



MASTERY
— CODING —

COURSE CATALOG '24-25



TURN YOUR GAMERS
INTO MAKERS

We provide **award winning courses** for:

- Elementary School
- Middle School
- High School
- Adult Learners

MASTERY

— CODING —

OUR PHILOSOPHY

Mastery Coding™ empowers students to meet the challenges of tomorrow through intelligent technology education. We provide industry-leading courses in Computational Literacy, Computer Science, Web & Game Development, and Academic Esports. We provide schools, teachers, and students a pathway to tap into the power of cross-disciplinary, standards-based, efficacious computer science and academic esports curricula through live, remote, or hybrid instruction.

Our courses empower students with the skills they need to become industry certified for high-skill, high-need, and high-paying workforce opportunities. By using gaming as a gateway, we build career readiness. Mastery Coding™ is on a mission to **turn student gamers into makers**.



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Channel your students' passion for gaming into career and college readiness

Pathway Esports

Channel your students' passion for gaming into college and career opportunities. With the Pathway Esports™ toolkit, students and schools will have everything they need to start and run their very own esports team and compete in exciting and dynamic tournaments.

Grades: 6 - 12



Our complete toolkit includes:

- A complete starter kit for new coaches as well as a deep toolbox for veterans to help their teams compete at the highest levels
- College scholarship guidance and resources (yes, there are SCORES of college scholarships available!)
- Academic learning modules that develop career awareness, technology skills, and computer literacy
- Health and gaming safety protocols
- Game-based strategies created by top-ranked esports athletes that will help elevate all players to the next level of their abilities
- Equity-based educational practices that foster diversity and inclusion for all races, genders, and ethnicities

Includes Career Explorations in Esports

Esports is a multi-billion dollar industry with multiple career pathways that extend beyond playing. Pathway Esports™ provides career pathway explorations for:

- Content Creators
- Esports Player/Manager
- Software Developers and Game Designers
- Shoutcasters, Streamers
- Business Development and Partnerships
- Event Planning and Sponsorships
- Agents, Lawyers, Player Advocates
- Communications Directors, Marketing and Media



The United States Academic Esports League

With the onboarding of Pathway Esports, teams from your school will be invited to enter an exclusive competitive tournament circuit where they will:

- Compete against other students, schools, and teams
- Win prizes and scholarships
- Have fun
- Be part of a gaming “safe space” where behavior is monitored and protocols enforced
- Focus on Social-Emotional (SEL) wellness for all students and teams
- Concentrate on character development, critical thinking, and STEM career exploration

STEAM Career Connections



Health Sciences:

Nutrition, Physiology, Psychology



Media Technologies:

Broadcasting, Social Media, Production



Software Engineering:

Game Design, Equipment, Hardware, Coding and STEM



Communications:

Event Planning, Marketing, Promotion



Business & Finance:

Percentages, Contracts, Agents, Lawyers



Technical Requirements

- A computer/console for each student
- Has access to Zoom meetings
- Runs the required game
- Can connect & play online
- Headsets recommended



All Mastery Coding courses come with year-round professional development and comprehensive teacher support

GamerMath™

This supplemental math curriculum uses today's most popular video games as a vehicle for standards-based math instruction.

5 Core Principles of GamerMath™



Culturally responsive teaching

Increase engagement by incorporating relevant cultural examples and contexts into math lessons.



Teach conceptual understanding

Demonstrate why mathematical procedures work rather than relying on memorization.



Promote comprehension through visual representation

Use gaming visuals to make math more exciting and to help students “see” the math.



Scaffolded learning

Break down complex concepts into smaller, more manageable steps and gradually increase the complexity.



Incorporating real-world applications

Connect math to practical applications in everyday life to help students see the value of math.

Technical Requirements

Operating System



- Chromebook: Chrome OS 100.0 or later
- Windows: 7, 8, 8.1, 10 or later
- Mac: OS X El Capitan 10.11 or later
- Linux: 64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, or Fedora Linux 32+

Software Installed

- Google Chrome



Program includes:

-  60 hours of content
-  Self-grading assessments
-  Video-based instruction
-  Comprehensive data and reporting
-  Professional development and ongoing support



Teach math using the games your students know and love

MINECRAFT

NBA 2K



MADDEN NFL



MARIO KART

POKÉMON



SUPER SMASH BROS.

FALL GUYS

Elementary Aligned Topics

- Lines and Angles
- Multiplication
- Time and Money
- Addition and Subtraction
- Fractions

Middle School Aligned Topics

- Statistics & Probability
- Ratios
- Percentages
- The Number System
- Lines and Angles
- Geometry
- Fractions and Decimals

Computer Science Foundations

Computer Science Foundations is a comprehensive introduction to computer science and programming, designed for middle school and high school students. Through engaging projects and clear, step-by-step guidance, students will learn to code in Python while exploring the exciting world of computer science.

