

## Career/ Tech Ed Department

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### CTE Department

#### Resource Teacher:

**Ed Graf**

[Edward\\_W\\_Graf@mcpsmd.org](mailto:Edward_W_Graf@mcpsmd.org)

#### Telephone:

301-284-4395

## Computer Science Teacher

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**Enitan Okusanya**

[Enitan\\_M\\_Okusanya@mcpsmd.org](mailto:Enitan_M_Okusanya@mcpsmd.org)

#### Telephone:

301-284-4395

## Computer Science Program link:

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[https://  
www.montgomeryschoolsmd.org/career-  
readiness/plans/  
computer-science.aspx](https://www.montgomeryschoolsmd.org/career-readiness/plans/computer-science.aspx)

#### Contact:

IB Coordinator: Lisa Ingram

Address: 10301 Apple Ridge Rd,  
Gaithersburg, MD , 20879  
Phone: (301) 284- 4375  
Email: Li-  
sa\_A\_Ingram@mcpsmd.org

More info at:

<https://www.ibo.org/>

# International Baccalaureate Career Related Pathway (IBCP)

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Photo Courtesy of the International Baccalaureate

## Computer Science



What Does the IBCP Enable Students To Do?

The CP enables students to:

- follow their chosen education and career pathways in life
- combine academic subjects with their personal and professional interests and skills
- engage in learning that makes a positive difference to their community
- think critically and creatively
- communicate clearly and effectively in a variety of situations
- work independently and in collaboration with others
- consider new perspectives and other points of view
- develop greater self-confidence and self-awareness
- demonstrate high levels of resilience and flexibility
- be internationally-minded and globally aware
- apply their knowledge to real-world scenarios and situations.

\*According to IBO.org

## Core Components of the IBCP

### • Personal and Professional Skills

The goal of Personal and Professional Skills in the IB program is to help students develop better learning skills. These skills fall under categories of communication, social, self-management, research, and thinking.

### • Community and Service

Students work with members of the community to satisfy local/global needs. This section of the core emphasizes the need to serve as contribution to academic value and career knowledge. Other characteristics that are developed through the Community and Service component include civic responsibility and social aptitude.

### • Language Development

Language Development targets the oral, visual, and written abilities of a student. To develop their language skills, students participate in a monitored self-directed study. IBCP students are required to keep track of their progress in a language portfolio

### • The Reflective Project

An in-depth investigation focused on an ethical dilemma within the career study that combines knowledge gained from IBDP courses, sections of the CP core and other career-related work.

- The Reflective Project must contain:

- Awareness of ethical consequences on the community
- An explanation showing knowledge and understanding of the issue chosen
- Research and evaluation of evidence and differing viewpoints
- Valid citations and bibliography
- A word limit of 3,000 words

## The Computer Science Pathway

Students in the IBCP Computer Science Programme must:

- ♦ Take at least two IB classes ( **one must be over the course of two years**)
- ♦ Complete a career pathway program
- ♦ Complete the core components

### Computer Science Career Pathway Program:

[AP COMPUTER SCIENCE PRINCIPLES](#) A/B **2924/2925** CM AP (AL) 0.5 credit  
This course, offered in partnership with Code.org, advances student understanding of the central ideas of computer science, engaging them in activities that show how computing changes the world. Through a focus on creativity, students explore technology as a means for solving computational problems, examining computer science's relevance to and impact on the world today. Aligned to the new AP test of the same name, this course is part of an MSDE-approved 4-credit Program of Studies in Computer Science.

[COMPUTER PROGRAMMING](#) 1 A/B Corequisite: Geometry or Honors Geometry **2989/2990** CM (AL) 0.5 credit

This course introduces the basic principles of structured programming, within the context of an object-oriented language. Topics covered include fundamentals of the C++ programming language, simple and structured data types, control statements, functions, arrays, and classes. Emphasis is placed on developing effective problem solving techniques through individual and team projects.

[AP COMPUTER SCIENCE JAVA](#) A/B Prerequisite: Computer Programming 1 A/B or AP Computer Science Principles A/B **2901/2902** CM AP 0.5 credit  
Using the JAVA language, students explore in-depth work with text files and arrays, abstract data types, recursion, searching and sorting algorithms, and program efficiency. Students examine and study specified class behaviors, interrelated objects, and object hierarchies. Students may elect to take the A version of the AP Computer Science exam on completion of this course.

[COMPUTER PROGRAMMING 3—ADVANCED TOPICS IN COMPUTER SCIENCE](#) A/B Prerequisite: AP Computer Science Java A/B **2965/2966** CM (AL) 0.5 credit  
Students will study advanced programming methodology, the features of programming languages, primitive data types, dynamic allocation of memory, data structures, searching, sorting, and numerical algorithms, using the JAVA programming language. Students also are introduced to software engineering concepts and team-oriented approaches for solving problems. Students will explore advanced topics such as memory management, network programming, simulation and game development, and multimedia programming.

[INFORMATION TECHNOLOGY INTERNSHIP](#) Prerequisite: Computer science POS required coursework **2907** 0.5 credit  
Students apply knowledge and skill sets acquired in their program of study to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities, and relevant workplace experiences.

\*Descriptions taken from the WMHS 2019 Course Offerings