Digital Media Academy

Course Catalog

ISTE Standards
Seal of Alignment
Student Standards
Dec. 2019-21

Technology Education | Grades Pre K - 12 | Standards Aligned

	Foundation	Discovery	Academy
Description	Foundation courses provide introductory-level knowledge, concepts, and technical skills development across a wide range of STEAM subject areas. Foundation courses support learners to develop and apply an under-standing of design-thinking and computational-thinking approaches to solve real-world problems.	Discovery courses provide a fun and engaging learning experience. Students dive deep into learning new technical and creative skills using industry-standard software and hardware. Through a project-based learning approach, students will apply their newly developed skills to produce portfolio-quality artifacts of learning.	Academy courses are designed to sequentially level up your students' skills to meet genuine university and industry demands. Academy courses prioritize deep technical knowledge, as well as the interpersonal, social-emotional, collaborative, and leadership skills that artificial intelligence will never replace.
Level	Beginner	Level 1-2; Beginner to Intermediate	Level 1-8; Beginner to Advanced
Age	5-18	9-12 & 13-18	13-18
Guided Learning Hours (GLH)	10-15 hours per course	25-30 hours per course	25-30 hours per course
Teacher Requirements	Suitable for all educators, no prior knowledge or expertise required	Course-specific instructor profiles provided. Subject-specialist may be required.	Designed for subject-specialist delivery
Course Materials	• **Teacher Guide** (Overview, Learning/Project Outcomes, Lesson Plans, Materials lists, Keywords) • **Slides** (Powerpoint, Google Slides, or SCORM) • **Handouts** (Google Doc, .docx, PDF) • **Assessment** (Student self-assessment, grading rubric, assessment procedures) • **Curricular Connections Guide** • **Standard Alignment** (ISTE, NGSS, CSTA) • **Portfolio Presentation Template** • **Course Completion Certificate Template**	• **Course Guide** (Overview, Instructor Profile, Resource Requirements, Delivery Methods, Assessment Process, Keywords) • **Slides** (Powerpoint, Google Slides) • **Handouts** (Google Doc, .docx, PDF) • **Course Assets** • **Assessment Toolkit** • **Standard Alignment** (ISTE, NGSS, CSTA) • **Portfolio Presentation Template** • **Course Completion Certificate Template**	• **Slides Including Teacher Preparation Requirements** • **Handouts** (Google Doc, .docx, PDF) • **Course Assets** (project files) • **Assessment** (Formative and Summative) • **Standard Alignment** • **Student Achievement Report Template** • **Portfolio Presentation Template** • **Course Completion Certificate Template** • **Masterclass Presentation Template**
Learning Environments	• **Integrated with Core Curriculum subjects** • **After-school, Makerspace** • **Vacation camps** (i.e. Summer/Spring Camps)	• **After-school, Makerspace** • **Vacation camps** (i.e. Summer/Spring Camps) • **STEAM Week or Student Competitions**	• **After-school, Makerspace** • **Vacation camps** (i.e. Summer/Spring Camps) • **STEAM Week or Student Competitions** • **Masterclasses or Private Lessons**

digitalmediaacademy.org

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Entrepreneurship Bootcamp

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Business

LEVEL:
Beginner

Course Description

Ever thought about starting your own business? Wondered what it takes to be an entrepreneur? Entrepreneurship Bootcamp is for you! Jump into the world of business and learn about topics such as 'where good ideas come from', innovation, leadership, persuasive communication, and business operations. This course will leave you equipped with the skills to start your own business. You will learn about logo design, analytical tools such as SWOT, digital marketing including social media literacy, business management, and finance, then produce a final pitch for a 'sold business'.

Learning Outcomes

- Identify the characteristics of entrepreneurial activity
- Recognize a market need and identify a target market for their product or service, including features and benefits
- Describe various forms of advertising and marketing that can influence a potential customer or buyer
- Spot the differences between consumer wants and needs role of money management in financing an idea or developing a product

Entrepreneurship & Innovation

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
Business

LEVEL:
1

Course Description

Your journey to becoming one of tomorrow's great business leaders launches here. Define your vision, generate business ideas and embody the characteristics of an entrepreneur. Understand business plans and the business model canvas, including revenue, value proposition and lean design thinking. Cement your name, logo and brand before launching and analyzing a marketing strategy and pitching your business to potential backers.

Learning Outcomes

- SMART Goals
- Business Startups
- Characteristics of an Entrepreneur
- Understanding Entrepreneurship
- Business Ideation
- Value Proposition
- SWOT Analysis
- Customer Experience
- Business Model Canvas
- Business Model Canvas Case Study
- Financial Management
- Business Plan
- Launch Preparation
- Business Launch
- Portfolio Presentation
- End of Level Review

Computer Science for kids

AGE:
5-8

COURSE TYPE:
Foundation

PATHWAY:
Software Development

LEVEL:
Beginner

Course Description

It's not magic, but it seems like it. Learn all about what computers are and how they work. Read stories and then draw and build your own computer models.

This course is designed to reveal the mystery behind the technology so many of us interact with constantly but which few of us really understand. Students will learn about the components of a computer (and related devices like tablets and smartphones) and how they work together to allow us to do things like seeing images, listen to music, create documents, and play games. Through simple activities, they will see inside the computer to understand the technology that so many of us use each day.

Learning Outcomes

- Identify the difference between hardware and software
  Identify different parts of the computer and how they work together
- Explain the general process of how a computing device works
- Give simple pseudo-code algorithms to a partner navigating through a maze

Explore the Internet

AGE:
5-8

COURSE TYPE:
Foundation

PATHWAY:
Artificial Intelligence

LEVEL:
Beginner

Course Description

Learn how the Internet works by playing games, watching animations, and inventing and designing your own connected device.

For people already used to using the Internet, the way the Internet works remains a complete mystery. This is particularly true for young children who have grown up with devices all around them. For them, the Internet is just simply there. This course dives into the way the Internet works and the technology behind it, opening students' eyes to the potential of the Internet as a way of sharing information, learning/ teaching, and creating new things.

Learning Outcomes

- Explain how the Internet works
- Decode basic binary to create a picture
- Find and use learning, play and sharing resources online
- Explain what the Internet of Things is (general idea)
- Imagine future uses for the Internet of Things in their world

Cool Computers

AGE:
5-8

COURSE TYPE:
Foundation

PATHWAY:
Software Development

LEVEL:
Beginner

Course Description

Learn how computers help us solve problems through games, art, music, and story.

This course is designed to introduce young children to what computers do and how they work. Students will learn about programs, input and output, and code and explore the way they work together to help us record and listen to music images, create art, take and view pictures and video.

Learning Outcomes

- Identify the difference between input and output devices
- Explain the general process of how a computing device works
- Give simple pseudo-code algorithms
- Understand that computers are tools that help us solve problems
- Creatively imagine the future of computers and problem solving.

Learn to Code with Scratch

Course Description

Curious about code? Want to make programs and games? This course will introduce you to Scratch, an amazing community of coders using a block-based coding language to make projects of all kinds. You'll be creating with code in no time!

In Learn to Code with Scratch, students will explore the creation and development of the Scratch platform as a block-based programming language and as a community of builders and remixers. Students will work on design-driven projects utilizing animation, music and sound, art, interactivity, and game design as they build skills in programming Scratch and in designing media for a real-world setting. Students will end the course with a studio of several Scratch programs, a slew of block-based programming skills that can readily be applied to text-based coding languages, and some experience in design-building.

Learning Outcomes

- Identify the difference between input and output devices
- Explain the general process of how a computing device works
- Give simple pseudo-code algorithms
- Understand that computers are tools that help us solve problems
- Creatively imagine the future of computers and problem solving.

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
Software Development

LEVEL:
Beginner

Encryption, Ciphers and Digital Detectives

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
Artificial Intelligence

LEVEL:
Beginner

Course Description

Learn to decode symbols, codes, and ciphers. Then learn a bit about how the Internet and data encryption works before you tackle your own digital security challenge.

In this course, students will explore the ways in which people have historically used encryption and ciphers to share and protect information and the modern worlds reliance on encryption. Looking at how encryption works through a mix of unplugged and plugged activities, students will both recognize how widespread its use is (for communication, commerce, and privacy) and come to understand how encryption systems work to protect and anonymize data. Students will discover the the ingenious ways people have developed to protect and communicate information, explore the technology and concepts behind encryption, and apply those concepts in activities that focus on problem and puzzle-solving.

Learning Outcomes

- Decrypt and encrypt basic ciphers
- Use computational thinking strategies to solve problems
- Apply understanding of codes and ciphers to the concept of digital encryption
- Use strategies to design solutions to real world problems

App Designer Studio

Course Description

In App Designer Studio students will design, create, and market an app that meets the needs of a defined user group. Through this app development process, Explorers will explore the different roles of app developers, UI/UX designers, marketers, and coders while also exploring the diverse range of applications created for mobile devices including social networks, health informatics, sports science, fintech, resource sharing, and recommendation algorithms.

Students will utilize essential principles of design to identify a need, develop an understanding of users, build a user profile, and incorporate these ideas into a successful app build. After Exploring how App Lab works through a variety of lessons and mini-projects, students will create a prototype of their app and submit this to users for testing. User feedback will be incorporated to improve the user experience and interface. After refining the app, students will create a marketing pitch to sell it, identifying an audience and creating a pitch to sell it..

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Software Development

LEVEL:
Beginner

Learning Outcomes

- Explore and use the design thinking process to design an app for a targeted group of users - Ideate, prototype, test, build and share
- Use App Lab to design and program an app
- Design a marketing pitch for a targeted group of users

Meeting the Future: AI and Machine Learning

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Artificial Intelligence

LEVEL:
Beginner

Course Description

We've seen smart robots and machines in science fiction for years - machines that can think and respond to unexpected information the way human beings do. In this course, you'll learn how computer scientists are helping machines actually learn so that they can do everything from talking to us to driving our cars. You'll build and train apps using your own data sets and cutting-edge industry tools like IBM's Watson to recognize images, make decisions, and understand text.

This course will introduce students to the topics of artificial intelligence and machine learning by engaging them in activities that help them understand what these topics mean and how they are used in the real world. Each module will lead students through a process of discovery; exploring, building, and testing different machine learning programs using Scratch and Watson. By participating in hands-on learning and reflecting on their projects, students will explore the benefits and challenges of AI and machine learning. The final module of the course will engage students in predicting and generating ideas about possible and probable future real-world uses of the technology.

