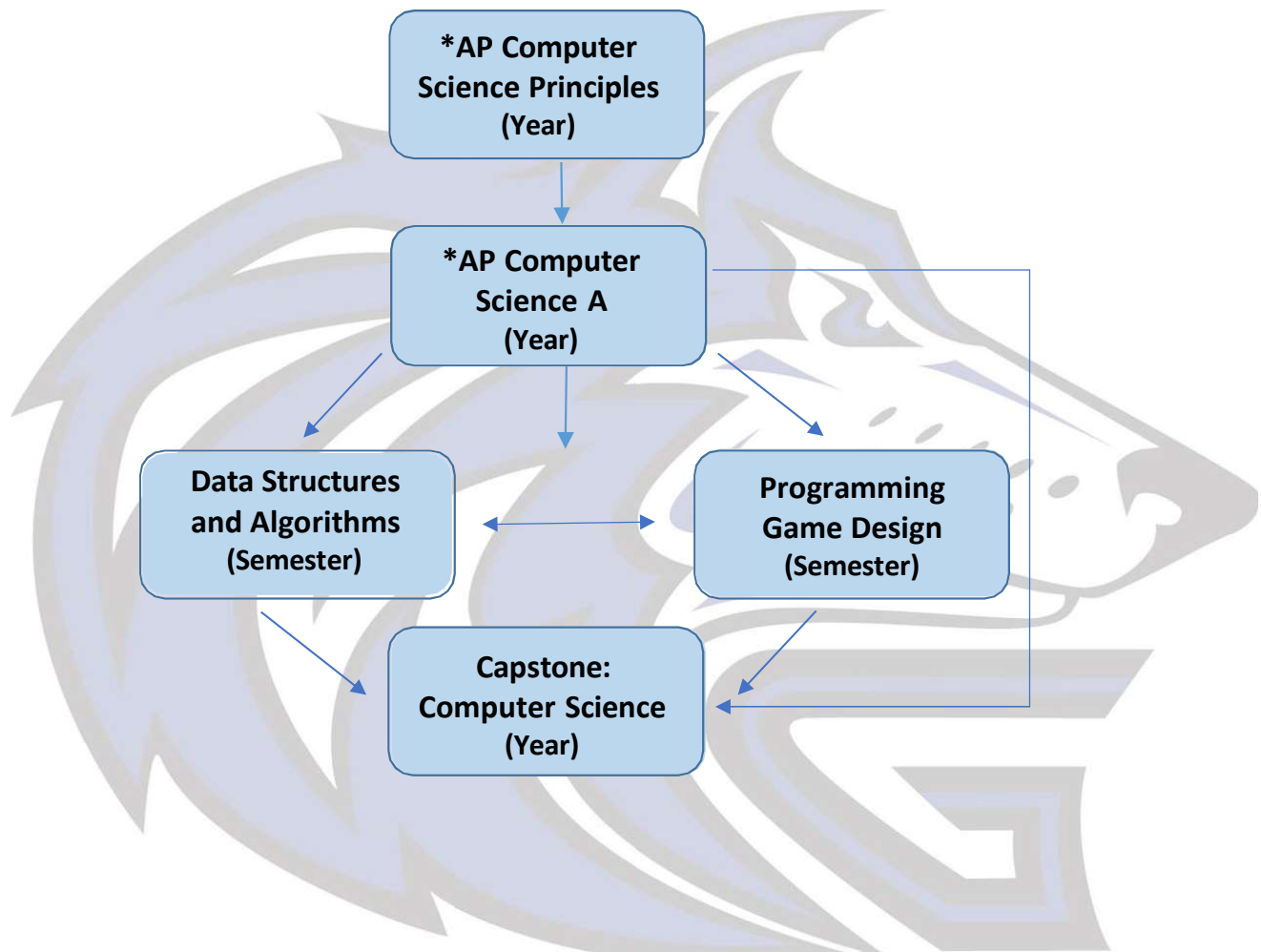


COMPUTER SCIENCE

Computer Science classes offer a wide selection of practical courses for students of all ability levels and interests. Course offerings allow students to explore a variety of topics in computer science and technology including multimedia, video production, the internet, computer graphics, and computer programming. Students successfully completing Advanced Placement Computer Science may receive college credit. Computer Science courses may be taken to meet the 1 1/2 credits required in Technology Education, Arts and Vocational Education.

**Students enrolled in Computer Science courses are encouraged to participate in the Technology Student Association (TSA), Women in Stem, Vex Robotics, and/or CyberPatriot/Computer Science Club.*



** Designates a weighted course*

COMPUTER SCIENCE COURSE DESCRIPTIONS

*AP COMPUTER SCIENCE PRINCIPLES

Grade Level: 9 – 12

Year: 1.0 Credit

Prerequisites: None**Fee: See AP section for exam fee information**

AP Computer Science Principles is an introductory computing course. Students cultivate their understanding of computer science through working with data, collaborating to solve problems, and developing computer programs as they explore concepts like creativity, abstraction, data and information, algorithms, programming, the internet, and the global impact of computing. The main language in this class is python.

*AP COMPUTER SCIENCE A

Grade Level: 10 – 12

Year: 1.0 Credit

Prerequisites: Grade of C or higher in AP Computer Science Principles**Fee: See AP section for exam fee information**

AP Computer Science A is an introductory college-level computer science course. Students cultivate their understanding of coding through analyzing, writing, and testing code as they explore concepts like modularity, variables, and control structures. The main language in this course is Java.

PROGRAMMING GAME DESIGN

Grade Level: 10 – 12

Semester: 0.5 Credit

Prerequisites: AP Computer Science Principles

Game Design combines problem-solving techniques with computer game design and implementation to introduce the student to basic gaming and computer science concepts. Students design, implement, and test computer games using software that allows for basic game creation through a wide variety of game creation tools. Course intended to teach students the in-depth detail of how video games are created. Students will learn how to combine different aspects of asset creation, code creation, GUI's, objective creation, and finalizing small video games. Students will start with simple programming basics to allow the understanding of game design. The class ends with Unity or Unreal Engine where students are using industry standard applications for game creation.

DATA STRUCTURES and ALGORITHMS

Grade Level(s): 10-12

Semester : 0.5 Credit

Prerequisite: AP Computer Science A

This course is a college level course that is a follow-up to AP Computer Science. This course will cover additional data structures, which include, but are not limited to, arrays, lists, stacks, and queues, trees, and hash tables. This course will also expose students to basic algorithmic development techniques as related to the data structures studied. This will help students gain an understanding of how Machine Learning / Artificial Intelligence have decision making algorithms.

CAPSTONE: COMPUTER SCIENCE

Grade Level: 11 – 12

Year: 1.0 Credit

Prerequisites: Successful completion of AP Computer Science A or teacher approval**Fee: Cost based upon materials needed**

This course allows for advanced work in the Coding Program of Study. This advanced work can be individualized to the student for a specific program of study. It may include project-based learning or preparation for end-of-program industry certification. Specific content and course design will be determined by the instructor in collaboration with the individual student. Goal setting, time management, and independent learning skills are developed in this course. The student will develop a career plan, a digital portfolio and professional presentation about their topic of study. This course is instrumental in helping students make future educational and career decisions. Students taking this course are encouraged to participate in the Technology Student Association (TSA) student organization.