students will analyze industry standard of the profession and study the importance of dressing well for a job interview. This will culminate into being fully prepared for Community Mock Interviews which occur as students complete a career pathway.

**Future Business Leaders of America**

The FBLA Mission is to bring business and education together in a positive working relationship through innovative leadership and career development programs. We bring our mission to life through the application of our Motto: Service, Education, and Progress. Competencies FBLA are integral components of both the core employability skills standards and the technical skills standards, and FBLA activities are incorporated throughout instructional strategies developed for the course.

- Promote competent, assertive business leadership
- Strengthen confidence of students in themselves and their work
- Create interest in and understanding of American business enterprise
- Encourage development of individual projects to improve home, business, and community
- Facilitate the transition from school to work
- Assist students in the establishment of career goals
- Encourage scholarship and promote school loyalty
- Encourage and practice sound financial management
- Develop character, prepare for useful citizenship, and foster patriotism

**Required Assignments**

Formative Assignments:

This class will have daily homework and reading. There will be a few quizzes (drills) for each unit. Homework will sometimes be collected for a grade. Students will frequently complete AP level free response questions and these will also sometimes be collected for a grade. The major component for this portion of the grade is quiz grades, CodingBat exercises, and routine programming assignments. Programming assignments will be turned in through itsLearning, or by inspection in class. ALL assignments must be turned in by assigned due dates. Selected programming assignments will be graded in detail.

Summative Assignments:

The summative grade will come primarily from test scores. There will be 2-3 tests in fall semester, plus a mid-term exam. There will be 2-3 tests in the spring semester, including at least one, but usually two, complete AP practice exams that will be scored for a grade. There will be at least one large programming project each semester that will be counted as a summative grade. The "Final Exam" will be a written final exam, similar in content and length to the various AP practice exams.

Independent Work Requirement (Extremely Important!):

While students will have the opportunity to work together and share ideas, both in and away from the classroom, every student is expected to turn in independent and original work. Students will not receive credit for submitted assignments that are substantially identical to work from other sources.

Availability for Extra Help: The lab is open before school or after school by appointment. Students may also seek help during IF.

Makeup Work: Make up work is defined as work assigned during a student's absence, not work assigned prior to an absence. The student has five (5) school days upon returning to school to complete make-up work. The teacher has the discretion to grant a longer period to complete the work, if there are extenuating circumstances.

On-Task Work Behavior: Since you will have time in the computer lab during this course, it is tempting to use the computers for off-task behavior (playing games, working on assignments for other classes, etc). Off-task activity, in the computer lab or in the classroom, is strongly discouraged. On-task activity will be monitored and will be reflected in your grade. Playing games on the computer is prohibited AT ALL TIMES, unless you are testing a game program that is part of an assignment. Any other game playing will result in loss of computer access. Further violations will result in parent conferences and discipline referrals.

**Course Curriculum Content**

| Course Standards | Units/Topics |
|---|---|
| CS.A.1A. Program and Class Design | Object-Oriented Programing Design |
| CS.A.2A. Implementation techniques<br>CS.A.2B. Programming constructs<br>CS.A.2C. Java library classes and interfaces included in the AP java subset | Program Implementation |
| CS.A.3A. Testing<br>CS.A.3B. Debugging<br>CS.A.3C. Runtime exceptions<br>CS.A.3D. Program correctness<br>CS.A.3E. Algorithm analysis<br>CS.A.3F. Numerical presentation of integers | Program Analysis |
| CS.A.4A. Primitive data types<br>CS.A.4B. Strings<br>CS.A.4C. Classes<br>CS.A.4D. Lists<br>CS.A.4E. Arrays | Standard Data Structure |
| CS.A.5A. Operations on data structures<br>CS.A.5B. Searching<br>CS.A.5C. Sorting | Standard Algorithms |
| CS.A.6A. System reliability<br>CS.A.6B. Privacy<br>CS.A.6C. Legal Issues and intellectual property<br>CS.A.6D. Social and ethical ramifications of computer use | Computing in Context |
| GaBest ePortfolio (Georgia Department of Labor) | Employability Skills |

