**Edutech’s Learning Technology Grant**

**Summary, April 2019**

**Goals**

* Expand educational opportunities to high school students through online and blended learning
* Increase the availability of STEM courses in computer science and engineering
* Increase capacity of districts to provide online/blended learning

**Summary**

* Years 2 (July 1, 2019) and 3 will provide 5-6 free online STEM courses per district.
* Year 1 (March – June 2019) will provide a 2-day PD for one “Online Learning Coordinator” (OLC) per district, who will support online learners. Districts receive a stipend of $150/person.
* Year 1 will provide a four-hour PD session for up to 15 teachers per district, with a focus on blended learning and digital tools. Districts receive a stipend of $100/person.
* Years 2 and 3 will provide for one day of PD and coaching activities
* Years 1-3 will provide a PLC to share information on high quality online/blended learning
* Year 2 will provide approximately five free Chromebooks for districts

**Online STEM Courses (subject to change)**

1. 3D Animation (requires 3D Modeling as a prerequisite)
2. 3D Modeling
3. Audio Engineering
4. Augmented and Virtual Reality Introduction
5. Bitcoin and the Future of Money
6. Digital Information Technology
7. Engineering and Technology Concepts
8. Engineering Design/CAD
9. Esports and the History of Video Games
10. Foundations of Programming
11. Game Design
12. Manufacturing Introduction
13. Middle School Coding
14. Procedural Programming
15. Robotics
16. The Internet of Things
17. Wearable and Implantable Technologies

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**Participating Districts**

Attica ; Avon; Batavia; Byron-Bergen; Caledonia-Mumford; Clyde-Savannah; Dansville; Gananda; Geneseo; Le Roy; Letchworth; Livonia; Lyons; Marion; Midlakes; North Rose-Wolcott; Palmyra-Macedon; Pavilion; Perry; Red Creek; Red Jacket; Romulus; Seneca Falls; Sodus; Warsaw; Wayland-Cohocton; Wayne; Notre Dame High; Hillside Children’s Center - Varick; Finger Lakes Christian School; Gilead School; Genesee Country Christian School

**Edutech Grant Site:** <https://www.edutech.org/resources/accelerateu-online-learning/ltg-grant>

**Professional Development Registration Links**

* Each district will choose one person as the Online Learning Coordinator (OLC). The two-day PD for this person is listed below and will focus on how to support online learners.
	+ WFLB Districts (May 20 and June 3)
	<https://www.mylearningplan.com/WebReg/ActivityProfile.asp?D=18662&I=3086160>
	+ GVEP Districts (May 21 and June 4) <https://www.mylearningplan.com/WebReg/ActivityProfile.asp?D=18662&I=3086355>
* Each district can send up to 15 teachers to a four-hour Blended Learning workshop on any of the following dates. It is not required that each district send 15 teachers. This workshop will focus on developing awareness of the transformational potential of technology-rich instruction to enhance learning. The workshop locations are listed below, with a link to ALL of the workshops.

1.       Tuesday, June 25 at Genesee Valley Educational Partnership, Le Roy

2.       Friday, June 28 at the Conference Center at Wayne Finger Lakes BOCES, Newark

3.       Monday, August 5 at Genesee Valley Educational Partnership, Le Roy

4.       Thursday, August 8 at Conference Center at Wayne Finger Lakes BOCES, Newark

5.       Monday, August 26 at Genesee Valley Educational Partnership, Le Roy

6.       Friday, August 30 at the Conference Center at Wayne Finger Lakes BOCES, Newark

7.       Tuesday, September 24 at Genesee Valley Educational Partnership, Le Roy

8.       Thursday, Sept 26 at the Conference Center at Wayne Finger Lakes BOCES, Newark

<https://www.mylearningplan.com/WebReg/catalog.asp?D=18662&M=&Term=Blended+learning&btn_View=Search&StartDate=03%2F21%2F2019&EndDate=08%2F31%2F2020&Page=1>