Learning Outcomes

- Create simple AI programs using Scratch and Watson
- Understand what machine learning and artificial intelligence are
- Recognize and devise potential applications for artificial intelligence
- Use data sets to ‘teach’ and improve apps that respond to human interaction

What Can You Do With Data?

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Artificial Intelligence

LEVEL:
Beginner

Course Description

Learn how data is used to shape the way we shop, eat, watch, listen and learn. Then come up with ideas to imagine the ways that we can use data to help solve all kinds of problems from the personal to the global.

Data is the lifeblood of the Internet and of the modern economy, driving everything from business to health care. Students in this course will learn about how data is collected (as well as how it can be protected) and the ways in which it is used to shape: our shopping experiences, business decisions, social networks, criminal investigations, the internet of things. Students will examine not only how data is used today but also be asked to imagine the future possibilities offered by the intersection of data and connectivity.

Learning Outcomes

- Identify several ways in which the technology they use every day collects and uses data
- Envision ways in which data collection and use can be used to help solve problems for individuals and groups
- Make more informed and meaningful decisions about how much personal data they want to share

Data Literacy in a Global Society

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Artificial Intelligence

LEVEL:
Beginner

Course Description

In Data Literacy in a Global Society, students will explore the areas of computational thinking, data literacy, automation, and flowcharts. These are important concepts to learn about prior to learning programming. Students will also learn how skills in these areas connect to different problems and solutions in our global society.

Students will learn the ways in which data is transforming our economy, including how it is affecting our media viewing and listening habits and choices, world stock markets and currency exchange, the Internet of Things, world politics, problem-solving in areas of health, transportation, science, and urban planning, and storytelling using Information Analysis.

This is Part 1 of a 2-part sequence. We recommend students take "Analyze Data using Python" next.

Learning Outcomes

- Students evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources
- Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning
- Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

Analyze Data using Python

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Software Development

LEVEL:
Beginner

Course Description

Learn how to program in Python, a very popular and versatile language for students in high school. This course will focus on using these programming skills to manipulate data as part of the Global Data Literacy movement.

Python is a language that is not only used by Computer Scientists and Software Engineers but also in popular and new popular careers such as Data Science. Python is easy to learn compared to other Foundation languages. When using Python one can build a website, develop a game, apply machine learning tasks, harvest data from websites, perform data analysis, automate a web browser, build artificial intelligence etc.

This is Part 2 of a 2-part sequence. We recommend students take "Data Literacy in a Global Society" before this course.

Learning Outcomes

- Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes
- Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways
- Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits

App Development with Thunkable

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Software Development

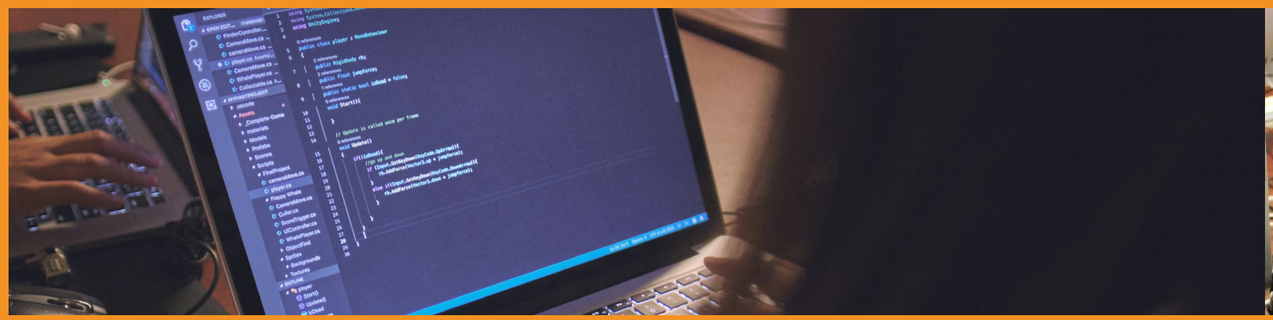
LEVEL:
Beginner

Course Description

Discover how to program an iOS app using Thunkable, an all new platform that allows students to create apps using a block based programming environment, a lot like Scratch. Throughout the iOS App Development camp, students will explore fundamental programming concepts and use these to create a basic app for iOS. Instructors will help the students along the way, ensuring that they are able to get through the more challenging parts of programming in Thunkable.

Learning Outcomes

- Describe Programming fundamentals
- Write Variables & Loops
- Use Conditional Statements
- Create Algorithms
- Describe UI Design
- Make a basic mobile application



Coding & Artificial Intelligence with Python

Course Description

Students will create their own artificial intelligence like chatbots, natural language processing, and recommendation systems. Use AI tools like Machine Learning to create smart programs like chatbots in scratch and utilize Google Assistant to create gender recognizers, or recommend movies. Artificial Intelligence and automation are expected to replace nearly half of all jobs that are currently done by 16-24-year-olds. Get ahead of this trend by learning how the machines that will do those jobs work! At the beginning of the week, students will get a chance to explore the world of artificial intelligence and machine learning, understanding how it affects our lives today and how it can be used for projects. Students also learn the basics of coding in Python. By the end of the week, students will have learned the foundations of programming and training machine learning models, image recognizers, and practiced coding fundamentals.

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Artificial Intelligence

LEVEL:
Beginner

Learning Outcomes

- Interact with the python shell and run machine learning & AI projects
- Define functions, identify variables and program small scripts
- Run AI projects and identify common problems that AI helps solve
- Test common AI problems such as binary classification and image recognition

Object-oriented Programming with Java

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Software Development

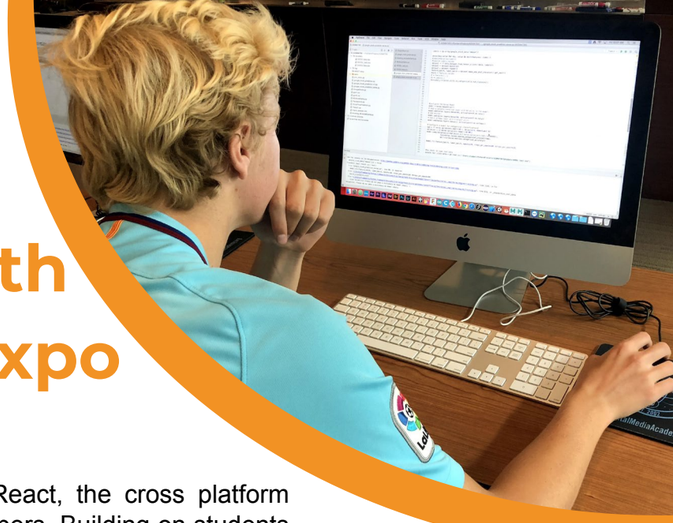
LEVEL:
1

Course Description

Experience an interactive, hands-on approach to learning Java, today's most widely used and powerful computer-programming language. Students will have the opportunity to open that door with the knowledge and know-how to use Java to develop apps, games, and drawings. Java is the most widely used programming language and the best way to get started with coding. This course provides an excellent launching point into the world of object-oriented programming. Not only is Java™ one of the most advanced and powerful programming languages, but mastering Java™ provides a perfect foundation for learning additional programming languages such as C++, C#, or Swift. This introductory course provides students with a foundational understanding of the anatomy of code and uses Processing IDE to gain a strong understanding of object-oriented coding. The course covers the basic syntax of Java, enabling students to create conditionals, loops, and functions. It also covers Object-Oriented design, as well as provides an introduction to Processing.js and UI design principles, which are further explored in depth in the advanced course Mobile App Development with React.

Learning Outcomes

- Explain and use 'clean coding' practices Identify and debug problems
- Build their own interactive Java applications
- Use their knowledge of object-oriented coding to learn more complex programming languages
- Use creative thinking to solve complex design problems
- Take complex coding projects and break them into smaller integrated components



Mobile App Development with React Native & Expo

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Software Development

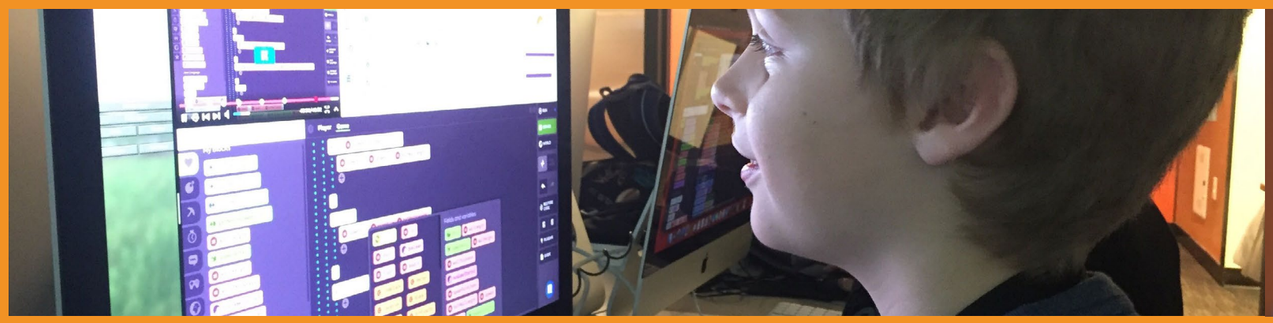
LEVEL:
2

Course Description

Start creating mobile phone applications using React, the cross platform development tool of choice for professional developers. Building on students existing knowledge of Java this course will take students through a learning journey to develop their own apps or games with React. React Native is the development tool of choice for professionals to create mobile applications for multiple platforms including iOS, Android, and Windows Mobile. Building on students existing knowledge of Java this course will take students through a learning journey to develop their own apps or games. At the beginning of the week, students will learn to weave together new skills in HTML, Javascript, and CSS to create useful and fun apps. By the end of the week, students will learn to create strong user interfaces and apps or games of their choice. Solve a big problem, or make something fun and take your creations home with you!