Grades: 6-10

Python

Course Objectives



Learn the foundations of programming in Python, including syntax, variables, and data types.



Enhance problem-solving skills through exploration of control structures, loops, and basic algorithms.



Understand crucial components of practical Python applications such as data structures and file I/O operations.



Advance coding proficiency by delving into functions, object-oriented programming, and Python modules.



Study the history and societal impacts of computing, along with fundamental software design principles.



Topics and Technologies

- Python Syntax and Basic API
- Variables and Data Types
- Control Structures: Conditional Logic, Loops
- Basic Algorithms and Problem Solving
- Data Structures: Lists, Dictionaries
- File I/O: Reading and Writing Data
- Functions and Object-Oriented Programming
- Modules in Python: Usage and Applications
- Data Collection and Analysis Techniques

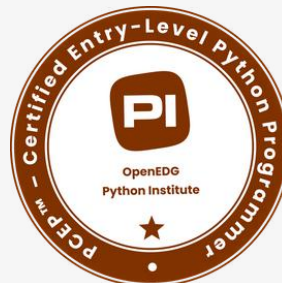


Course Outcomes

Certifications

This course prepares students for the following certifications:

- Certiport IT Specialist Python
- Knowledge Pillars Python Coding Apprentice
- PCEP Certified Entry-Level Python Programmer



Project Portfolio

Students will build various coding projects, resulting in a solid portfolio demonstrating their skills and experience.



Technical Requirements

Students will use a **web-based code editor**, eliminating the need for extensive software installations. However, it is essential to have a system that can run a modern browser efficiently.

Operating System

- Chromebook: Chrome OS 100.0 or later
- Windows: 7, 8, 8.1, 10 or later
- Mac: OS X El Capitan 10.11 or later
- Linux: 64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, or Fedora Linux 32+

Hardware Specifications

- RAM: 4 GB minimum (8 GB recommended)
- Peripherals: Keyboard and mouse

Software Installed

- Google Chrome



All Mastery Coding courses come with year-round professional development and comprehensive teacher support

Game and App Certification Pathway

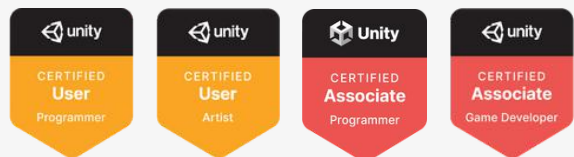
Mastery Coding’s flagship Game and App Certification pathway uses engaging, cross-disciplinary, project-based modules to teach core coding skills and offer a direct path to the industry-recognized Unity certifications. Seize the power of Game-and-Make™!

Grades: 9-12

Unity | C# | Blender

Certifications

- Unity User: Programmer (Year 1)
- Unity User: Artist (Year 1)
- Unity Certified Associate: Programmer (Year 2)
- Unity Certified Associate: Game Developer (Year 2)



Course Objectives



Learn the fundamentals of Object-Oriented C# programming.



Use Unity, an industry-leading game engine, to create playable games and interactive applications.



Publish games and coding projects to a digital career portfolio.



Create 3D art assets using Blender, an open-source 3D modeling and animation software.



Technical Requirements

Software Installed

- Google Chrome
- Unity Hub + Unity 2021 LTS
- Blender 3.1 or later
- Microsoft Visual Studio Code

Operating System

- 64-bit Windows 10 or later
- macOS 11 or later



Portfolio Projects



Alchemy LaB

Students model an alchemy laboratory from scratch and write logic for first person interactions with the environment.

3D art, UX, geometry, lighting, interaction design



Castle Siege

Students combine physics with C# scripting to create a challenging platformer.

3D vector arithmetic, Newton's laws, level design



Stars and Cars

Students design a city where players drive around collecting stars in a race against the clock.

Animation, Particle Systems, Physics and Collision Detection



STEAM Connections



Apply physics principles including Newton's laws of motion to predict and simulate projectile motion.



Dive deep into computer science topics by writing C# code to create full-featured games and applications



Become familiar with the engineering design process through managing and completing software projects.



Produce original game art, assets, and 3D models to implement in games and applications



Utilize 2D and 3D vector arithmetic to position and move game objects.



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Game Development Foundations

Game Development Foundations (GDF) leverages the excitement of creating games to teach computer science, mathematics, and problem-solving.

