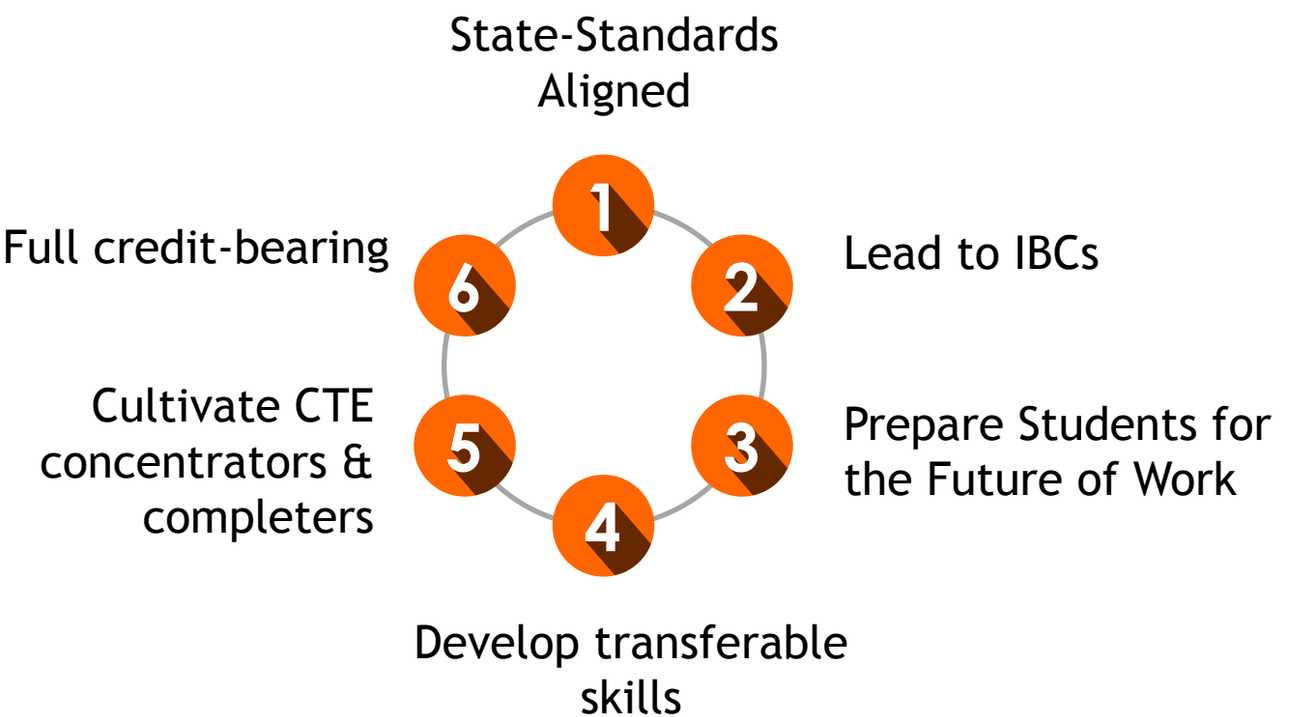
CTE Digital Careers Pathways Catalog

YaizY

Course Catalog
School Year 2024-25

Our **Career and Technical Education (CTE)** courses:

1. Seamlessly combine academic learning with practical, industry-specific skills
2. Prepare students for a diverse range of roles within the digital industry
3. Help students earn industry-recognized credentials



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CTE Digital Career Clusters and Pathways

STEM & Information Technology

- Computer Science
- Engineering
- Web Development
- Cybersecurity

Business, Marketing, and Finance

- Marketing
- Entrepreneurship & Business Management

Arts, Audio/Video Technology, and Communications

- Graphic Design
- Animation
- Game Development
- Filmmaking

STEM & Information Technology clusters

YaizY Pathway	Leading Tech IBCs
Computer Science	PYTHON INSTITUTE Open Education & Development Group; CodeHS; Google; Microsoft
Web Development	CERTIPORT; CodeHS; NOCTI; Meta
Cybersecurity	IBM; CompTIA; Google; PYTHON INSTITUTE Open Education & Development Group
Engineering	CERTIPORT; AUTODESK; SOLIDWORKS

Business, Marketing & Finance cluster

YaizY

YaizY Pathway

Marketing

Entrepreneurship & Business Management

Leading Tech IBCs

Google Microsoft facebook WiX

NOCTI Microsoft CERTIPORT salesforce

Arts, Audio/Video Technology and Communications cluster

YaizY Pathway	Leading Tech IBCs
Game Development	unity, CalARTS
Graphic Design	Adobe, AIGA, Google
Animation	Adobe, Toon Boom (Bring Your Stories To Life), blender
Filmmaking	Adobe, NOCTI

Marketing pathway

Courses		Industry Based Certificates	
level 1 Changemakers: Impact Marketing	Students establish and manage the presence of their impact marketing campaign on social media platforms. They become digital content creators – both video (Reels and TikToks) and graphic (posts and stories) – to make their campaigns memorable and effective.	• Microsoft Office Specialist: Microsoft Excel expert** • Facebook Digital Marketing Associate Certification	• Microsoft Office Specialist: Microsoft Word Expert*** • Facebook Digital Marketing Associate Certification** • Wix. Accessibility certification** • Google Ads Creative Certification** • Microsoft Office Specialist: Microsoft Word Expert**
level 2 Business Marketing	Students develop expertise in core marketing & sales functions: marketing planning, market research, pricing, service management, promotion, channel management and sales. By the end of the course, they pitch their idea for a new product or service with a detailed marketing plan to promote it.	• Microsoft Office Specialist: Microsoft Excel expert** • Facebook Digital Marketing Associate Certification	• Microsoft Office Specialist: Microsoft Word Expert*** • Google Digital Marketing & E-commerce Specialist Certification • HubSpot Content Marketing Certification

Changemakers: Impact Marketing

level 1

Course Summary

With a strong focus on digital marketing, students gain skills to establish and manage their own impact marketing campaign's presence on social media platforms. Students become digital content creators – both video (Reels and TikToks) and graphic (posts and stories) – to make their campaigns memorable and effective.

Key skills

- Impact marketing
- Teamwork
- Goal-setting
- Graphic design
- Oral & Visual Presentation skills
- Data analysis

Final Project

An impact marketing campaign consisting of marketing tools to draw attention to a social issue chosen by the student: a landing page, an Instagram post, a TikTok video, and a press release.

Watch our students' final project

Course Info

Designed to meet Social Media Marketing Standards

Hardware & Software

Computer/laptop, webcamera, microphone, headphones

Web tools only (website creation tools, graphic design tools, video editing tools)

Modules

1 Cause marketing campaign: idea generation

- Principles of cause marketing campaigns

Main project: cause marketing campaign idea and moodboard

2 Landing page creation

- Landing page development basics

Main project: landing page on a social issue

3 Digital Analytics

- Usability testing and digital metrics

Main project: questionnaire for an interview

4 Digital content for a social media

- Social media platforms

Main project: Instagram Post and TikTok video

5 PR and event marketing

- Influencers and bloggers

Main project: press release

6 Marketing campaign presentation

- Final presentation development

Main project: marketing campaign presentation

"I get to know more about marketing to be able to start my own business one day!"