Learning Outcomes

- Explain App development principles including UI/UX design
- Explain responsive design, prototyping, and testing
- Demonstrate advanced programming techniques
- Use arrays, data structures, and object-oriented design
- Develop using React Native



Applications Programming & Web Development with Python & HTML/CSS

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
Artificial Intelligence

LEVEL:
1

Course Description

Learn to problem-solve like a computer scientist and code like a software engineer using Python, the world's most in-demand programming language. Develop an understanding of challenging concepts such as programming best practices, conditionals, Object-oriented programming (OOP), Integrated Development Environments (IDE), loops, debugging, Turtle graphics, functions and scoping, and HTML and CSS while developing your presentation skills and confidence.

Learning Outcomes

- The Way of Programming
- Intro to Web Dev & IDE
- Program Design, Python I/O & Import
- Web Dev: Text Formatting, Lists & Links
- Simple Data Types & Working with Strings
- Intro to CSS
- Conditionals & If Statements
- Web Design: Box Model & Responsive Layout
- Working with Loops
- Working with Functions & Scoping

Data Structures & Algorithms with Python

Course Description

Take your software engineer mindset to the next level with advanced programming concepts like user-defined and built-in data structures, algorithms, recursion and networked application program interfaces. Efficiently perform operations such as sorting, searching and indexing, essential for high-performing applications.

Learning Outcomes

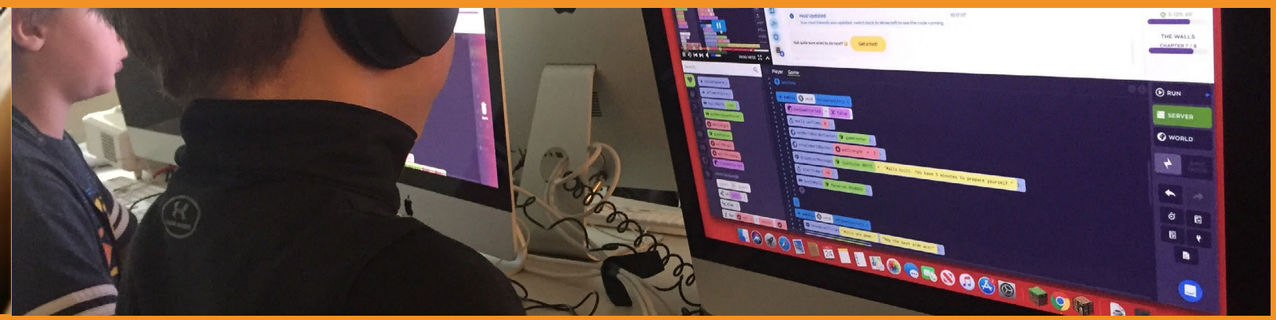
- Intro to Data Structures & Lists
- Data Structure: Tuples
- Data Structure: Dictionaries
- Data Structure: Sets
- Data Structures: Application Programs
- Data Structures: the Goodies
- Intro to Databases & SQL
- Working with DB-API
- Data Structures: Stacks
- Data Structures: Queues
- Searching: Hashing
- Sorting: Bubble & Selection Sort
- Sorting: Insertion & Merge Sort
- Web Apps Using Flask

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
Artificial Intelligence

LEVEL:
2



Data Science with Python

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
Artificial Intelligence

LEVEL:
3

Course Description

Step up your pursuit of a career in data science as you understand its role in the AI, Machine Learning and NLP pipelines. Learn to ask the right questions to acquire data and clean, explore and visualize to make data-driven decisions. Develop database fundamentals, including writing SQL statements and queries. Understand and utilize tools used by data scientists like scikit-learn, NumPy, pandas, Matplotlib and spaCy and learn the benefits of using the cross-industry standard process for data mining (CRISP-DM). Take part in your first feature engineering and model evaluating tasks. All the while, continue improving your communication skills and being the curious researcher, problem solver and critical thinker you are!

Learning Outcomes

- Data Science
- Data Acquisition & Preparation
- Exploratory Data Analysis & Decision Making
- Data Visualization
- Databases & SQL
- Working with DB-API
- Introduction to ML & Modeling
- NLP & Sentiment Analysis
- Feature Engineering
- Model Evaluation
- EDA & ML Case Studies

Applied Data Science & Machine Learning with Python

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
Artificial Intelligence

LEVEL:
4

Course Description

Solve real-world business problems and build basic intelligent systems. Develop your ability to analyze data, detect statistical data biases and perform feature engineering. Understand supervised and unsupervised Machine Learning models and deep learning algorithms, including dimensionality reduction and over and under fitting. Tell compelling stories with data to drive decision-making. Understand human-in-the-loop pipelines to improve model performance with human intelligence.

Deep dive into the essential areas of Applied Data Science (Machine Learning) as meticulously planned by our industry professional curriculum designers. *Core content coming soon.*

Don't Stand Still Mate... Animate!

AGE:
5-8

COURSE TYPE:
Foundation

PATHWAY:
2D Animation

LEVEL:
Beginner

Course Description

Do you like watching cartoons and animated movies and wonder how pictures can be made to come to life? Learn how some of your favorite shows are created! We will also teach you how to make your own animation on paper and on the computer that you can impress your friends with!

In this course, students will get an introduction to what animation is and how it can be an effective way to tell stories. Students will be exposed to three types of animations that are most commonly seen on TV and in movies today and explore how each of them is created by professionals in the field. They will then learn to create their own simple animations using the flipbook method as well as using a computer program to create digital animation.

Learning Outcomes

- Understand how common types of animation are created
- Create a simple flip book animation using pencil and paper
- Create a digital flip animation using a web application
- Get a basic understanding of what an animation is, and some common types of animation that they see on different media

Daring Designs

AGE:
5-8

COURSE TYPE:
Foundation

PATHWAY:
3D Modeling

LEVEL:
Beginner

Course Description

Ever wonder how the objects we use every day have changed over time? How about what these objects would look like in the future? Learn about the changes in the designs we use and design your own versions in the future.In this course, young students will investigate the way design has changed over time by examining the objects and places that influence our day-to-day lives. As a function, materials, technology, and design ideals have evolved, these products and places have changed dramatically. Students will then take part in a challenge to imagine and redesign common objects that meet the needs of future consumers.

Learning Outcomes

- Identify major design changes over time
- Understand and implement the design process
- Envision future designs based on course skills and content
- Investigate the way design has changed over time by examining the objects and places that influence our day to day lives

The Power of Pictures: Photography

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
Photography

LEVEL:
Beginner

Course Description

Learn how to take and edit photos to use in creative projects for fun and for an audience.

In this course, students will learn about the ways in which photographs are used to tell stories. In the first module, students will learn to 'read' a picture by learning some basic visual literacy techniques. They will examine photographs used in print ads and newspaper articles and use photos to inspire their imaginations. Students will then learn some basic photography techniques relating to shots, angles, perspectives and framing to see the ways in which photographs can be used to tell a story. As a final step, they will use their new photography skills and knowledge to tackle some photography challenges.

Learning Outcomes

- Edit images using online software
- Design and create interesting projects using text and images
- Take quality photographs that demonstrate understanding of angles, framing and point of view
- Identify images that represent specific ideas and are tailored to a specific audience

The Power of Pictures: Digital Illustrations

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
Graphic Design

LEVEL:
Beginner

Course Description

Learn how to draw and edit illustrations to use in creative projects for fun and for an audience.

In this course, students will learn about the ways in which images are used to tell stories. Already familiar with picture books, they will use this knowledge as a springboard to analyze how different elements of a picture convey meaning. They will then learn how to use different online drawing programs to create digital illustrations for specific purposes. As a final step, they will plan a story they want to tell and use a collection of original digital illustrations to tell their story.

Learning Outcomes

- Understand the relationships between images and text
- Use digital art tools to create and edit illustrations
- Design and create interesting projects using text and images
- Identify images that represent specific ideas and are tailored to a specific audience

The Power of Pictures

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
Photography

LEVEL:
Beginner

Course Description

Learn how to draw and edit illustrations and how to take and edit photos to use in creative projects for fun and for an audience.

In this course, students will learn about the ways in which images are used to tell stories. Already familiar with picture books, they will use this knowledge as a springboard to analyze how different elements of a picture convey meaning. They will then learn basic photography techniques (zoom, shadow, composition, etc) to understand some of the ways that photographers can create a narrative as well. As a final step, they will plan a story they want to tell and use a collection of images (drawings, found images, and their own photos) to tell a story.

Learning Outcomes

- Edit images using online software
- Use digital art tools to create and edit illustrations
- Design and create interesting projects using text and images
- Identify images that represent specific ideas and are tailored to an audience
- Take quality photographs that demonstrate understanding o angles, framing and point of view

Watch Cartoons? Create Your Own!

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
2D Animation

LEVEL:
Beginner

Course Description

Have you ever watched an animation on TV or in the movies and wondered how they are made? Learn about how professionals like the ones from Pixar create storyboards to plan out their ideas. Create your own animation starting from a simple sticky note storyboard to an online storyboard-building tool before animating your story using an easy-to-use app on a mobile device!In this course, students will learn about the history of animation and briefly explore the common types of animation that are featured on television and in movies. They will discover that no matter what type of animation it is, a good animation depends on good planning. Professionals use what is called storyboarding to plan out their work before creating their animation and students will have an opportunity to try it using a web-based tool called StoryboardThat. Later on, students will be introduced to a mobile-based app called Toontastic 3D, where they can create engaging 3D animations using their storyboards as their blueprint.

Learning Outcomes

- Get a basic understanding of what an animation is, and some common types of animation that they see on different media
- Understand what a storyboard is and why it's important in digital storytelling
- Use a web application called StoryboardThat to create a digital storyboard
- Explore a mobile app called Toontastic 3D to create simple animations

Graphic Designer Studio

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Graphic Design

LEVEL:
Beginner

Course Description

Learn some techniques and tricks that graphic designers use to create the products we use every day. Apply your new skills and knowledge to create your own websites, book covers, logos, and more.

Participants in this course will learn about accepted principles of graphic design and their influence on media ranging from print design to app design. They will explore the ways that color scheme and layout affect the user experience (UX) and user interface (UI) in many of the devices and programs we use every day. Throughout the course, participants will analyze, remix, and create original work for target audiences that reflect these essential concepts of design.

Learning Outcomes

- Create original designs or branding for specific audiences
- Remix designs to personalize them for themselves and others
- Identify major elements of color theory and principles of design
- Select user interfaces and user experiences for specific audiences

Introduction to 3D Modeling in Tinkercad

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
3D Modeling

LEVEL:
Beginner

Course Description

This course will introduce students to the world of 3D modeling in our global society before creating 3D models using the polygonal method of modeling. These models can then be viewed and shared in a digital environment or printed using a 3D printer.