**Course Projects**

| Unit | Project Description | FBLA Integration |
|---|---|---|
| Object-Oriented Programing Design | **Painting a Room Lab**: Write a program accepts input from the user and outputs quality of paint needed to paint a room rounded to the nearest galloon. Determine the quality of paint in gallons required to paint a room after determine width, length, and height and taking doors and windows into consideration. | FBLA Benefits of Membership at the local, state, and national level |
| Program Implementation/program Analysis | **Dogs Inheritance Lab**: Construct a Java program that creates an abstract dog classes. Using inheritance, extend dog to create a Labrador, Yorkshire, and a third breed of your choice. | FBLA Leadership Development, Community Service, professional communication, and employability skills<br>FBLA Competition Overview |
| Standard Data Structure/Standard Algorithms | **Marshmallow Monster Lab**: Use the supplies provided to construct a marshmallow monster. Write a Java program that would take as inputs the supplies you have been provided and output a monster similar to what you have created with your supplies. Select two classmates' monsters to incorporate into your Java program. | FBLA State Project Overview<br>FBLA Business Achievement Awards |
| Computing in Context | **Favorite Song Lab**: Select your favorite song and write a Java Program that will system output the lyrics to the first stanza | FBLA Career Awareness |
| Employability Skills | **GaBest ePortfolio**: Following the guidelines set forth by the Georgia Department Labor, create a Employability Skills portfolio to demonstrate soft skills and employment readiness for the workforce. | FBLA Portfolio Competition |

**Course Pacing Guide**

| Course Pacing Overview | | |
|---|---|---|
| **Duration (Weeks)** | **Unit/Topic** | **Standard** |
| 6 weeks | Object-Oriented Programing Design | CS.A.1A. Program and Class Design |
| 6 weeks | Program Implementation | CS.A.2A. Implementation techniques<br>CS.A.2B. Programming constructs<br>CS.A.2C. Java library classes and interfaces included in the AP java subset |
| 2 weeks | Program Analysis | CS.A.3A. Testing<br>CS.A.3B. Debugging<br>CS.A.3C. Runtime exceptions<br>CS.A.3D. Program correctness<br>CS.A.3E. Algorithm analysis<br>CS.A.3F. Numerical presentation of integers |
| 9 weeks | Standard Data Structure | CS.A.4A. Primitive data types<br>CS.A.4B. Strings<br>CS.A.4C. Classes<br>CS.A.4D. Lists<br>CS.A.4E. Arrays |
| 4 weeks | Standard Algorithms | CS.A.5A. Operations on data structures<br>CS.A.5B. Searching<br>CS.A.5C. Sorting |
| 2 weeks | Computing in Context | CS.A.6A. System reliability<br>CS.A.6B. Privacy<br>CS.A.6C. Legal Issues and intellectual property<br>CS.A.6D. Social and ethical ramifications of computer use |
| 2 weeks | Employability Skills | GaBest ePortfolio |

## *GRADING CALCULATIONS AND POLICY*

**Georgia Milestones End of Course Assessment (replacing EOCT) Course Average**
40% (1st Sem. Course Work) + 40% (2nd Sem. Course Work) + 20% Georgia Milestones EOC Assessment
1st & 2nd Semester Course Work = 75% Summative + 25% Formative

**Non-Georgia Milestones EOC Assessment Course Average**
50% (1st Sem. Course Work) + 50% (2nd Sem. Course Work)
1st and 2nd Semester Course Work = 75% Summative + 25% Formative

**Concept of formative and summative assessment**
http://www.forsyth.k12.ga.us/assessmentconcepts

| Grading Policy | | | |
|---|---|---|---|
| A = 90 – 100 | B = 80 – 89 | C = 70 – 79 | Failing = Below 70 |

** Formative Assessments include, but are not limited to homework, class work, practice tests, rough drafts, and sections of projects/ research papers/presentations.*

** Summative Assessments include, but are not limited to unit tests, final projects, final essays, final research papers, and final presentations.*

# Career Tech Grading Policies for 2017-2018

In order to receive recovery students must complete some type of remediation (i.e. coming in before/after school or during designated recovery time).

All recovery assignments are to be completed within ten school days. Based on a 100 point score a 20-point reduction will be taken off the final grade of the assignment.

All grades become locked after the 9 week grading period ends.

In the event a student is dealing with extenuating circumstances the student must have academic waiver signed by Career Tech Administrator, to allow for an extension.

The Career Tech Department will be following the county wide policy on absences from school.