Uplift Education School Student

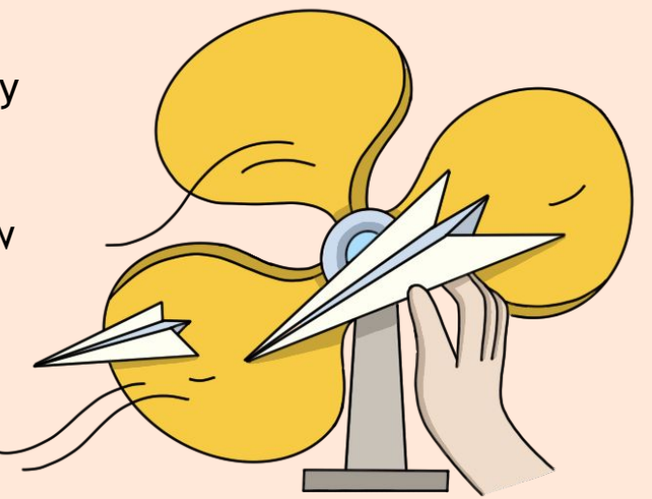
Business Marketing

level 2

Course Summary

This course covers marketing and sales fundamentals. Students build job-ready skills by creating their own marketing campaigns in small groups. With a strong focus on core marketing functions, they explore marketing planning (target audience analysis), market research, pricing, service management, promotion (ways to get people to know your product), channel management (ways the product reaches the user) and sales.

By the end of the course they pitch their idea for a new product or service with a detailed marketing plan to promote it.



Key skills

- Target audience analysis
- Teamwork
- Goal-setting
- Market research
- Promotion
- Pricing

Course Info

Designed to meet Marketing Standards

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Entrepreneurship & Business Management pathway

Courses		Industry Based Certificates	
level 1 Startup Life	This course equips young entrepreneurs with key skills in business, marketing, and finance. Students explore real-world case studies and projects, gain insights into regulations and businesses strategies, and navigate the exciting journey from initial idea to a successful startup.	• Entrepreneurship and Small Business (Certiport) • Microsoft Office Specialist: Microsoft Excel expert** • Microsoft Office Specialist: Microsoft Word Expert**	• General Management (NOCTI) • Salesforce Build Your Sales Career**
level 2 Business Management through eSports	Students establish their own venture associated with the eSports industry. While progressing through the stages of developing and operating their companies, they acquire business management skills in strategic planning, organizational management, talent recruitment, budgeting, and more.	• General Management (NOCTI) • Microsoft Office Specialist: Microsoft Excel expert** • Microsoft Office Specialist: Microsoft Word Expert** • Certified Associate in Project Management (CAPM) (Project Management Institute)** • Project Management Institute (PMI) Project Management Ready (Project Management Institute)**	• Communication Skills for Business • Google Project Management ** • Project Management Professional** • Certified ScrumMaster (CSM)**

Startup Life

level 1

Course Summary

This course equips young entrepreneurs with key skills in business, marketing, and finance. Students explore real-world case studies and projects; gain insights into regulatory environments and businesses strategies; and navigate the exciting journey from initial idea to a successful startup.

Key skills

- Market research
- Business plan creation
- Business modeling
- Principles of Supply & Demand
- Sales channels strategies
- Tax legislation
- Financial management fundamentals

Final Project

A startup presentation crafted for a company awards event, where students create a detailed visual map demonstrating their startup's vital components: team structure, talent recruitment plan, company culture, operational systems, and market entry plans.

Course Info

Designed to meet Principles of Business, Marketing and Finance Standards

Hardware & Software

Computer/laptop, webcamera, microphone, headphones

Web tools only (business model canvas tools, project management tools)

Modules

1 Igniting Your Entrepreneurial Spark

- Entrepreneurship basics
- Idea generation and market demand

Main project: startup idea

2 Starting Your Engines: Building and Testing Your Product

- Customer needs and persona
- Minimum viable product
- Scalable sales and marketing

Main project: product MVP

3 Fueling Your Dream: Pitching and Funding Your Idea

- Investor pitch crafting
- Startup funding options
- Investor relations

Main project: investment deck

4 Taking Off: Company Building

- Team building and company culture
- Operational processes
- US legal and regulatory navigation

Main project: startup presentation

5 Accelerating Your International Growth

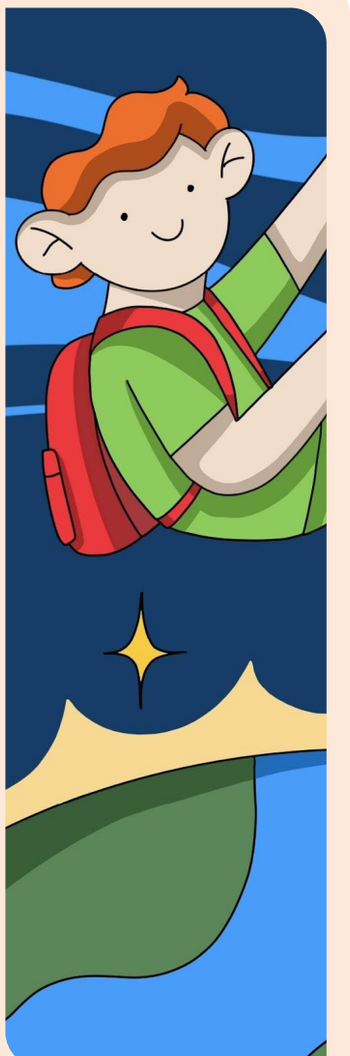
- Business growth and sustainability

Main project: international expansion strategy

6 Peaking Out and Selling Your Startup

- Exiting a startup (acquisition, IPO, strategic partnership)

Main project: startup exit options



Business Management through eSports

level 2

Course Summary

Students establish their own ventures associated with the thriving eSports industry. While progressing through the stages of developing and operating their companies, they will acquire indispensable business management skills encompassing strategic planning, efficient organization, staffing, effective leadership, and control.

Key skills

- Team Formation and Collaboration
- Quality Control
- Hiring and Talent Acquisition
- Financial Analysis and Projections
- Organizational Strategy and Structure

Final Project

An eSports organization presentation crafted for a Deming Awards event, where students showcase their organizational structure, business model, quality control management, hiring strategy, company culture, operational systems.

Course Info

Designed to meet Business Management Standards

Hardware & Software

Computer/laptop, webcamera, microphone, headphones

Web tools only

Modules

1 Creating a Team for Success

- Team formation and roles
- Hiring process in eSports
- Conflict resolution

Main project: team presentation: identity, shared values and promotion strategy

2 Developing a Business Idea

- Stages of creating a business idea
- Business Model Canvas and financial projections
- Business plan development

Main project: business plan pitch

3 Setting up an Organization

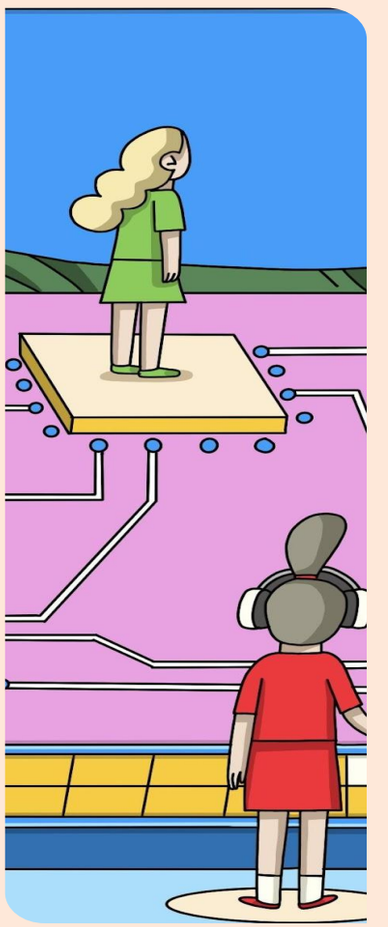
- Organizational strategy and structure
- HR management and motivation strategies

Main project: an eSports organization presentation (McKinsey 7S Model)

4 Growing Business & Sustaining Competitive Advantage

- Quality control and service improvement
- Innovation strategies and change management
- Global management and corporate social responsibility