With the basic skills the student learns in this course, they will be able to start exploring a variety of education paths to working in the 3D modelling industry other areas of interest such as Entrepreneurship, prototyping and marketing; engineering and fabrication; art, design and sculpture; robotics and more. The course will end with an introduction to the new feature of 3D modeling with code.

Learning Outcomes

- Understand the design elements of a good printable 3D model
- Understand how positive and negative space combine to create a 3D model
- Become familiar with how 3D modeling is used in every day in the world around us

Designing Play Spaces

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
3D Modeling

LEVEL:
Beginner

Course Description

In this course, you will combine your creative genius and 3D designs to create an original play space. You'll start with simple structures and then use the design process to envision and start building a world for fun, play, and exploration.

Designing Play Spaces takes learners on a journey that begins with inspiration and ends with an exciting project-based design activity. The final project provides the opportunity for learners to combine design thinking, 3D modeling skills and creativity as they design and build (with software) a public play space of their choice. The course begins with students discovering the different types of careers they can have as architect designers and continues as they learn the skills that help them build virtual spaces inspired by their own ideas and of the designers who inspire them.

Learning Outcomes

- Use Tinkercad to create floor plans
- Use Tinkercad to create 3D models of structures
- Develop a plan for a unified space that reflects a unified theme
- Use design thinking principles to design play spaces that appeal to users

Designing Urban Spaces

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
3D Modeling

LEVEL:
Beginner

Course Description

Cities are amazing, complex places. Helping so many people live healthy, happy lives in one place is part of the work of urban designers and architects. Use your talent and creativity to create unique urban spaces that make city living better for everyone.

More than half the world's population lives in urban issues and that percentage is expected to grow in the coming decades. With more and more people living in cities, the challenges of housing, security, recreation, and healthy living (to name just a few) will be tackled by planners, designers, and architects.

In this course, students will explore the role of designers, architects, and urban planners in making cities better places to live. After learning how to use Tinkercad and taking part in a design process, they will research some of the common urban issues facing cities around the world. They will then use their own ideas and research to design an urban space that seeks to improve urban life by addressing - through design - specific urban issues.

Learning Outcomes

- Use Tinkercad to create designs
- Conceive of and plan urban spaces that address urban issues
- Recognize and better understand the challenges of urban living
- Use the design process to come up with creative solutions to make urban living better

Show and Tell: Script and Storyboard

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
2D Animation

LEVEL:
Beginner

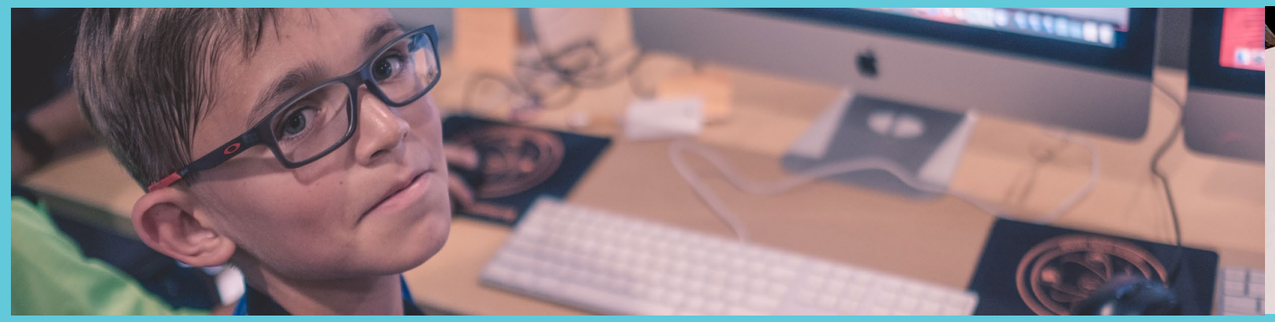
Course Description

Have you ever wondered how professionals such as the ones who work at Pixar come up with story ideas for popular movies like Wall-E, Toys Story, and Up? Take this course to learn about the art of storytelling and try your hands on creating a story using helpful hints from professionals! You can also learn about how scripts and storyboards are created for animation, and try out a few programs that you can use easily to tell stories digitally!

In this course, students will first explore the history of scriptwriting and how it helps drive storytelling on television and in movies. They will also learn that a good production hinges on good planning and professionals use what is called storyboarding to plan things out before creating their work. Students will get to try this using a web-based tool called StoryboardThat to create a simple storyboard, which will then be used as a basis for a story. Using the storyboard, they will write out a script for the story, then explore a computer program called Plotagon Story which uses the script to generate a 3D animation.

Learning Outcomes

- Explore a mobile app called Plotagon Story an animation
- Understand what a script is and why it's important in digital storytelling
- Use a web application called StoryboardThat to create a digital storyboard
- Understand how to write simple scripts using WriterDuet



Mobile Journalism

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Photography

LEVEL:
Beginner

Course Description

Journalism isn't just about news - its about giving voice to the events, people, and ideas that shape our lives. This course will give you the skills to find stories (about people, communities, sports, food, art, or music), to tell them, and to reach an audience. Its your moment, its your world, so help shape it.

This will be a foundational course for the student interested in being a content creator for the digital age. Digital tools and the plethora of media platforms have transformed journalism, allowing traditional media outlets to reach audiences in rich, engaging ways while also enabling citizen journalists to tell their stories and connect with people around the world. Digital tools allow creators of any age to share the stories shaping their lives and even bring about social change. Social media platforms make it possible to connect with people from almost anywhere at any time. This course will explore the use of mobile-based digital photography and video as a powerful medium to share ideas, inspire change, and give voice to new ideas and perspectives.

Learning Outcomes

- Learn and practice adding sound to video stories
- Learn photo and video shooting and editing techniques
- Learn traditional journalism techniques - writing, pitching, content strategy
- Produce and shoot one or more original, researched story (video and/or photography)

Stop Motion & Computer Animation with Toon Boom Harmony

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
2D Animation

LEVEL:
Beginner

Course Description

Discover how animators at Pixar, Cartoon Network, and Disney produce animated cartoons and movies. Create drawings and bring them to life using production techniques such as timelines and keyframes and using Toon Boom Harmony, the same software used by industry pros. Create drawings and bring them to life, using production techniques such as timelines and keyframes in Toon Boom Harmony™ - the same software used to create Spongebob and many more popular cartoons. Work as part of a team and make friends who share your interests as you explore other animation techniques like claymation and “humanimation”. At the end of the course, you take home a stop-motion-animated short film to share with family and friends.

Learning Outcomes

- Demonstrate animation skills and the fundamentals of storytelling
- Explain how to create claymation and humanimation
- Hone their cartoon drawing skills
- Develop a cartoon and create a character
- Use Toon Boom Harmony, the professional animation software

Content Creation for TikTok, Instagram & YouTube Studio

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Content Creation

LEVEL:
1

Course Description

With nearly one billion daily active users combined, YouTube is the established player while Instagram and TikTok have crashed onto the digital content scene like a tidal wave. Get social, learn from experts, and share your new skills with your world. Learn the fundamentals of the creative digital arts and develop your skills with mobile apps, YouTube, TikTok, and Instagram.

Students will begin the week by learning and sharing top thematic styles utilized by social video content creators across platforms. Students will learn the methods used by creators to publish different types of video and photo content to social networks YouTube, TikTok and Instagram. The week finishes as students create multiple examples of the types of posts they are most interested in mastering with the help of experienced content creators.

Learning Outcomes

- Learn to use digital editing software
- Produce their own content
- Make creative content for social media
- Upload, brand, and promote content

Digital Photography with Adobe Photoshop

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Photography

LEVEL:
1

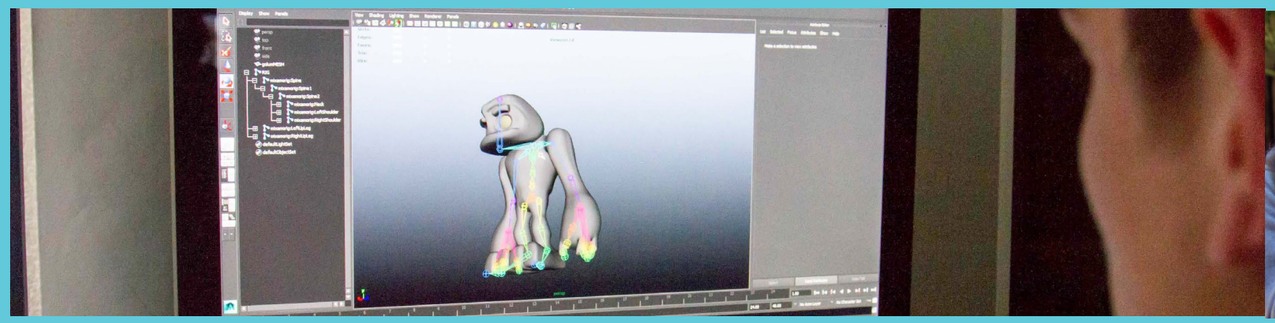
Course Description

Professional shooting techniques combined with hands-on learning show you how to use your DSLR camera to take world-class photographs. Master your DSLR camera as you learn professional workflows and manual camera controls like aperature, shutter speed, and ISO speed settings. Use Adobe Lightroom and Adobe Photoshop to edit your photos before creating a professional portfolio.

Every image we see in media today is created using digital photography and image editing software. Whether students are considering a graphic design career or curious about how it all works this course will give them a deep dive into the fundamentals. Students will learn how to create stunning digital photography and enhance imagery in Adobe Lightroom and Photoshop. Students will build up their digital photography techniques first, then transition to developing their software and editing skills. By the end of the course, students will have a portfolio of professionally shot and edited photographs, and an understanding of how the photography industry works.

Learning Outcomes

- Explain the elements of a good composition
- Explain the effect of aperture, shutter speed, and ISO changes
- Troubleshoot and fix a “bad photo”
- Demonstrate photo manipulation techniques
- Organize and improve photos in post-production



Graphic Design with Adobe Photoshop & Illustrator

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Graphic Design

LEVEL:
1

Course Description

Develop and improve your graphic design skills while mastering professional design tools, such as Adobe Photoshop and Adobe Illustrator. Create original projects for your professional portfolio.