Grades: 6-10

JavaScript

Course Objectives



Get an overview of the various job types, tasks, and career paths in the video game industry.



Write code to drive core game logic for an assortment of games and projects.



Expand on what game mechanics are and learn best industry practices in-game and application development.



Work through the game design and game development process to produce original, full-featured browser-based games and applications.

Technical Requirements

Operating System

- Chromebook: Chrome OS 100.0 or later
- Windows: 7, 8, 8.1, 10 or later
- Mac: OS X El Capitan 10.11 or later
- Linux: 64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, or Fedora Linux 32+

Software Installed

- Google Chrome



Course Outcomes

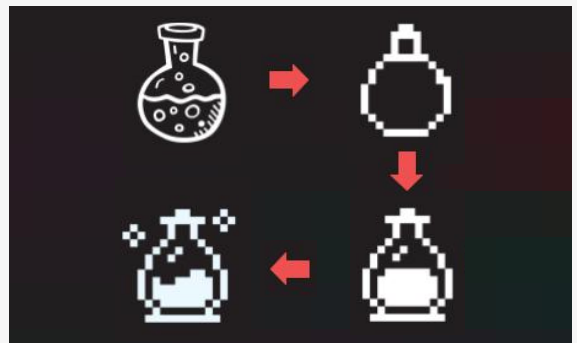
Project Portfolio

Students will build a variety of browser-based games that introduce them to various career paths that exist within design and development. By the end of the course, students will have the experience of building their own games and a strong portfolio of their own individual projects to prove their knowledge and skill.



Design Portfolio

Students apply game and asset design knowledge and use industry-standard workflows to create game narratives and resources. By the end of the course, students will have an online portfolio of game art assets hosted on Pixilart.com.



STEAM Connections

- S** Using science concepts from disciplines including physics, biology, and ecology, students will create games that simulate the real world in meaningful ways.
- T** Students learn computer science principles as they utilize JavaScript to write game logic. The history and development of modern computer technology including software and hardware are discussed.
- E** Students will work with a custom game engine to improve their understanding of mathematics and understand engineering concepts to design a more realistic game.
- A** Game art is an integral part of producing a fun and engaging video game. Students create their own game art assets to make their games unique.
- M** Students apply mathematical concepts, including arithmetic, vector mathematics, and geometry, in their code to achieve desired results.



All Mastery Coding courses come with year-round professional development and comprehensive teacher support

Career Explorations in Esports

This one-of-a-kind elective allows students to explore a variety of high-paying professions inside the dynamic, multi-billion dollar industry of esports.

Grades: 6 - 12

Students will Learn:

- What is the job and who hires for the position
- What are the pay scale and average salary range
- What skills are required to be successful in each career strand
- What level of education is typical of each job
- What does a typical “week in the life” of each professional look like
- What technological aptitudes are necessary for the role
- What communication tools are most widely used for each job
- What employment opportunities are available in today’s market
- What college majors/degrees are typical for each position
- Which hard and soft skills do employers seek in job candidates
- What is the pathway from apprentice to professional
- How does this skill in esports connect to other industries



****BONUS! In-depth resources about college scholarships available in esports**

Prepare your students for High School with Career Pathway Connections that are CTE Aligned

- Health Science
- Information & Communication Technologies
- Arts, Media, & Entertainment
- Marketing, Sales, & Services
- Business & Finance

Technical Requirements

- Student computer: Chromebook or PC
- Reliable Internet connection



Careers Explored

- Esports Player/Manager
- Software Developer and Game Designer
- Shoutcaster, Streamer
- Business Development and Partnerships
- Event Planning and Sponsorship
- Agent, Lawyer, Player Advocate
- Communications Director, Marketing and Media

STEAM Connections



Health Sciences:

Nutrition, Physiology, Psychology



Media Technologies:

Broadcasting, Social Media, Production



Software Engineering:

Game Design, Equipment, Hardware, Coding, and STEM



Communications:

Event Planning, Marketing, Promotion



Business & Finance:

Percentages, Contracts, Agents, Lawyers



Course Includes:

- 30 hours of multifaceted career exploration curriculum
- Self-grading assessments
- Project-based learning
- Capstone career exploration project w/ grading rubric
- Includes PD at no additional cost



All Mastery Coding courses come with year-round professional development and comprehensive teacher support

Web Development Foundations

Web Development Foundations (WDF) explores Internet history, coding principles, and languages. WDF teaches HTML, CSS, and JavaScript so students can design, create, and breathe life into visually appealing web pages. Upon completion of this course, students will have a solid understanding of computer science principles and the ability to code interactive web pages from scratch.