Main project: an eSports organization presentation



Graphic Design Pathway

Courses		Industry Based Certificates	
level 1 Comics Studio: Storytelling	Students create comics digitally, from initial idea to final publication. This course covers the basics of art, including basics of graphic design, aesthetic visual tools, color theory, and comics history.	• Adobe Certified Professional in Graphic Design and Illustration Using Adobe Illustrator** • Adobe Certified Professional in Visual Design using Adobe Photoshop** • Adobe Certified Professional in Print and Digital Media Publication Using Adobe InDesign**	• AIGA Design Leadership Certificate**
level 2 Foundations of User Experience (UX)	In this course, students delve into the fundamentals of the UX field. The curriculum empowers students to generate innovative design solutions, develop wireframes, prototypes, and mockups, and rigorously test designs for valuable user feedback.	• Audio-Visual Communications - Job ready	• Google UX Design Certificate • Salesforce UX Designer

Arts, Audio/Video Technology and Communications cluster

Comics Studio: Storytelling

level 1

Course Summary

Students use their imagination as a superpower to create comics digitally, from initial idea to final publication. They engage with their favorite Marvel heroes; analyze the principles of visual communication; learn industry standard tools; and create own comic universe.

This course covers the basics of art, including the graphic design basics, aesthetic visual tools (composition, shapes & forms, volume, texture, proportions), color theory, and comics history.

Key skills

- Storytelling
- Public Speaking
- Visual Communication
- Sketching, Color, Texture Techniques
- Project creation
- Critical Thinking
- Cooperation, Discussions & Pitches

Final Project

A pitch package for your comic, which includes pre-production art, comic pages, a comic cover, and a compelling pitch presentation

Course Info

Designed to meet Graphic design & Illustration Standard

Hardware & Software

Computer/laptop, webcamera, mouse

Web tools only

Modules

1 Welcome to the world of Comics

- Principles of storytelling media
- Character development
- Plot development

Main project: comic world & story

2 The Structure of Comics

- Staging on the page
- Transition Types
- Text Bubbles and Lettering

Main projects: comic pages

3 The Art of Comics

- Emotions and posing
- Color
- Designing a Logo

Main project: comic pages

4 Final Project

- Final presentation

Main project: comic book

Foundations of User Experience (UX)

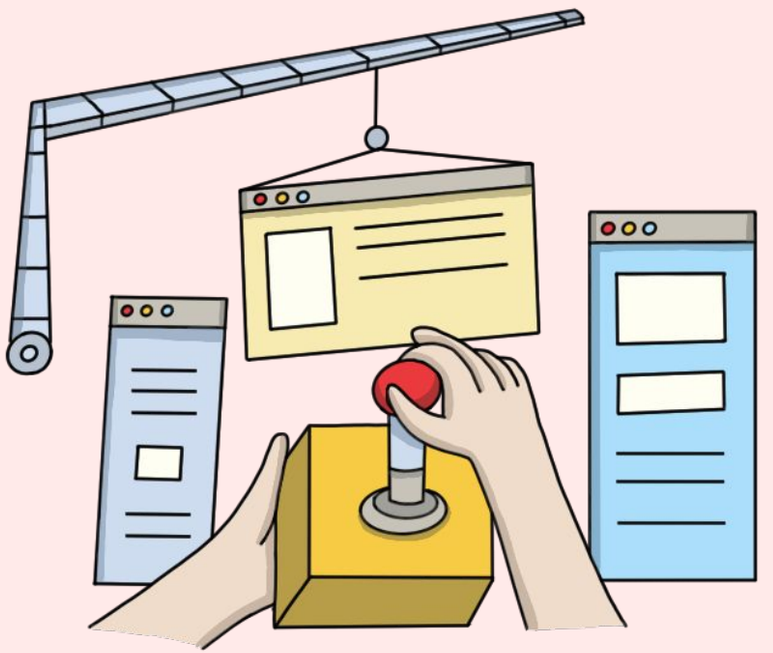
level 2

Course Summary

In this course, students delve into the fundamentals of the UX field and its significance for both consumers and businesses. The curriculum empowers students to identify product pain points, generate innovative design solutions, develop wireframes, prototypes, and mockups, and rigorously test designs for valuable user feedback.

Course Info

Designed to meet Foundations of User Experience (UX) Standards



Key skills

- Wireframing
- Prototyping
- Customer development
- User research
- Visual design
- Information Architecture

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Animation Pathway

Courses

level 1

Animation DreamLab

Students engage in the artistic process of creating their own short animated film. Leveraging animation tools, students create animations with different techniques (hand-drawn, stop motion, 3D) as a part of their filmmaking.

level 2

Animation 2: DreamLab Studios

During this course students are engaged in a full artistic process of creating their own short animated films on social topics. Students practice stop motion animation creation in different techniques (object, pixilation, cutout, clay).

Industry Based Certificates

- Adobe Certified Professional In Visual Effects and Motion Graphics Using Adobe After Effects**

- Certified Web Animator Associate (CWAnim) (WebProfessionals)**
- Adobe Animate Certified Expert**
- Blender Certification**
- Toon Boom Certified Professional**

Animation DreamLab

level 1

Course Summary

Students are engaged in the end-to-end artistic process of creating their own short animated film. Leveraging animation tools, students create animations with different techniques (hand-drawn, stop motion, 3D) as a part of their filmmaking. For the course capstone, students present their films in a “film festival” format.

Key skills

Animating | Video editing | Arts fundamentals | Storytelling & Creative Writing | Sound design | Storyboarding | Giving feedback on creative work

Final Project

A film 1-2 minutes long using a magic-realism style that highlights their creativity and proficiency with 2D | 3D | stop-motion animation techniques and related technologies.

Watch our students’ final project

Course Info

Designed to meet Animation I Standard

Hardware & Software

Computer/laptop, webcamera (built-in or external moving webcam), microphone, headphones, mouse

Web tools only (video editing tools, hand-drawn animation and stop motion animation tools)

Physical materials are used

Modules

1 Introduction to Animation and Basic Storytelling Tools

- Main principles of animation
- Character design

Main project: story script

2 Animation Techniques Overview

- 2D | 3D | stop-motion animation

Main project: animated sketches with different techniques

3 Disney’s basic principles

- 12 animation principles

Main project: animated sketches illustrating animation principles

4 Voice & Sound

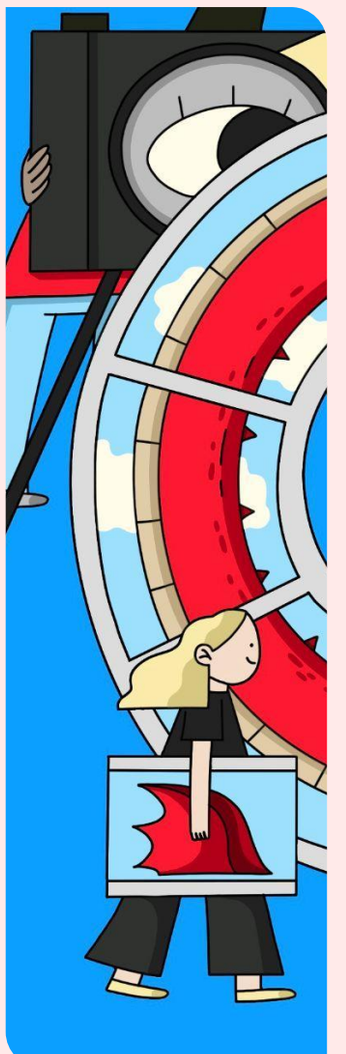
- Sound design
- Foley
- Lip sync
- Voice acting

Main project: sound design

5 Final Project

- Video editing
- Project pitch

Main project: original film



Animation 2: DreamLab Studios

level 2

Course Summary

During this course students are engaged in the comprehensive artistic process of creating their own short animated films on social topics. Students practice stop-motion animation creation in different techniques (object, pixilation, cutout, clay).