Students will start out learning the fundamentals of graphic design, using the Adobe Creative Suite and project-based learning. They will learn the design process, color theory, typography, and how to recreate professional media and advertisements. At the end of the course, students will have a portfolio of designs and develop a final project piece that allows them to focus on their passion and emulates a real-world client.

Learning Outcomes

- Articulate the core principles of graphic design and industry vocabulary
- Explain the ways that graphic design defines the visual world around us
- Use Adobe Photoshop and Illustrator to achieve their vision
- Identify differences between Photoshop and Illustrator
- Incorporate resources from the web into their designs

Tech Entrepreneurship with TinkerCAD & Adobe XD

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Content Creation

LEVEL:
2

Course Description

This innovative course submerges students into the world of product development and Silicon Valley entrepreneurship. How many times have you thought of a good product/service idea, but you weren't sure what the next step should be? This course will guide students from developing their idea to product testing, market research, and elevator pitch development, as well as making their own marketing pitch and video.

Students will be exposed to a variety of prototyping applications such as TinkerCAD, Fusion 360, Adobe XD. Ideally, this class will create the next passionate, successful entrepreneurs with a product or service that generates excitement for venture capitalist investment. The focus is not only on the end product but also teaching students about design, legal issues, idea development, and leadership.

Learning Outcomes

- Understand innovation, communication, and business basics
- Master the design process & principles and their role in product/ service design
- Pitch their idea to a crowd of investors
- Grasp the relationship between market research and data collection in developing an idea
- Understand the role of business planning in entrepreneurship

Digital Drawing & Design with Adobe Photoshop

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
2D Animation

LEVEL:
1

Course Description

Take your drawing and illustration skills from paper to digital, understanding the principles of life-drawing (utilizing clothed digital poses and anatomy), perspective (1, 2 and 3-point) and composition. Understand how to design backgrounds and characters that work well when animated. Develop the art of storytelling by thinking sequentially to create storyboards. Apply industry-standard techniques in Adobe Photoshop, including layering, adjusting and masking, using a drawing tablet throughout. Gain an insight into the job opportunities in the animation industry and develop your critical thinking. The essential first step for any budding animator or illustrator.

Learning Outcomes

- Installing & Using a Graphics Tablet
- Photoshop Basics
- Custom Brushes
- Drawing in Photoshop
- Coloring Line Art
- Custom Templates
- Layering & Masks
- Character Design
- Set Design
- Concept Art Design
- Animated GIFs

Classical Animation with Adobe Animate & Premiere Pro

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
2D Animation

LEVEL:
3

Course Description

Incorporate classical animation principles and understand the importance of animation in TV, film and games history. Develop expertise in Adobe Animate for Flash animations and character testing. Master walk cycles, run cycles, extreme takes and acting. Continue your Photoshop and character design (including props and anatomy) mastery.

Learning Outcomes

- Adobe Animate
- Ball Bounce
- Walk Cycle
- Run Cycle
- Carry Weight
- Animated Backgrounds
- Animated Props

Rigged Animation with Toon Boom Harmony

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
2D Animation

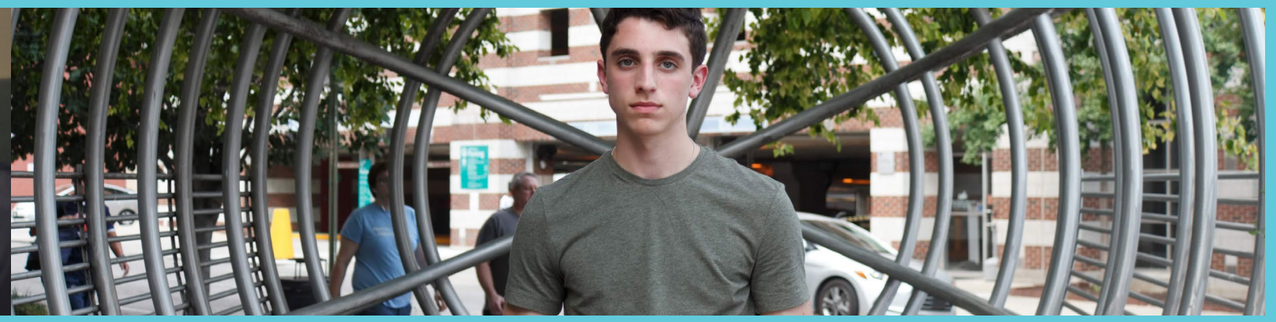
LEVEL:
4

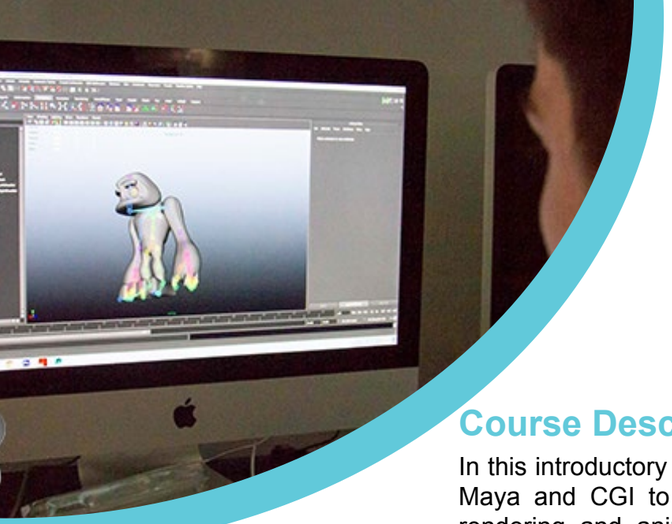
Course Description

Take on your first real-world Client Brief, creating a Public Service Announcement using another industry-standard string to your bow, Toon Boom Harmony. Use Harmony and Photoshop to learn the animation pipeline while developing your skills in frame-by-frame animation, rigging and character design. Embrace your concept design skills incorporating new elements like color palettes, keyframing, prop sheets and more. Start developing your industry-ready portfolio with a pre-production portfolio and client approved work.

Learning Outcomes

- Connecting to Adobe Animate
- Pipeline Concepts & Storyboard
- Pipeline Animatic
- Pipeline Assets
- Pipeline Production
- Client Brief Intro
- Client Concept Art
- Client Animatic
- Client Pitch
- Client Assets
- Client Production
- Client Presentations





3D Modeling with Maya

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
3D Modeling

LEVEL:
1

Course Description

In this introductory course you'll develop an artistic style using Autodesk Maya and CGI to master the basics of modeling, texturing, lighting, rendering and animation for 3D film production. Create 3D models, sculpt characters, and build environments as you explore complex modeling techniques that focus on proper model topology. Learn professional workflows as you work with Autodesk Maya. Become a well-rounded 3D artist capable of using modeling software in games, film, and tv with this course. 3D design and modeling open doors into all kinds of modern creative careers. Learn, discover, create and enjoy learning with other passionate creators. After learning the basics of Maya's UI and tools, students will practice creating complex shapes and models. Once students are comfortable with basic modeling concepts, advanced skills and techniques will be taught as students model their own human character and create textures before rendering their final model. Throughout the course, students will gain an understanding of career paths and studio roles while engaging in a collaborative process.

Learning Outcomes

- Maya User Interface and Camera Controls
- Basic Object Manipulation
- Maya Modeling Tools
- Texturing, Lighting, and Rendering
- Mudbox Sculpting
- Sculpting with Mudbox
- Dynamic Tessellation
- UV Texture Mapping
- Lighting and Textures
- Painting Specularity
- Exporting Textures and Building Arnold Shaders
- Lighting and Rendering
- Extrusion and Stroke Demo
- Mirroring Geometry
- Texturing and Lighting
- Texture Painting in Mudbox

3D Character Animation with Maya

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
3D Modeling

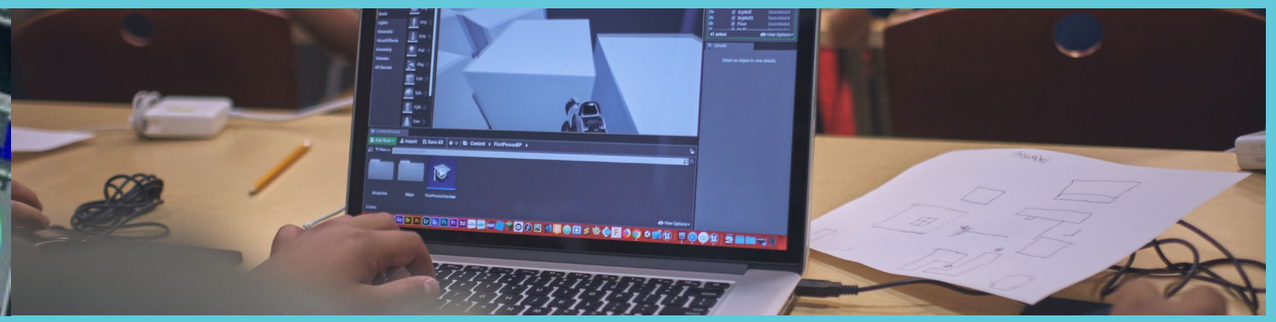
LEVEL:
2

Course Description

Model and create characters while learning professional animation techniques from the pros, bringing your ideas to life with an animated film. Learn how to create 3D character animations with Maya. Bring characters to life by learning professional techniques to make animation fun and easy. Develop an understanding of the storytelling and character animation process with the industry-standard 3D software, Autodesk Maya. Students will learn how to bring characters to life, using lighting, settings, and camera angles. We'll teach you a workflow that will take pre-rigged models and animate them in an original short sequence that tells a story. Building on existing knowledge of the basics of 3D modeling, students will take their design skills from modeling into animation just like the pros. By the end of the week, students will have an understanding of keyframing, facial expressions, character poses, object modeling and the pre-production process.

Learning Outcomes

- Introduction to interface and camera controls
- Introduction to the main components of the Maya user interface
- Basics of object manipulation
- Creating custom window layouts
- Bouncing Ball
- Introduction to puppeteering characters
- Making a rig animation ready
- Advanced five pose story OR make a cycle
- How to plan a project: Pre-production and final project prep
- Adding props and scenery
- Polish key poses
- Create breakdowns - transitions that define the poses of the characters
- Picking up or putting down objects
- Render or playblast



Inventing and Reinventing Machines

AGE:
5-8

COURSE TYPE:
Foundation

PATHWAY:
Robotics

LEVEL:
Beginner

Course Description

How do people build everything from cars to giant structures? With machines! Learn about the machines that shape our world and start designing the next generation of machines to change the future.