Grades: 6-10

HTML | CSS | JavaScript



Course Objectives



Learn the historical context of how computers, code, and the web came to be and use HTML to write and code their own informational document.



Understand and implement design concepts of unity, color theory, white space, and typography to create a professional-looking web page.



Understand and apply computer science concepts including sequencing, selection, looping, and state management by coding in JavaScript.



Use event-driven development to create interactive web applications.

Technical Requirements

Operating System

- Chromebook: Chrome OS 100.0 or later
- Windows: 7, 8, 8.1, 10 or later
- Mac: OS X El Capitan 10.11 or later
- Linux: 64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, or Fedora Linux 32+

Software Installed

- Google Chrome



Course Outcomes

Certifications

This course prepares students for the following certifications:

- Knowledge Pillars HTML & CSS Coding Specialist
- Certiport IT Specialist - HTML and CSS Certification



Project Portfolio

Students will build a variety of websites and web applications. By the end of the course, students will have the experience designing and building their own web pages, resulting in a strong portfolio of their own individual projects to prove their knowledge and skill.

STEAM Connections



Students dive into ecology topics including conservation, restoration, and succession as they incorporate such topics into their projects.



Students learn about the history and development of computers and the Internet and become familiar with computer science principles using JavaScript.



Students explore emerging technologies to see the progress, possibilities, and problems these technologies present.



Students learn and apply design principles, including color, typography, layout, and composition, to create visually appealing web pages and web applications.



Students use arithmetic and logical operations in their code to achieve desired results.



All Mastery Coding courses come with year-round professional development and comprehensive teacher support

Computer Science Essentials

From learning what code is and how it works to learn how to keep their information and online activity protected, private and secure, this program teaches the essential introductory computer science knowledge students need to be successful and safe in today's technological world.

Grades: 3 - 5

Course Objectives



Have a better understanding of the history and use of code and what career options are available to them



Understand the foundations of computer science logic, code, and how computers work



Learn to interact online with kindness and respect



Understand how to safely use the internet

Technical Requirements

Operating System

- Chromebook: Chrome OS 100.0 or later
- Windows: 7, 8, 8.1, 10 or later
- Mac: OS X El Capitan 10.11 or later
- Linux: 64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, or Fedora Linux 32+

Software Installed

- Google Chrome



STEAM Connections



Students will learn about the functions and foundational principles of sequencing, algorithms, loops, and if- statements.



Students will be taught the rules of safe digital interaction, and the core principles of cybersecurity, online safety, and digital citizenship.



Students will learn about the basic hardware and software makeup of computers and the impact of each component on the larger system.



Students will understand the concepts 'copyright' and 'plagiarism' to not only protect their content online but to also give credit to artists and creators when credit is due.



The program will have students apply core math concepts including pattern recognition, estimation, and calculating percentages.

SEL Connections

Self-Awareness: Students will be given the chance to recognize where they can begin setting goals in order to successfully organize and reach objectives.

Self-Management: Students will develop their time management skills by having a mixture of “explore time” and “assignment time” where they will be required to learn and practice along with the instructor.

Social Awareness: Students will develop their social skills by working together with their teammates as they learn the core principles of teamwork and effective communication.

Responsible Decision Making: An exceptionally important skill in school, the workplace, and at home students will see and learn the value teamwork brings to their lives.

Relationship Skills: Students build and maintain healthy relationships with other players through community, cooperation, trade, and peacefully resolving conflict.



All Mastery Coding courses come with year-round professional development and comprehensive teacher support



Workforce Solutions: Unity Certification Institute

The UCI is a project-based course that teaches Unity and C# programming, preparing learners to attain the Unity Certified User: Programmer certification. By the end of this course, learners will be able to build full-featured video games and applications in Unity.

Grade Band: Adult Learners

Course Objectives



Learn C# coding concepts including data types, variables, conditionals, loops, arrays, properties, methods, and scope.



Use Unity to build a series of mini-projects to master key Unity competencies.



Create two full-featured 3D games, combining 3D models, textures, audio files, and C# scripts.



Build a full-featured 2D game using 2D sprites, 2D animations, and knowledge of data structures.

Technical Requirements

Operating System

- 64-bit Windows 10 or later
- macOS 11 or later

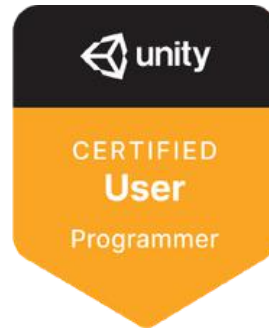
Software Installed

- Google Chrome
- Unity Hub + Unity 2021 LTS
- Blender 3.1 or later
- Microsoft Visual Studio Code



Certification

After completing this course, students will have the knowledge and skills needed to attain the **Unity User: Programmer certification.**



Portfolio Projects



Roll-a-Ball

Using 3D models, textures, audio files, and C# scripts, students create a fully-featured game where the player navigates through an obstacle course.