Key skills

- Animating
- Video editing
- Sound Design
- Artistic research
- Critical Thinking
- Visual Storytelling
- Creative writing

Final Project

A 1–2 minute long showreel combined from a digital portfolio of 4 animated films created during the course in a manner that meets current animation industry expectations, and shows the student's proficiency with different animation techniques.

Course Info

Designed to meet Animation II Standard

Hardware & Software

Computer/laptop, webcamera (built-in or external moving webcam), microphone, headphones, mouse

Web tools only (video editing tools, hand drawn animation and stop motion animation tools)

Physical materials are used

Modules

1 Research through art!: Anti-bullying Stop Motion Animation

- Principles of cutout animation
- Artistic research

Main project: anti-bullying stop motion animation

2 Educate!: Educational Hand-drawn Animation

- Aesthetic visual tools
- Animating visuals in hand-drawn technique

Main project: educational hand-drawn animation

3 Create!: Meaningful Stop Motion Animation

- Models, clay puppets, props and scenery
- Music and sound effects

Main project: meaningful stop motion animation

4 Go viral!: Project publishing

- Intellectual property rights
- Basic tools of video editing

Main project: animation showreel

Game Development Pathway

Courses

level 1

Intro to Game Design

Students journey from basic game concepts to digital narratives and video game creation, acquiring a blend of theoretical knowledge and practical skills that prepare them for innovation in game design.

level 2

Unity Game Design

This course introduces students to advanced game creation using Unity and C#, emphasizing interactions with key game development tools. The curriculum fosters fundamental skills in game mechanics and 3D modeling, setting the stage for more intricate game development projects.

level 2

Advanced Unity Game Design

This advanced course deepens students' understanding of game development. It covers sophisticated techniques in programming, UI design, and digital aesthetics, with a strong emphasis on practical applications and problem-solving, preparing students for complex, real-world gaming projects.

Industry Based Certificates

- Unity Certified User: Programmer

- CALARTS: Game Design: Art and Concepts Specialization**
- Unity Certified User: Artist
- Unity Certified Associate: Programmer
- Unity Certified Associate: Programmer
- Unity Certified Associate: Artist

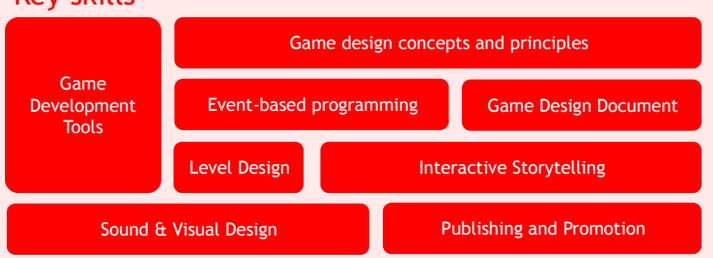
Intro to Game Design

level 1

Course Summary

Students explore the dynamic world of game design, transitioning from paper-based game concepts, delving into digital text narratives, and concluding with video game development. This blend of theory and varied practical projects equips them with a comprehensive skill set, positioning them to innovate in the gaming arena.

Key skills



Final Project

Students apply their knowledge and skills to develop a game in GDevelop, choosing any genre. Alongside this, they also create a Game Design Document and design interfaces and UI.

Course Info

Designed to meet Video Game Design Standards

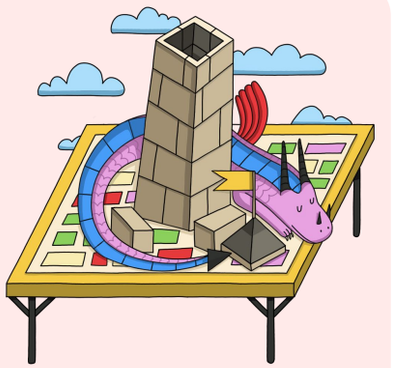
Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Web-tools only (GDevelop, Twine,Canva, Google Workspace, Neural networks tools)

Physical materials are used

Modules



1 Game Design Basics

- Gaming industry overview
- Game concept
- Mechanics & technology
- Story & aesthetics
- Game loops & players motivation

Main project:
Paper-based game prototype

2 Story and Narrative Development for Video Games

- Story structure
- Interactive storytelling
- Game characters
- Narrative design

Main project:
Digital text adventure game

3 Event-based Game Development

- Conditions & actions, circles & comments
- Level design & game balance
- Testing and debugging
- Game design documentation

Main project: 2D video game in GDevelop

4 Game publishing and Promotion

- Game publishing on itch.io
- Public relations & target audience
- Social media platforms

Unity: Game Design

level 2

Course Summary

In “Unity: Game Design” students enhance their game development skills, using the Unity engine and C# programming. They interact with key tools — including physics engines, UI elements, 3D assets, and animations. The course focuses on fundamental skills in game design and 3D modeling, readying students to build compelling, complex games. Practical experience in developing games equips them with a strong skill set for future creativity in the gaming field.

Key skills

- Unity game engine
- Game design
- Creating game animations
- Programming in C#
- 3D modeling
- Presenting games and sharing feedback
- Developing game physics
- Creating UI design

Final Project

Students apply their knowledge and skills to develop a game in GDevelop, choosing any genre. They also create a Game Design Document and design interfaces and UI.

Course Info

Designed to meet Web Game Development Standards Standards

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Web-tools only (GDevelop, Twine,Canva, Google Workspace, Neural networks tools)

Physical materials are used

Modules

1. Introduction to Unity development
   - Unity engine interface
   - Asset Store
   - Camera and prefabs

   Main project: creating a prefab
2. Working with UI
   - Designing adaptive and interactive interfaces

   Main project: visual Novel
3. Animations
   - Using animation toolbar
   - Managing the frame rate and curve mode

   Main project: animation with curves
4. Introduction to C# development
   - Basics of C# syntax

   Main project: prototype of a survival game
5. Animator. Create transitions in animation
   - Transitions between object’s animations

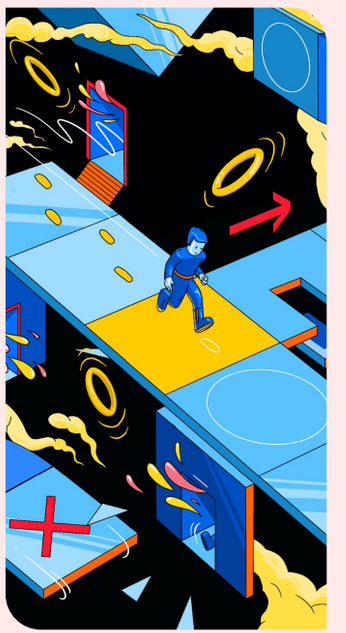
   Main project: prototype of a survival game
6. Physics in Unity
   - Rigidbody properties
   - Physic-based environment

   Main project: flying bird machine with obstacles
7. Skybox & Particle system
   - Adding effects and Skybox to the game

   Main project:a trebuchet with effects
8. 3D modeling
   - Blender objects and geometry

   Main project: creating a set of models and export to Unity
9. Game Design
   - Game Design concept and principles

   Main project: “Roll and Move” game



Advanced Unity: Game Design

level 3

Course Summary

"Advanced Unity: Game Design" sharpens students' skills in key areas of game development. The course delves into asset management, programming logic, and UI layout, along with complex scene content design using advanced tools. Students learn animation, lighting, and materials, while learning to troubleshoot and optimize for different build targets.

The hands-on approach ensures readiness for real-world challenges in the gaming industry.