Inventing and Reinventing Machines will introduce students to simple machines such as levers, pulleys, wheels/axles, pulleys, planes, and screws - tools that shaped the development of human societies. After learning about these simple machines, students will learn about some of the machines that make modern life possible (e.g., internal combustion engines and turbines for energy). With an understanding of the machines that shape our world, students will take part in creative challenges to re-imagine and redesign machines to tackle problems of modern life.

Learning Outcomes

- Explain what simple machines are and how they work
- Solve basic problems using knowledge of simple machines
- Understand the connection between simple machines and modern innovation

Design Challenges

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
3D Printing

LEVEL:
Beginner

Course Description

This course will give you the opportunity to learn about and practice all different kinds of design. Whether you're interested in fashion, technology, product design, architecture, or play spaces, you can build your design skills and knowledge by tackling a series of design challenges. You can even have the opportunity to share your design solutions with others.

In this course, students participate in the design process through hands-on learning. Each module covers a different aspect of design thinking and learning and as students learn about each topic, they will practice their knowledge and skills with real-world design challenges. Students learn about different kinds of design careers and they can choose the design challenges that match their interests or take a chance on exploring a design project that is new to them.

Learning Outcomes

- Use design-thinking skills to generate solutions to real-world problems
- Identify different types of design careers they might want to pursue
- Identify design problems in their community
- Define problems and implement solutions that reflect the needs of uses, customers, or stakeholders.

Fun with Robots

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
Robotics

LEVEL:
Beginner

Course Description

Learn about robots, play with some virtual robots online then use your creativity and skills to design a robot of the future.In this course, students will learn about modern uses of robots, use the design/ engineering process to plan and design virtual robots, and understand the potential for robots in different fields (e.g., manufacturing, medicine, space exploration).

Learning Outcomes

- Understand and define what a robot is
- Use computational thinking to control virtual robots
- dentify different parts of a robot and how they work together
- Use design-thinking to generate ideas for robots of the future
- Use the engineering process to build machine and simple robot prototypes

3D Printing & Modeling with TinkerCAD & Ultimaker Cura

Course Description

Creating has undergone an incredible evolution in the last decade as 3D printing capabilities continue to rapidly evolve. Whether fixing your favorite toy's broken part or building your 3D printed city, this course will empower students with the fundamental understanding and experience with the software and hardware that are responsible for custom 3D printing.

Students will spend the week using a CAD (computer-aided design) software program called Tinkercad and learning how to break down real-world objects into 3D shapes. They'll also learn about the 3D printing process, taking the objects from Tinkercad and setting them up for printing in an application called Cura, and then printing them on the Ultimaker 2+ printers. Each student will leave camp with four custom-designed 3D-printed objects.

Learning Outcomes

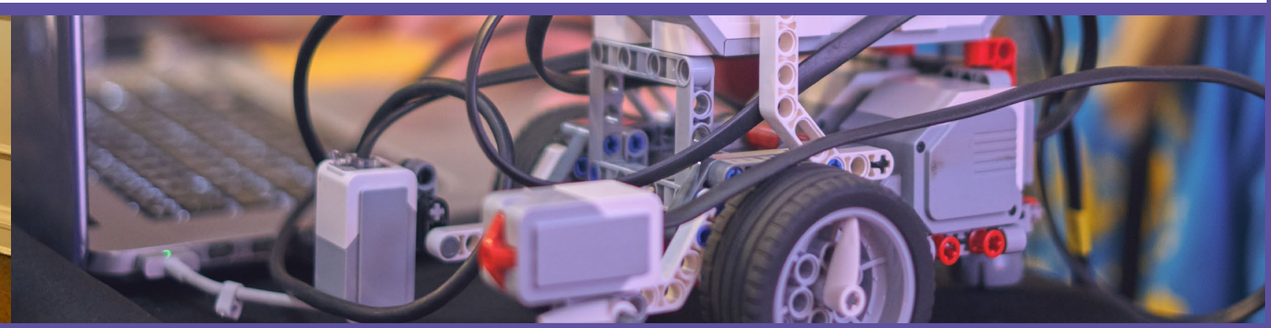
- Explain how 3D printers are changing the world
- Explain the design and engineering process used by professionals
- Explain the thinking behind the industrial design and consumer goods
- Download pre-made 3D models
- Make and print a 3D model using TinkerCAD and a 3D printer

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
3D Printing

LEVEL:
Beginner



3D Printing & Modeling with Fusion 360 & Ultimaker Cura

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
3D Printing

LEVEL:
1

Course Description

In this course, students will learn how to develop their very own products from concept to 3D printed prototype using an Ultimaker 2+ 3D Printer and Autodesk Fusion 360. They will act as designers and will be given real-world design challenges.

Projects will range from a personalized keychain, a USB drive, pair of dice, and final project that plays to their passion. We'll also discuss the concept of Design Thinking, how to design for others. Thinking creatively and learning how to represent your ideas into prototypes is the key to this class!

Learning Outcomes

- Plan out product development
- Create and Print Working Parts
- 3D Model in Autodesk Fusion 360
- Use 3D Print Software such as Cura
- Clean and Present Prototypes

Sustainable Energy - The Future of Transportation

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
EnviroTech

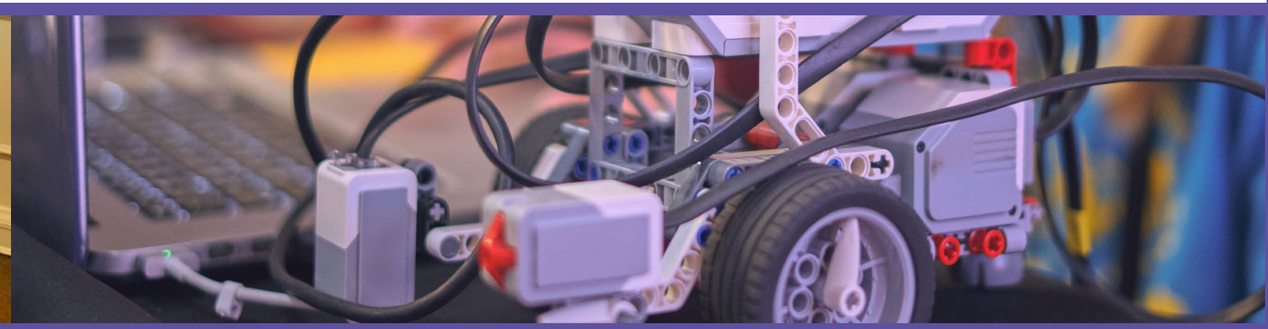
LEVEL:
Beginner

Course Description

This course will facilitate students in their first steps to becoming a Sustainable Energy Engineer. Students will learn of the need for cleaner energy in our world and explore solutions that are already out there. Students will go through the Design Thinking Process to learn more about how energy is transferred from one form to another. They will also use the Design Thinking Process to come up with solutions to problems put forth by inquirers.

Learning Outcomes

- Understand the need for other forms of energy
- Practice going through the Design Thinking Process multiple times
- Create models of sustainable forms of transport
- Explore future options for transport



Robotics & Coding with LEGO Boost

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Robotics

LEVEL:
Beginner

Course Description

Learn the basics of robotics and coding with Lego. Students will build and program robots which they will use to complete a series of challenges.

Students design, build and program robots using LEGO's most accessible robotics technology – the powerful LEGO Boost Robot. LEGO Boost features an easy-to-use programming language that lets students immediately begin simple robotics programming and then advance into developing more complex algorithms.

Students work in pairs or individually to complete projects, program their robot, and develop custom robotics. This course focuses on the engineering design process, building, and programming using LEGO. Advanced extensions generally provide additional design, programming and building opportunities.

Learning Outcomes

- Go through the engineering design process
- Follow building guides
- Code Visual Programming Languages (VPL)
- Analyze data using sensor feedback
- Problem-solve
- Innovate and build a variety of robots

Robotics & Programming with LEGOMindstorm EV3

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Robotics

LEVEL:
Beginner

Course Description

In this course, students design, build and program robots using LEGO's most advanced and latest robotics technology – the powerful MINDSTORMS® EV3. EV3 features an easy-to-use graphical programming language that lets students immediately begin simple robotics programming and then advance into developing more complex algorithms. Classmates work in pairs or individually to complete projects and compete in a tournament.

This course has a focus on the engineering design process, building, and programming using EV3. Advanced extensions generally provide additional design, programming and building opportunities.

Learning Outcomes

- Understand the engineering design process
- Follow building guides
- Program using EV3
- Analyze data using sensor feedback
- Problem-solve
- Innovate and build a completely new LEGO robot

Build a Robot with Arduino

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Robotics

LEVEL:
1

Course Description

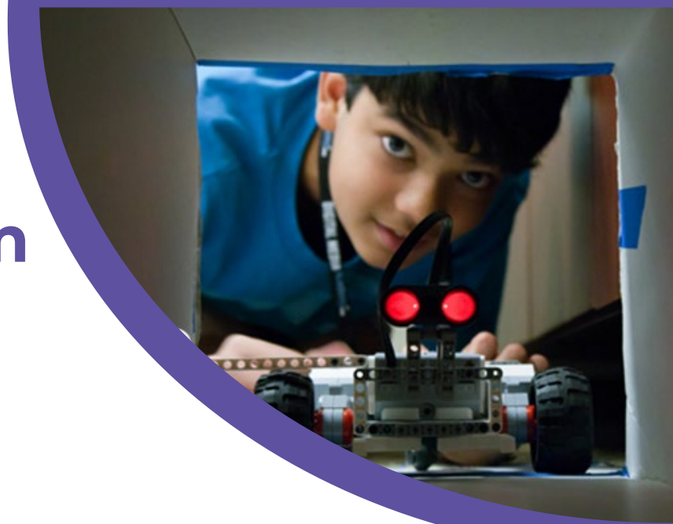
Using a combination of mechanical, electrical and software engineering, you'll learn how to design, assemble and program a robot, using your own Arduino micro controller.

Few things are more gratifying than building a robot for yourself - and you'll get to keep your working robot at the end!

