

Missouri Course Access and Virtual School Program (MOCAP)

Course Descriptions – CREATE A LOOP

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INTRODUCTION TO CODING - MIDDLE SCHOOL

This engaging and hands-on course introduces middle school students to the exciting world of computer science through visual block programming, CoffeeScript, and Python. Students will learn to think like programmers by designing interactive stories, animations, games, and solving real-world problems. With a strong emphasis on creativity, logical thinking, and collaboration, the course builds foundational coding skills that will prepare students for more advanced study in computer science.

CODING WITH PYTHON I - MIDDLE SCHOOL

This one-semester course introduces middle school students to computer programming using Python, one of the most widely used and beginner-friendly coding languages. Students will learn fundamental programming concepts such as variables, loops, conditionals, and functions through fun, hands-on projects. No previous coding experience is needed. The course emphasizes logical thinking, creativity, and problem-solving in a supportive and engaging virtual environment.

CODING WITH PYTHON II - MIDDLE SCHOOL

Coding with Python II builds on the skills developed in Python I and challenges students to create more advanced, interactive, and dynamic programs. Students will expand their knowledge by working with complex data structures, file input/output, and basic object-oriented programming. The course introduces students to real-world applications, such as simulation, simple data analysis, and basic AI principles. Students will also explore how to use generative AI (like ChatGPT) to support debugging and project planning.

INTRODUCTION TO COMPUTER SCIENCE (WITH PYTHON) A - HIGH SCHOOL

In this dynamic, project-based course, students will explore the foundations of web development and programming through HTML, CSS, JavaScript, and Swift. Students will build websites, create interactive web elements, and design simple iOS-style app prototypes. Emphasis is placed on real-world problem solving, creative thinking, and collaboration. By the end of the course, students will have a working portfolio of digital projects and the foundational knowledge to pursue more advanced programming courses or pathways in computer science.

INTRODUCTION TO COMPUTER SCIENCE (WITH PYTHON) B - HIGH SCHOOL

This advanced-level course is designed for students who have completed an introductory web and app development course. Students will deepen their knowledge of JavaScript and Swift, build more complex web applications, and begin exploring back-end development and APIs. Emphasis is placed on real-world coding practices, teamwork, and project management. Students will gain experience with version control, responsive design, and mobile-first development while working on long-term projects that simulate professional software development environments.

WEB DESIGN & DEVELOPMENT

This course introduces students to the foundational principles of web design and front-end web development. Students will learn how to create visually appealing, accessible, and functional websites using HTML, CSS, and introductory JavaScript. The course emphasizes design thinking, user experience (UX), coding fundamentals, and responsive design. Through hands-on projects, students will build and publish their own websites while developing skills relevant to careers in technology and digital media.

GAME DESIGN & DEVELOPMENT

This one-semester virtual course introduces high school students to the exciting field of game design and development. Students will explore the foundations of interactive storytelling, visual design, coding, and game mechanics. Using beginner-friendly game engines and AI-assisted tools, students will create original games that are engaging, purposeful, and technically sound. The course integrates creativity, logic, and collaboration while exposing students to industry practices and emerging technologies such as generative AI for art, writing, and level design.

GRAPHIC DESIGN I

This course provides a foundational overview of graphic design principles, tools, and applications. Students will explore design theory, color, typography, composition, branding, and digital imaging through hands-on projects using industry-standard software. The course balances creative development with technical proficiency and prepares students for further study or entry-level work in the field of visual communication.

GRAPHIC DESIGN II

This advanced-level course builds on the foundational skills from Graphic Design I. Students will deepen their understanding of visual communication through complex design challenges, real-world scenarios, and brand development projects. Emphasis is placed on creative problem-solving, project management, portfolio refinement, and the development of a personal design style. Students will complete client-based simulations and prepare their work for public presentation or professional use.