Course Info

Designed to meet Advanced Video Game Programming Standards

Key skills

- C# Advance Programming
- UI
- Employment preparedness
- Lighting, Cameras, Materials and Effects
- Project management
- Asset Management
- Scene Content Design
- Services

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Game Development Pathway

Filmmaking Pathway

Courses

level 1

Audio/Video Production

Students gain hands-on experience in capturing visuals and recording audio to create integrated multimedia projects. This course helps students perform as content creators, filmmakers, and multimedia enthusiasts — equipping them with the relevant skills to create compelling digital content.

level 2

AI video editing

In this course students learn the art of video editing using artificial intelligence (AI) technology. They gain hands-on experience in creating polished, professional videos, with a focus on enhancing visual quality, adding dynamic effects, and optimizing audio.

Industry Based Certificates

Audio-Visual Communications - Job ready

- Adobe Certified Professional in Print and Digital Media Publication Using Adobe Premiere Pro
- Digital Video Production

- Apple Certified Pro
- Final Cut Pro X Certification
- Google Video Advertising Certification
- YouTube Certification
- Avid Certified User

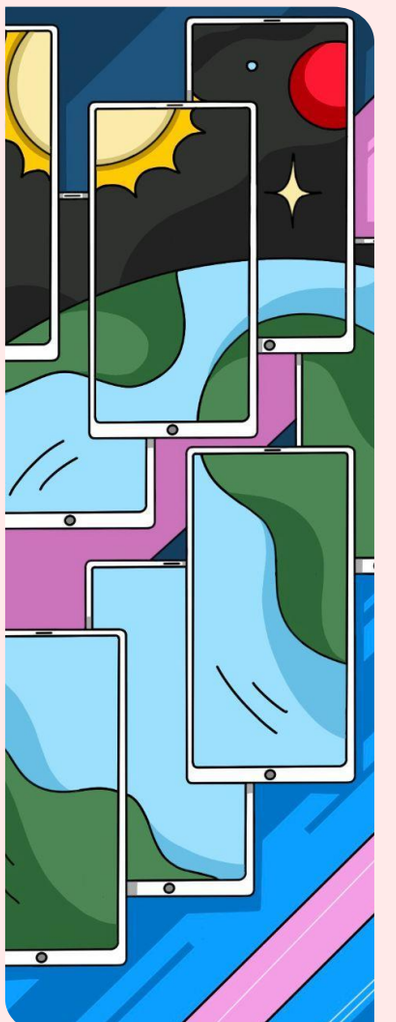
Audio/Video Production

level 1

Course Summary

Students gain hands-on experience in capturing visuals and recording audio to create integrated multimedia projects. They garner hands-on experience in capturing visuals, recording audio, and combining them to craft immersive multimedia projects.

This course helps students perform as content creators, filmmakers, and multimedia enthusiasts — equipping them with the relevant skills to create compelling digital content.



Key skills

- Scriptwriting
- Digital Filmmaking & Editing
- Artistic research
- Sound design
- Digital Audio & Editing

Course Info

Designed to meet Audio/ Video Production Standards

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

AI video editing

level 2

Course Summary

In this course students learn the art of video editing using cutting-edge artificial intelligence (AI) technology. They explore core concepts of video editing while harnessing the power of AI to streamline their workflow.

With the guidance of AI-driven tools and techniques, they learn to create captivating videos for artistic, creative, and/or professional endeavors.

Key skills

- Filmmaking
- Video Editing
- Creative Thinking
- Artistic research
- Sound design
- Storytelling
- Pitching a Creative Product

Course Info

Designed to meet AI Video Editing Standards

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Computer Science Pathway

Courses		Industry Based Certificates		Micro-credentials
level 1 Fundamentals of Computer Science	initiates students into Scratch and Python basics, blending playful coding with foundational Computer Science principles.	• **PCEP** • **AP CS Principles** • Code HS Python Level 1 Certification • CompTIA ITF+*** • Microsoft Certified: Azure Fundamentals CompTIA A+ **,*** • NOCTI Computer Programming** • NOCTI Computer Networking Fundamentals**	• Google Workspace Certification • Microsoft Office Specialist: Associate (Office 2019)**: • AP CS Principles • Foundational Google Data Analytics Certificate • **PCAP** • PCAD** • Certiport Python** • Microsoft Certified: Power BI Data Analyst Associate** • Advanced Google Data Analytics Certificate**	• Kaggle: Intro to programming** • Kaggle: Python** • Cognitive Class (IBM): • Data visualization with Python** • Cognitive Class (IBM): • Data analysis with Python**
level 2 AP Computer Science Principles	immerses students in core CS concepts, Python coding, and digital world insights, tailored to AP exam success.			
level 3 Computer Science II	stimulates creativity through complex program development in Python, emphasizing object-oriented techniques and data manipulation.			

Fundamentals of Computer Science

level 1

Course Summary

In the 'Fundamentals of Computer Science' course, students start with learning how computers work and move to programming in Scratch, covering key concepts in computer science. The course advances to Basic Python, where students actively engage in creating, writing, and troubleshooting their own programs and mini-games.

Key skills

PC settings and operations | Operating systems | Scratch coding | Presentation Software | Spreadsheets | Algorithmic thinking | Python Fundamentals | Conditional Blocks and Loops | Cryptography and Storage

Final Project

A windowed application that solves a real-life task using Python (for example, a task tracker, calendar, or graphing calculator) created by students using a combination of their new coding skills.

Course Info

Designed to meet Fundamentals of Computer Science Standards, APCSP and PCEP Objectives

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Web tools only (Scratch, Python Web IDE, Google Workspace)

Modules

1 **Basics of Computer Science**
- Computer settings
- Operating systems
- Cybersecurity basics
- Presentation Software

Main project: presentation on Stuxnet

2 **What can you do with code**
- Programming terms & concepts
- Scratch programming

Main project: scratch mini-game project

3 **IT as an ecosystem**
- PC Hardware
- Cloud Storage
- Data analysis Software

Main project: data analysis project

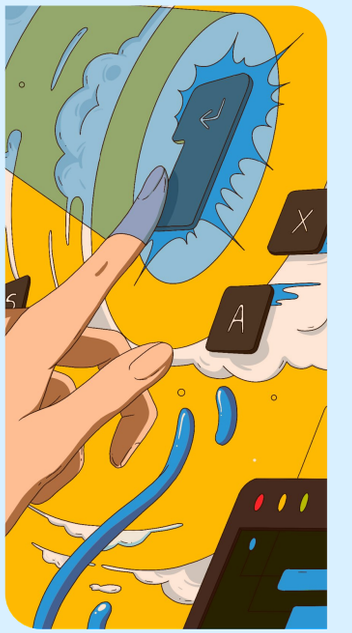
4 **Introduction to Python**
- Python in the workplace
- Basic Python concepts

Main project: turtle chase simulation

5 **Python control structures**
- Operators
- Conditionals and Loops

Main project: weather forecast display app

6 **Impact of Computing**
- Beneficial and Harmful Effects
- Digital Divide
- Computing Bias



"I like that this class lets us work and explore new things in order for us to learn."

Longview Public School Student

AP Computer Science Principles

level 2

Course Summary

In the AP Computer Science Principles course, students dive deep into the essential concepts at the heart of computer science. Through Python programming, they learn computational thinking and problem-solving, understanding the internet's structure, and analyzing the vast world of data. The course sharpens students' skills in creating digital programs and exploring the global impact of computing technologies.