This course provides a great introduction to the world of robotics and electrical engineering. Students will move from basic programming and electronic circuit concepts to building the robot. You'll explore each sensor and actuators capabilities by programming with Arduino to perform automated tasks. The course finishes with two final challenges, a maze navigation course and a balloon pop battle!

Learning Outcomes

- Program in Arduino
- Explain signal processing
- Build electronic circuits
- Troubleshoot errors and solve logical problems



Build and Program a Laptop with Python

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Robotics

LEVEL:
2

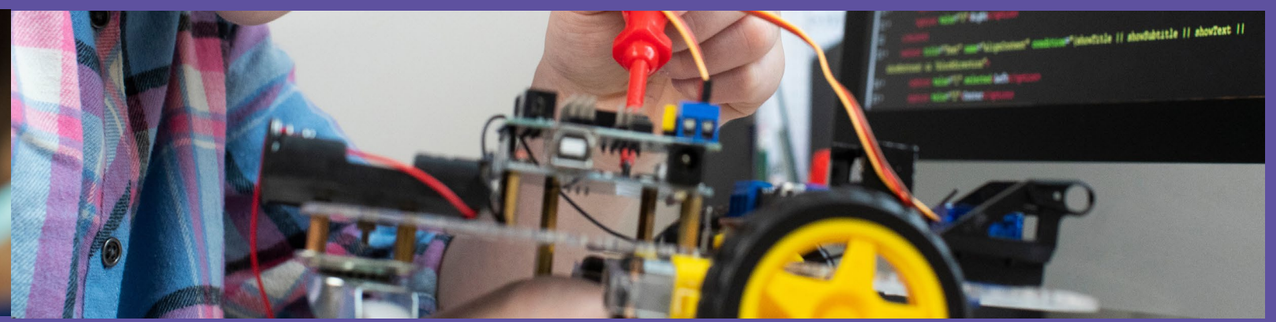
Course Description

Choosing a laptop these days can be hard to do but building your own with Raspberry Pi and Python opens students to a whole new world where they are designers and creators of incredible things. Explore the Internet of Things through building and programming a pi-top [3] laptop: the perfect tool to help you learn to code, create awesome devices, and take your knowledge to the next level.

This course builds upon knowledge of basic programming and circuitry to empower students to build their own unique projects using the Raspberry Pi and a variety of sensors. Students will learn the basics of Python, physical computing with the Pi, and how to use the Pi's internet connectivity to communicate with it remotely.

Learning Outcomes

- Set-up and use a Raspberry Pi
- Write command line interfaces
- Write code in Python
- Explain physical computing
- Demonstrate electrical engineering basics



Code, Computers and Carrots

AGE:
5-8

COURSE TYPE:
Foundation

PATHWAY:
Game Programming

LEVEL:
Beginner

Course Description

Learn about computers and coding by solving some puzzles, playing some games, and reading some stories about Rabbits! At the end of the class, you will put your new programming skills to work and challenge yourself with some online, block-based coding challenges.

In this course, students will begin exploring with the following questions:

What is a computer? What is a computer program? What is code?

Students will learn some basic coding/programming terms that are common to all computer languages through hands-on activities including drawing, puzzles and games. In the last module, students will have the skills and knowledge to engage in some basic block-based coding challenges.

Learning Outcomes

- Understand basic coding terms and how they connect to computer programs
- Identify what a computer is and what it can do
- Solve simple coding puzzles
- Write simple pseudo-code programs

Crazy About Games

AGE:
5-8

COURSE TYPE:
Foundation

PATHWAY:
Game Design

LEVEL:
Beginner

Course Description

If you love playing games then you will love this course! You'll learn how all kinds of games work and then use what you've learned to design and build your own games from scratch. Games can be card games, board games, sports games, paper games, and/or digital games.

In this course, students will explore the key concepts of game creation using elements of computational and design thinking. Students will analyze different types of games to identify general game components, rules, and features of good game design. After analyzing familiar games, students will use a design process to begin devising their own simple games using readily available materials and ending with a final game project.

Learning Outcomes

- Apply learning to creating and testing a game
- Explain key elements and characteristics of a game
- Identify and understand important elements of game design
- Use computational thinking as a problem solving strategy
- Apply computational thinking strategies to designing games

Game Play and Coding

AGE:
9-12

COURSE TYPE:
Foundation

PATHWAY:
Game Design

LEVEL:
Beginner

Course Description

Learn how to design your own games that you and your friends can play. You'll start creating your own board or card games and then move on to creating your own digital games that you can play on your phone or computer.

In the first section of this course, students will discover key elements of game design, create game assets (such as characters), storyboard and then create 2D games without code. From there they will apply the game development process to a block-based coding environment to plan, design, and code interactive games.

Learning Outcomes

- Understand and apply basic elements of game theory and game design
- Design simple and challenging board/card games for different audiences
- Design and build simple digital games using block-based coding

Game Designer Studio

AGE:
13-18

COURSE TYPE:
Foundation

PATHWAY:
Game Design

LEVEL:
Beginner

Course Description

You're no longer the player, you're the designer! Learn how to design and build your own game, even if you have no coding or design experience. You'll learn hands-on how to create and import your own assets and how to build games that others like to play.

This course will introduce students to the principles and practices of portable game design on phones, tablets, and PCs. Using the online block-based programming site, Scratch, students will build knowledge and skills in game design and development including planning, testing, level design, and basic physics. As part of the course, students will create personalized game assets (images and sounds) and learn how to import them into an original game that others can play.

Learning Outcomes

- Understand essential elements of games
- Use block-based coding (Scratch) to develop an online game that incorporates essential game elements and game theory
- Learn key concepts of coding
- Create prototypes and engage in user testing

Game Coding with Scratch & Processing

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Game Programming

LEVEL:
Beginner

Course Description

In this course, students get a chance to make 2D Games using Scratch and Processing. Students will get accustomed to using variables, conditionals, and loops. They will also learn how to take advantage of coordinate systems and create code to simulate basic physics like gravity and collisions. Making use of events, they will create games, animations, stories, and experiences.

Students will get a chance to design, identify, and improve game mechanics, explore narratives, and playtest examples and other students work. By giving and getting strong, helpful feedback, students can iterate on their works and become better designers in the process.

Learning Outcomes

- Understand the power of programming as a tool
- Master coordinate systems
- Grasp Physics concepts like velocity and gravity
- Perform game development in various languages

Game Design with Adobe Photoshop, GDevelop, Piskel & Tiled

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Game Design

LEVEL:
Beginner

Course Description

This course offers a great introduction to the principles of game design including interactive storytelling, character creation, and publishing. Our hands-on, design-thinking approach encourages students to unleash their inner designer as well as work collaboratively with other students as they create mobile video games that can be uploaded onto an iPhone or iPad. Showcase your personality by creating a game that's as unique as yourself. Learn how to bring your ideas and stories to life. Discover the immersive world of game development and learn key game design principles including game theory, character creation, digital storytelling, and publishing. You'll build and customize game elements using Tiled and Piskel, and practice problem-solving. You'll design creative solutions in a supportive community of burgeoning designers. At the end of the week, you can take your creation home to share with friends and family.

Learning Outcomes

- Work with the principles of good game design
- Build a solid foundation of programming principles
- Fix and test their own projects
- Make and find great game assets

Game Development with Roblox

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Game Programming

LEVEL:
Beginner

Course Description

This course provides an introduction to game design using an awesome drag-and-drop building game called Roblox! We'll start by introducing students to this sandbox world and get them set up with their own accounts, and over the course of the week we'll guide them through the development and creation of their own game. This is a one-week, group project based course. Students will work in groups of three or four on a small platformer using assets from Roblox's built-in editor.

Learning Outcomes

- Describe the basics of good game design
- Manipulate objects in Roblox
- Use the basics of lighting, color and UI
- Explain the basics of scripting
- Monetize and Advertise their game
- Describe Color Theory for function and narrative
- Work in teams to create Alphas, Betas and organize successful playtests

Java Programming with Minecraft

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Game Programming

LEVEL:
Beginner

Course Description

This course provides students with the opportunity to create their very own Minecraft Mods using Java programming. Students will be creating custom server side mods using Code Kingdoms, a Java coding framework designed specifically to teach Foundations to code in Minecraft. Students will have the opportunity to follow along with some great tutorials, build mods, deploy them to a server, and test them. Code Kingdoms allows students to interchangeably program with a block interface, or completely in pure Java, so the course can be fun and rewarding for all levels of coding experience!

Learning Outcomes

- Program concepts with Java
- Explain project management and flow
- Implement a game design process
- Understand playtesting, events, and iteration

Game Design& Mechanics with Fortnite Creative & Unreal Engine

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Game Design

LEVEL:
1

Course Description

This course provides an introduction to understanding game design as a team-driven process that has many dynamic elements and nuanced goals by making levels in Fortnite Creative. We'll be taking the students through the process of creating and revising design documents, working in teams while collaborating with others, and ultimately creating a game that they can share with their friends or online!

In addition, we'll be showing them the basics of the Unreal Engine, which Fortnite runs on. They will get the chance to cut their teeth on its many features, both to see what a game engine looks like and to gain an appreciation for what's going on behind the scenes with their favourite game.

Learning Outcomes

- Describe why and how games are made
- Work as a group toward specific game goals
- Make a level in Fortnite Creative
- Use basic functionality of the Unreal Engine

Game Design with Unity

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Game Programming

LEVEL:
Beginner

Course Description

Learn the essentials of game design by harnessing the power of Unity to master creating 2D or 3D environments and levels. Use C# and the Unity Game Engine to design and code your own 2D and 3D games. Get introduced to basic game design concepts, including user experience design and beta testing. At Digital Media Academy, our goal is to empower students to become creators of digital media rather than just consumers. Everyone loves a good game and creating those games is more exciting than ever for our students. Unity is the primary framework used to develop most of the video games people play today. At the beginning of the week, students will practice using the Unity editor to create levels and environments, program mechanics in C# and create a few guided projects. At the end of the week, students will work together or independently to create their own game with assets and mechanics of their choice.