Textures, Level Design, Game Physics



Retro Swipe

Through building this 2D "Match-3" game, students demonstrate their understanding of C# data structures, the 2D grid and the Unity Animator Controller.

2D animation, C# collections, 2D grid



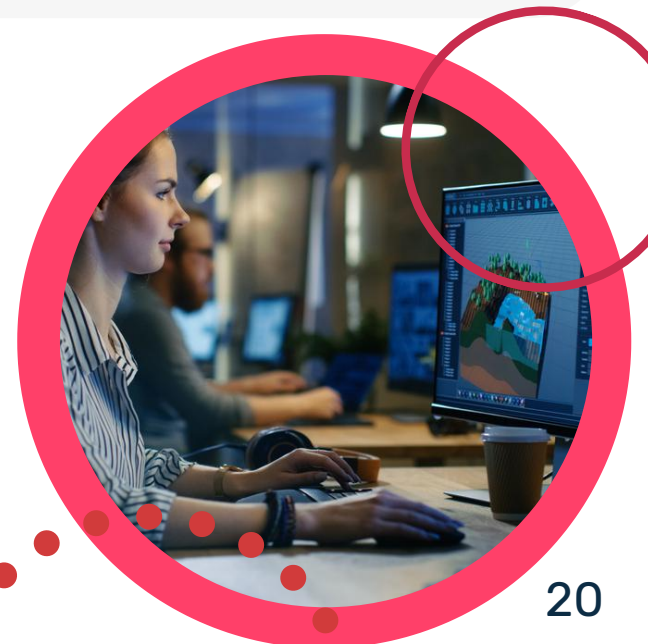
Zombie Chase

Students create their own city level using the provided 3D assets, enemies with AI pathfinding, atmospheric scene lighting and particle effects.

Pathfinding, Lighting, Particle Effects, 3D animation

Course Format

This 80-hour Unity boot camp is delivered via self-guided video lessons and includes live virtual workshops with an instructor to work through the material.



Academic Esports™ Camps & Clubs

The Extended Learning Curriculum you Need Aligned to Federal Funding Guidelines

Our camps and clubs allow students to follow their passion for gaming down productive STEM pathways while emphasizing social-emotional learning and good ol' fashioned FUN!

Grades: 3 - 12

Camp and Club Offerings

- Academic Esports™ Minecraft Camps and Clubs
- Academic Esports™ Among Us Camps and Clubs
- Academic Esports™ Rocket League Camps and Clubs
- Academic Esports™ Fortnite Camps and Clubs
- Academic Esports™ Super Smash Bros. Camps and Clubs
- Academic Esports™ FIFA Camps and Clubs
- Academic Esports™ Overwatch Camps and Clubs
- Digital Adventures in Computer Science Camps and Clubs



SEL Connections

Self-Awareness: Students will develop their ability to advocate for themselves by being able to identify and express their emotions to each other in a positive manner.

Self-Management: Students will develop their time management skills by having a mixture of “game time” and “practice time” where they will be required to learn and practice along with the instructor as they are taught, new mechanics.

Social Awareness: Students will develop their social skills by working together with their teammates as they learn the core principles of teamwork, effective communication, and competitive etiquette.

Responsible Decision Making: Students will learn how each situation they are presented with has multiple, viable options and see the relationship between choosing wisely and choosing quickly.

Relationship Skills: Students will understand the value of good sportsmanship and how to be kind and considerate in both victory and defeat.



Technical Requirements

- A computer/console for each student
- Has access to Zoom meetings
- Runs the required game
- Can connect & play online
- Headsets recommended



Implementation

Academic Esports™ Clubs

- 1-hour sessions
- Multi-week implementation

Game-and-Learn™ Camps

- 3-hour sessions
- Single week implementation



STEAM CONNECTIONS



Students will begin to understand the rules of the game and how things function on a deeper level within the code.



Students will explore software development concepts like level design and how that impacts the gameplay and players.



Students will begin to understand how to manage their computer hardware and software and optimize it for their play.



Students will understand how managing different graphics and visual options will optimize performance and improve their gameplay.



Students will understand how to analyze and calculate damage totals by finding ratios through numerical compare and contrast methodology.



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TURN YOUR GAMERS INTO MAKERS



SCAN ME

Where critical thinking meets
project-based fun



www.masterycoding.com

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