Key skills

- Python programming
- Computational thinking
- Algorithm design
- Data Structures
- Networks and the Internet
- Collaborative work
- Cryptography and Storage
- Functions and Exceptions
- Global Impact

Final Project

Students will synthesize course concepts to collaboratively build a website, incorporating elements from each segment of their learning journey

Course Info

Designed to meet AP Computer Science Principles Standards, AP CSP and PCEP

Hardware & Software

Computer/laptop, web camera, microphone, headphones, mouse

Web tools only (Python Web IDE, Google Workspace)

Modules

1 Programming with Python

- Python control structures
- Functions and Parameters
- Basic data structures
- Error handling

Main project: inventory management system

2 Data

- Binary Numbers
- Data storage, procession,transfer
- Data encryption, encoding and transformation

Main project: data encoder/decoder

3 Computer Systems and Networks

- The internet
- Fault tolerance
- Parallel and distributed computing

Main project: networked information system

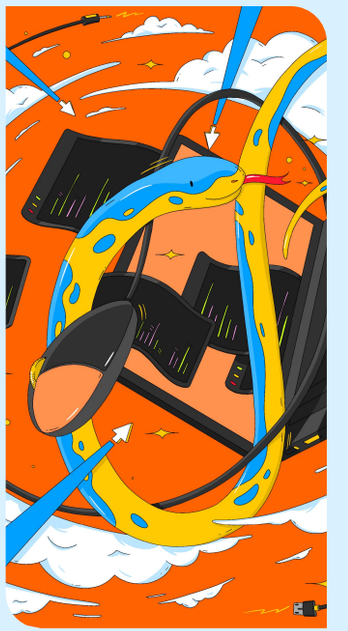
4 College Board: Create Performance Task

Main project: A program demonstrating students' grasp of key programming concepts

5 Impact of Computing

- Crowdsourcing
- Legal and Ethical Concerns
- Safe Computing

Main project: digital citizenship web portal



Computer Science II

level 3

Course Summary

Computer Science II dives deep into Python programming, enhancing students' expertise. Students explore system administration, understand the workings of operating systems, and grasp networking basics. The course progresses into advanced Python topics, emphasizing the foundational principles of object-oriented programming and data analytics.

Key skills

- Networking & Internet Protocols
- System Management & Configuration
- Advanced Python Programming
- Object-oriented programming
- Data Analytics
- Machine Learning
- Data Visualization
- Web Development Basics

Final Project

Students develop a Market Analysis Tool using Python. Through this tool, they gather, cleanse, and interpret market data, providing insights via visualizations. This project synthesizes their knowledge in OOP and data analytics.

Course Info

Designed to meet Computer Science II Standards, PCAP & PCAD Objectives

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Web tools only (Python Web IDE, Google Workspace)

Modules

1 System Administration

- Operating systems
- Software and Applications
- Application Security
- Browser Configuration

Main project: Presentation on system administration concepts and its impacts

2 Networking Fundamentals

- Impact of the Internet
- Data Representation
- Internet Hardware & Addresses
- Domain Name System (DNS)
- Packets and Protocols & Routing

Main project: Web Page creation with HTML

3 Advanced Python Programming

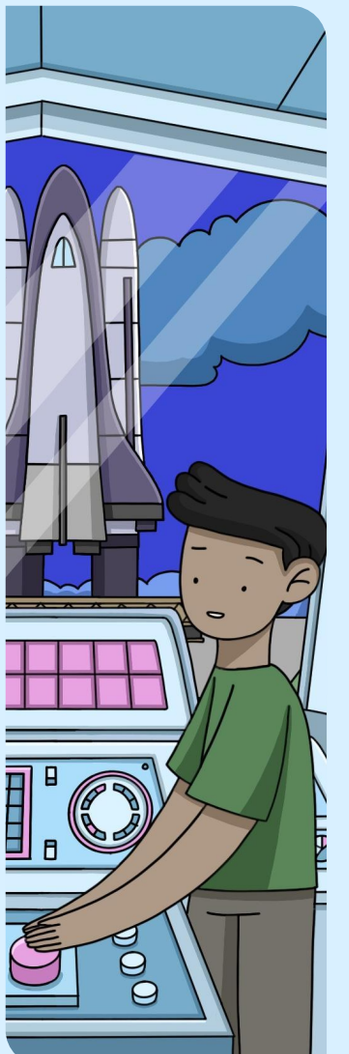
- Modules & Packages
- Python and self-defined Exceptions
- Operations on strings & string methods
- Classes and Object-Oriented Programming

Main project: Library Management System

4 Data Analytics with Python

- File processing and operations with NumPy and Pandas
- Visualizations with Matplotlib and Seaborn
- ML fundamentals with SciKit-Learn

Main project: Market Analysis Tool



Engineering Pathway

Courses		Industry Based Certificates
level 1 Principles of Applied Engineering	Immerses students in essential engineering skills and 3D modeling — emphasizing problem-solving, project management, and technical documentation — for a foundational understanding of engineering careers.	• Certified SOLIDWORKS Associate (CSWA)** • Autodesk Associate (Certified User)** • NOCTI Engineering Technology Foundations** • NOCTI Pre-Engineering/Engineering Technology**
level 2 Manufacturing Engineering Technology I	Offers hands-on manufacturing insights, focusing on CAD/CAM, CNC, PLCs, and various control systems, preparing students for advanced engineering pursuits with practical skills and quality analysis.	
level 3 Engineering Science	Integrates advanced STEM concepts with real-world applications — promoting scientific reasoning, investigative design, and a deep understanding of forces, materials, and systems — for success in high-tech engineering careers.	

Principles of Applied Engineering

level 1

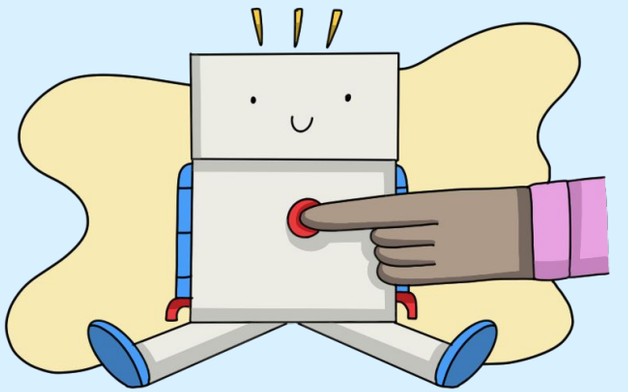
Course Summary

In the "Principles of Applied Engineering" course, students acquire essential engineering skills, mastering cutting-edge tools like 3D modeling software and engaging with the engineering design process.

They develop practical competencies in problem-solving, project management, and technical documentation, laying a solid foundation for advanced studies and careers in engineering.

Course Info

Designed to meet Principles of Applied Engineering Standards



Key skills

- Technological systems
- Engineering documentation
- Appropriate tools and safe work habits
- System modeling and design
- Engineering design process
- Drafting
- Electrical and mechanical systems

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Manufacturing Engineering Technology I

level 2

Course Summary

In "Manufacturing Engineering Technology I," students delve into manufacturing's practical side, enhancing soft skills and gaining technical proficiency in CAD/CAM, CNC operations, and PLC management.

The curriculum extends into in-depth studies of electrical controls, pneumatics, hydraulics, and thermal science, culminating with an emphasis on analyzing quality control systems.

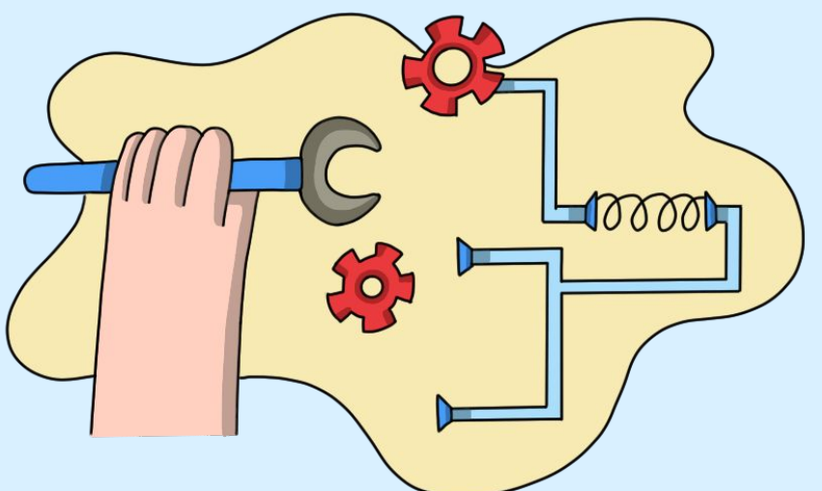
These foundational skills set the stage for students' seamless transition into further engineering studies.