Learning Outcomes

- understand the power of programming
- create clear, readable and efficient code
- troubleshoot errors and solve logical problems
- plan a game
- understand the basics of level design, storytelling and user empathy

Game Development with Unity & VR

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Game Programming

LEVEL:
Beginner

Course Description

Create interactive experiences using AR while working with the Unity game engine. Learn the skills you need to create virtual reality games and experiences for your mobile phone or VR headset. Create interactive experiences using AR while working with the Unity game engine. Game design and development are undergoing significant changes as immersive experiences like virtual reality continue to push the boundaries of storytelling, games, and interactive experiences. Students will leave this course with a great introduction to creating in this emerging field. In this course, students learn the skills needed to create virtual reality games and experiences for mobile phones or headsets. They will also create an augmented reality game, melding the real world and digital worlds on their mobile devices. Learn the best ways to use the Unity game development engine and tackle the unique design challenges that arise when building for Virtual and Augmented Reality. Plus, you'll explore the basics of C# programming.

Learning Outcomes

- Create 3D worlds in Unity
- Play their games on their mobile devices
- Program game mechanics in C#
- Bug test, troubleshoot, and share their projects

Creative Storytelling in Film with Pixton & Celtx

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Film Production

LEVEL:
Beginner

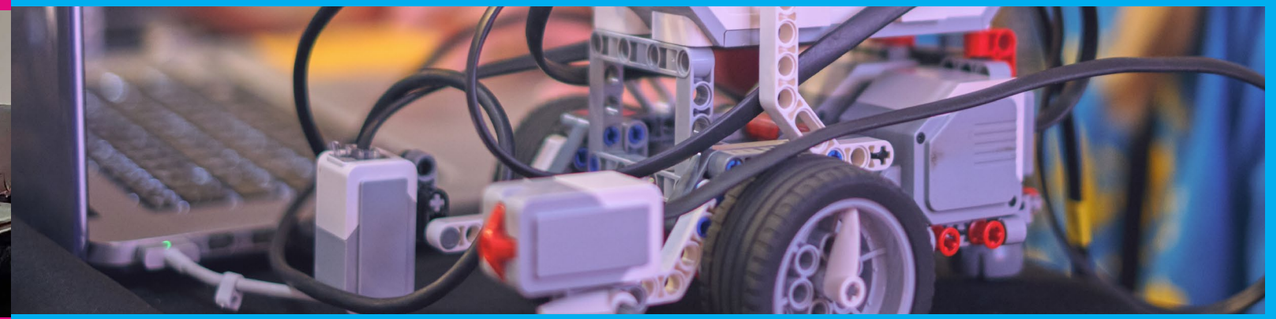
Course Description

In this course, students will become inspired filmmakers as they learn to comprehend the power of storytelling to express their ideas. These young filmmakers will advance their skills and experience as they learn, through creating, the Fundamentals of Storytelling.

Your life, your story. Students will dive into the art of storytelling as they express themselves through their own lived experience. Students will be the main character; the producer; the sound designer; the lighting engineer, and learn to communicate meaning through storytelling. Students will learn to differentiate between fact and fiction and become content creators instead of passive consumers of media. Students will gain a wide understanding of how their story, and the stories of history, work as building blocks for their own video projects.

Learning Outcomes

- Comprehend the history and basis for storytelling
- Create unique and inspiring stories using media
- Share their stories with an audience
- Learn to work with individual and group digital media projects
- Understand basic elements, the building blocks of digital media



Creative Storytelling Through Music Production

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Music Production

LEVEL:
Beginner

Course Description

This course is designed to emulate the song production process, from the formation of an initial song idea through to its digital release and promotion in today's global music industry. In this sense, the students are the ones who oversee all aspects of their project, similar to the role of a film director. For this course, students will be able to learn the concepts in this course using any music production software of their choice, whether it be on a mobile or desktop device.

Learning Outcomes

- Use storytelling to develop an initial song idea
- Plan and arrange a song before recording it
- Record and edit a song
- Mix and master a recorded song
- Distribute and promote a song on digital platforms

Music Production with Ableton Live

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Music Production

LEVEL:
Beginner

Course Description

Get into the rhythm of Music Production by learning the basics of music and how to use professional music software! Students will learn the science of sound and synthesis and how to loop musical ideas in Ableton Live's session view. Students will have created their own arrangement and production of an existing popular song and will have learned the basics of music production. This course provides an introduction to music production and recording for even the newest musicians! At the beginning of the course, students will learn the basics of music (pitch, rhythm, melody, timbre, texture, dynamics), and how to use professional music recording software for creating and recording their own musical ideas. Later in the course, students will learn about the difference between midi and audio and how to assign different types of sounds and instruments to separate tracks. Students will learn the science of sound and synthesis and how to loop musical ideas in Ableton Live's session view. At the end of the course, students will have created their own arrangement and production of an existing popular song and will have learned the basics of music production. Students will go home with the ability to produce their own music.

Learning Outcomes

- Explain the basic elements of music
- Use professional music recording software
- Design custom sounds in Ableton Live 10
- Record their own musical ideas

Filmmaking with Adobe Premiere Pro

AGE:
9-12

COURSE TYPE:
Discovery

PATHWAY:
Film Production

LEVEL:
Beginner

Course Description

Discover how Hollywood shoots and edits movies while mastering filmmaking and special effects techniques. Express your creative voice through storytelling as you write a script, storyboards, and record your own movie. Get started on your adventure to making your own films! Whether you are excited to produce video for the Internet or the big screen this course prepares students for a future in filmmaking. Over the first two days, students will learn how to develop story ideas with small production teams. While creating a short commercial or similar project, students practice shooting and editing techniques to create a cohesive movie and apply the design thinking process to peer critiquing. Over the last three days, students will continue to develop their filmmaking skills while completing a final (passion) project of their choice. The week will conclude with a film festival during Open House. Attendees will leave camp with the production skills required to create a movie, along with footage of their very own short film!

Learning Outcomes

- Explain the movie-making process start to finish
- Use a camera to tell stories via shooting techniques
- Edit with Adobe Premiere
- Work on a team
- Give and receive constructive feedback

Filmmaking & Video Production with Adobe Premiere Pro

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Film Production

LEVEL:
1

Course Description

Explore the art of digital filmmaking by shooting and editing your own unique video. Learn to write a script, operate a camera using manual functions and make edits to your film. Using the latest equipment, techniques, and software students will learn the ins and outs of video production and make films while using the editing suite trusted by the professionals: Adobe Premiere and Creative Cloud. The course begins with basic principles of short narrative filmmaking: screenplay structure, camera functionality, camera operation, and role descriptions. Students then learn how to work as a crew, how to storyboard, how to direct, and how to edit. Students will produce two to three short film projects from start to finish, learning from each experience as they share, reflect and receive constructive feedback.

Learning Outcomes

- Explain storyboarding and scene blocking
- Explain how to effectively use sound and music in a film
- Use basic filmmaking language and story structure
- Demonstrate cinematography using DSLR cameras
- Demonstrate their post-production editing skill with Adobe Premiere

Advanced Filmmaking & Visual FX with Adobe After Effects &Premiere

AGE:
13-18

COURSE TYPE:
Discovery

PATHWAY:
Film Production

LEVEL:
2

Course Description

Video and Film these days involves a lot of post-production work to create the incredible visual experiences we enjoy today. Building on students existing knowledge of the basic principles of filmmaking in this course students hit the ground running, beginning with a rapid short narrative project that they complete during the first day of the course. Students then learn about title design and basic visual effects or VFX with Adobe Photoshop and Adobe After Effects, before launching into their second short film project. Students will learn how to use a green screen effectively. Additionally, students will gain a basic knowledge of sound design for video and film production with Adobe Premiere Pro. Film projects can be in a range of genres including narrative, music video, documentary, feature and more.

Learning Outcomes

- Describe advanced cinematography and the importance of mise-en-scene
- Demonstrate cinematography using DSLR cameras
- Explain the philosophy & technology behind sound design
- Use basic Adobe Photoshop and After Effects workflow for VFX
- Demonstrate green screen editing techniques with Adobe After Effects
- Demonstrate advanced post-production editing techniques with Adobe Premiere

MIDI & Beatmaking with Ableton Live

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
Music Production

LEVEL:
1

Course Description

Join us for the essential first step for any budding music producer and create your first beats on Ableton Live. Hone your MIDI skills through copying, pasting, duplicating, looping, recording, editing and quantizing. Experiment with MIDI controllers, drum machines and the mixer. Harness the power of structure and rhythm for programming drums. Finally, analyze the stylistic features of various genres to make your productions more authentic and/or commercially viable.

Learning Outcomes

- Using a Drum Machine
- Drawing in MIDI
- Rhythm Basics
- MIDI Duration
- Recording MIDI
- MIDI Controllers
- Intro to Song Sections
- Duplicating MIDI Sections
- EDM Beat Essentials: House & Techno
- EDM Beat Essentials: Dubstep & Downtempo
- Pop Beat Essentials
- Hip Hop Beat Essentials
- Film Score Track Essentials
- Mixing Basics

Songwriting & Structure with Ableton Live

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
Music Production

LEVEL:
2

Course Description

Ready to take your productions to the next level? Develop the music theory essentials that turn basic tracks into great songs: key, chord progression, basslines, melody, voice leading and arranging. Develop your self-expression as a lyricist through topic, theme and rhyme. Plus, recap and hone essential MIDI editing, rhythmic and structural skills.

Learning Outcomes

- Key Signatures
- Time Signatures
- Melody & Accompaniment
- Complete Rhythms
- Advanced Rhythms
- Song Sections
- Song Form
- Chords in a Major Key
- Chords in a Minor Key
- Chord Progressions
- Song Themes
- Intro to Lyrics
- Rhyming Schemes
- Melody & Voice Leading

Audio & Sampling with Ableton Live

AGE:
13-18

COURSE TYPE:
Academy

PATHWAY:
Music Production

LEVEL:
3

Course Description

Ever wondered why your tracks sound like your software? Delve into the world of audio and harness copy, trim, duplicate and warp functions. Exploit existing audio and loops to build unique sampler instruments and stamp your distinct sonic identity. Includes upskilling in compositional elements such as structure, basslines, melody, and arranging.

Learning Outcomes

- Copying, Pasting & Duplicating Audio
- Trimming Audio & Snapping to the Grid
- Percussion Loops
- Layering Loops
- Instrumental Loops
- Vocal Loops
- Sends & Buses
- Transposing Loops
- Intro to the Sampler
- Creating your Own Samples
- Creating a Sampler Instrument
- Loops in Live Mode