Key skills

- Software skills in Manufacturing
- Programmable logic controls
- Control, electrical, mechanical, fluid devices
- Electrical and thermal systems
- Quality-control systems
- Production and programming of CNC

Course Info

Designed to meet Manufacturing Engineering Technology I Standards



Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Engineering Pathway

Engineering Science

level 3

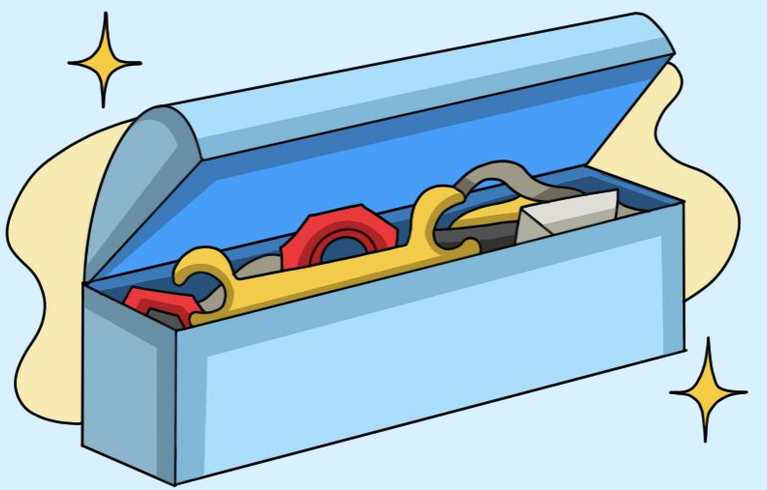
Course Summary

In "Engineering Science," students synthesize their accumulated technical knowledge with an advanced exploration into the realms of science, technology, engineering, and mathematics. They will confront real-world challenges using scientific reasoning and employability skills — delving deeply into investigative designs, energy management, and control systems.

A thorough analysis of forces, materials, and kinematics in practical engineering contexts prepares students for the rigor of postsecondary education and high-tech careers in various engineering domains.

Course Info

Designed to meet Engineering Science standards



Key skills

- Laboratory and field investigations
- System energy requirements
- Material testing
- Flowcharts and control system operating programs
- Complex calculations
- Scientific reasoning
- Statistics and kinematics

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Engineering Pathway

Web Development pathway

Courses		Industry Based Certificates
level 1 Web Design	Starting with HTML and CSS, students learn to build responsive web pages, focusing on user interface (UI) and basic cybersecurity. The course culminates in the creation of a personal portfolio that demonstrates the student's skills and creativity in these areas.	• CodeHS Web Design Level 1 • Certiport HTML & CSS • Certiport HTML5 Application Development
level 2 Web Development	This course expands on foundational web skills, guiding students through advanced website and mobile app creation. It emphasizes practical coding challenges and user experience (UX) enhancements, leading to a comprehensive student portfolio showcasing their industry readiness.	• Google Mobile Web Specialist Certification • Meta Front-End Developer Professional Certificate • Certified Web and Mobile App Developer Apprentice • NOCTI Web Design

Web Design

level 1

Course Summary

In the Web Design course, students start by learning HTML and CSS, the building blocks for creating websites. They then apply these skills to construct their own responsive web pages. The course also covers essential user interface (UI) principles and basic cybersecurity concepts as students create functional, user-friendly, secure websites.

At its culmination, students will have a personal web portfolio to showcase their technical skills and creativity, preparing them for success in the digital world.

Key skills

- UI Principles
- Graphic Design
- HTML/CSS
- System Administration
- Web Accessibility
- Software Security
- Prototyping
- Networking Fundamentals

Course Info

Designed to meet Web Design Standards

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Web Development pathway

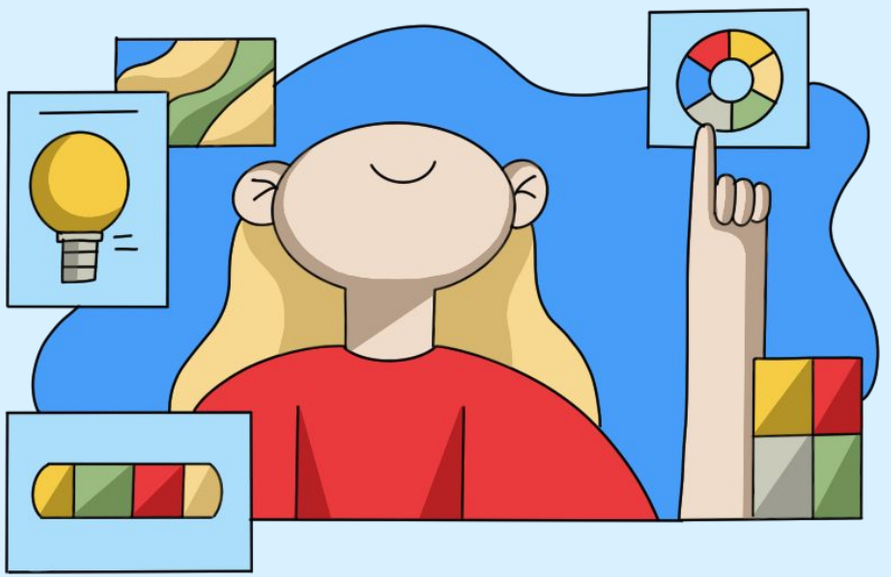
Web Development

level 2

Course Summary

In the Web Development course, students advance their HTML/CSS and JavaScript skills to craft sophisticated websites and mobile applications. They also engage in real-world programming challenges that enhance the user experience (UX) across digital platforms.

The curriculum emphasizes hands-on learning, culminating in a robust portfolio that demonstrates their in-depth expertise and readiness for the technology industry.



Key skills

- User Experience (UX)
- Backend Development
- HTML/CSS
- JavaScript
- Mobile Responsive Design
- Security Practices
- Version Control
- API Integration

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Cybersecurity Pathway

Courses		Industry Based Certificates		Micro-credentials
level 1 Foundations of Cybersecurity	Provides a primer on digital security, emphasizing threat recognition and cyber hygiene as a basis for further study in the field.	• NOCTI Cybersecurity Fundamentals • CodeHS Cybersecurity Level 1 • Microsoft Certified: Azure Fundamentals	• IBM IT Fundamentals for Cybersecurity Specialization • Certiport Cybersecurity	• Kaggle: Intro to SQL • Kaggle: Advanced SQL
level 2 AP Computer Science Principles: Cybersecurity	Uses Python for an in-depth look at cybersecurity, preparing students for the AP exam and future security-focused careers.	• PCEP • AP CS Principles • Microsoft Certified: Security, Compliance, and Identity Fundamentals	• Foundational Google Data Analytics Certificate	
level 3 Advanced Cybersecurity	Hones practical skills for securing tech ecosystems, stressing compliance and incident handling in professional scenarios.	• Google Cybersecurity Certificate • CompTIA Security + • Certiport Network Security	• Microsoft Certified: Security Operations Analyst Associate	

Foundations of Cybersecurity

level 1

Course Summary

In the Foundations of Cybersecurity course, students immerse themselves in the essentials of digital security. They'll master critical skills in information and network security, delve into cyber hygiene practices, and explore cryptography principles.

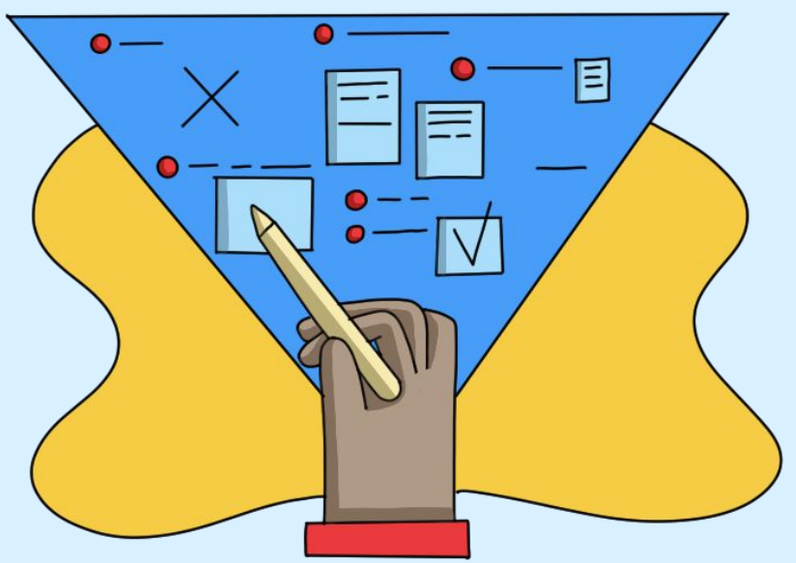
By analyzing cyber attack trends and identifying security threats, students build a robust knowledge foundation, preparing them for further academic studies in cybersecurity.

Key skills

- Digital Citizenship
- IT Infrastructure
- Networking Fundamentals
- Risk Management
- Cryptography
- Software Security
- Cyber Defense
- System Administration

Course Info

Designed to meet Foundations of Cybersecurity Standards



Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

AP Computer Science Principles: Cybersecurity

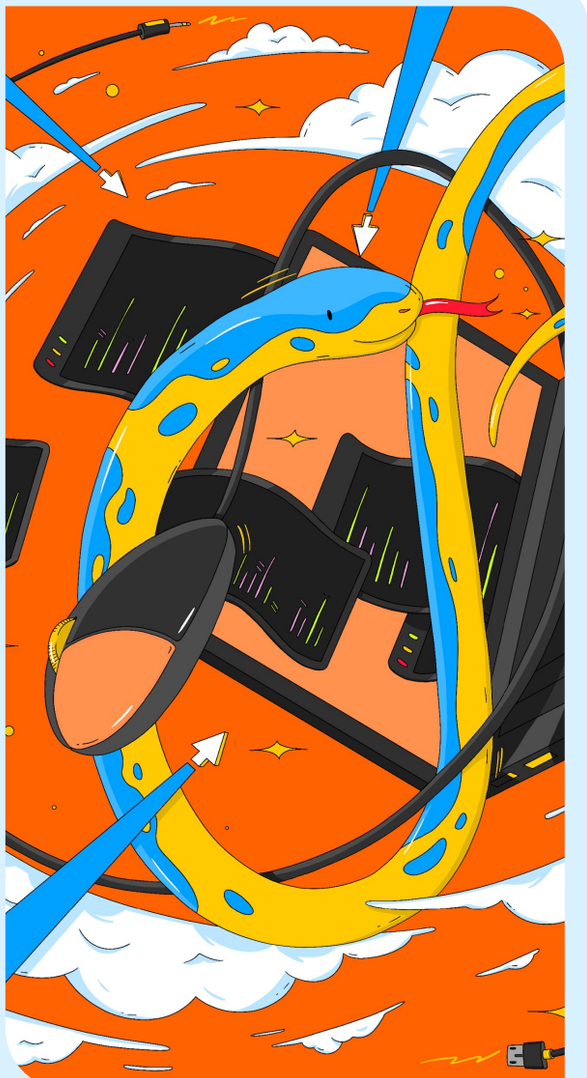
level 2

Course Summary

Building on prior foundational studies, the “AP Computer Science Principles: Cybersecurity” course immerses students in advanced cyber defense concepts. Through Python, students enhance their coding skills and confront complex cybersecurity issues, delving into areas from data protection to digital forensics. This course, in line with AP standards, prepares students for the AP exam and a future in the ever-important field of cybersecurity.

Course Info

Designed to meet AP Computer Science Principles Standards



Key skills

- Python programming
- Computational thinking
- Algorithm design
- Data Structures
- Networks and the Internet
- Risk concepts & models
- Cryptography and Storage
- Functions and Exceptions
- Global Impact

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

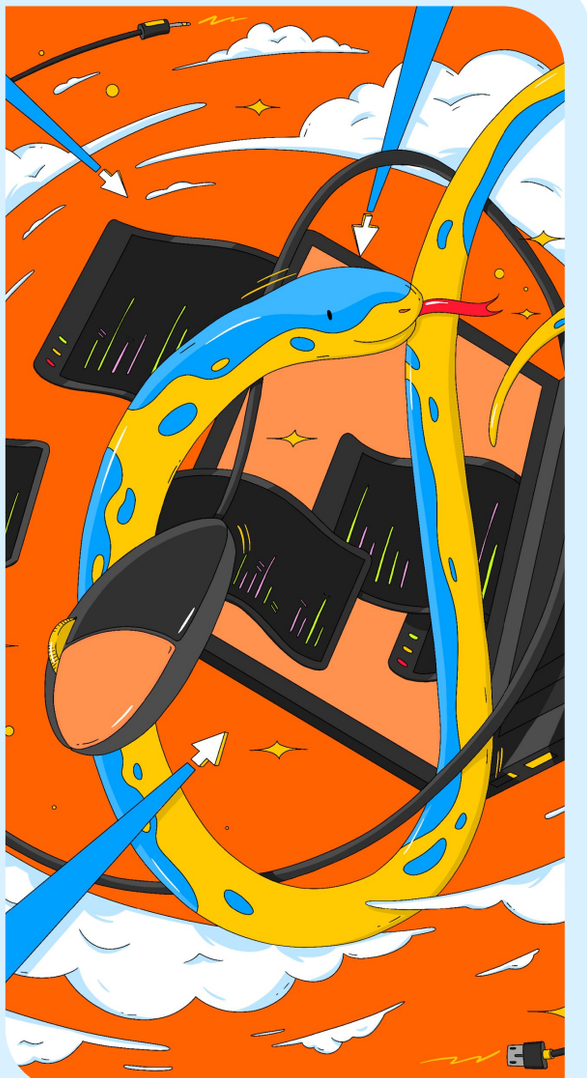
Cybersecurity Pathway

Advanced Cybersecurity

level 3

Course Summary

In the Advanced Cybersecurity course, students deepen their skills in evaluating and improving the security of various enterprise systems. The course covers practical strategies for securing diverse technologies, including cloud and mobile services, IoT devices, and more. Emphasis is placed on compliance with regulations and policies, teaching students to navigate governance and risk. A key component of the curriculum involves learning to identify and tackle security incidents effectively, preparing students for crucial cybersecurity roles.



Key skills

- IoT Security
- Advanced Python Programming
- Policy Development
- Advanced Threat Analysis
- Cloud & Mobile Security
- Forensic Analysis
- IoT Security
- Risk Management
- Compliance & Governance

Hardware & Software

Computer/laptop, webcamera, microphone, headphones, mouse

Thank you!

Visit our website!

** IBC is ~75% integrated in the course
*** IBC is approved, but for other course