**Course Descriptions**

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| **3D Art 1: Modeling****(one semester)****Requires Windows PC** | N: This course introduces students to 3D modeling tools and concepts. Using Blender, the popular open-source 3D modeling package, students learn the basics of creating shapes, adding textures and lighting, and rendering. By the end of the course, students produce a series of increasingly sophisticated projects for their 3D portfolio. This course is suitable for students with no prior experience in 3D game design or digital media authoring tools |
| **3D Art 2: Animation****(one semester)****Requires Windows PC** | : In this advanced course, students build on the skills they developed in 3D Art I to learn 3D animation techniques. Using Blender, a powerful open-source modeling tool, students master the basics of animation—rigging, bones, and movement—while learning how to apply traditional animation techniques to their 3D models |
| **Animation****(one semester)** | 2D animation creates movement in a two-dimensional artistic space. And in this course, you will learn the necessary skills to do just that. 2D Animation will give you the tools to conceptualize and bring your animation dreams to life! Using a variety of software and design programs, you’ll have the power to transform your creative notions into reality! Design, define, and complete a variety of digital design projects including creating your own website! Learning about 2D Animation could lead to a thriving career in the growing world of technology and animation! |
| **AP Computer Science****(two semesters)** | The AP Computer Science A course is an introductory computer science course. A large part of the course involves developing the skills to write programs or parts of programs that correctly solve specific problems. The course also emphasizes the design issues that make programs understandable, adaptable, and when appropriate, reusable. At the same time, the development of useful computer programs and classes is used as a context for introducing other important concepts in computer science, including the development and analysis of algorithms, the development and use of fundamental data structures, and the study of standard algorithms and typical applications. In addition, an understanding of the basic hardware and software components of computer systems and the responsible use of these systems are integral parts of the course. |
| **Automotive Basics****(one semester** | This course is designed to accomplish two goals. First, it is to give you basic knowledge of automobile systems and how they work together to make your car run. Second, it is to prepare you to make educated decisions about maintaining your vehicle. Believe it or not, you have the ability to maintain your vehicle in good running condition without paying huge fees to service technicians! There are some things that you and I cannot do because of our limited resources, but you might be surprised to learn what you can do. Two of the biggest benefits of doing these things yourself are the amount of money you will save and the confidence you will have in yourself. |
| **Audio Engineering****(one semester)****Requires Windows PC** | In this introductory course, students learn about the physics of sound and the history of recording technologies. They learn about the four stages of professional music recording projects: recording, editing, mixing, and mastering. Using Audacity, an open-source recording and mixing program, they practice the techniques used by sound engineers to produce multitrack recordings. Through a series of engaging hands-on projects, they learn the fundamental concepts of audio engineering. |
| **Augmented and Virtual Reality****(one semester)** | Separating hype from reality is hard… especially in the fast-growing and evolving space of augmented and virtual reality (AR/VR). Recent advances in technology has allowed AR/VR systems to become extremely sophisticated and realistic. This course introduces students to the technologies that underpin AR/VR systems. Then the course walks through 7 applications of AR/VR and how they will change and impact numerous aspects of our lives and the economy. Students will also learn about and discuss the risks and side effects of these systems, including health, privacy, and ethical implications. |
| **Biotechnology****(one semester)** | In this course, you will explore the history of biotechnology, including early attempts at food preservation, the development of antibiotics, and changes to food crops around the world. You’ll also learn more about some of the challenges of biotechnology, such as the growth of antibiotic resistant bacteria and questions about the safety of commercially produced genetically modified organisms (GMOs). Finally, you’ll research new biotechnologies and how they are changing the world we live in. |
| **Bitcoin and the Future of Money****(one semester)** | In this course, students will learn all about bitcoin, including its history, development, and context within the modern global economy. Students will learn the basic cryptographic principles that underlie bitcoin, and gain confidence by demonstrating strong security principles in storing and transacting bitcoin. Key principles such as mining, wallets, and hashing will be introduced. And finally, they will be familiarized with the nascent industry of digital currencies and how they function.  |
| **Digital Information Technology****(two semesters)** | Dive into an exciting course that will provide you with the foundational skills needed for exciting careers like game development, military defense, web design, and software engineering! You will explore Microsoft Office online applications, web design, emerging technologies, operating systems, project management, communication methods, Information Technology careers, and much more in this course. Learn about your strengths and how they relate to different career paths.This course serves as a prerequisite to many exciting career and technical education programs of study. |
| **Engineering and Technology Concepts****(one semester)** | In Concepts of Engineering and Technology, you will learn more about engineering and technology careers and what skills and knowledge you'll need to succeed in these fields. You'll explore innovative and cutting-edge projects that are changing the world we live in and examine the design and prototype development process. Concepts of Engineering and Technology will also help you understand the emerging issues in this exciting career field. |
| **Engineering Design/CAD****(one semester)****Requires Windows PC** | Computer-aided design systems are used by designers and manufacturers in virtually every industry to create engineering design solutions. In this course, students are introduced to engineering, learning the basics of CAD software: creating points, lines, other geometric forms, isometric drawings, and 3D models. They learn how to translate initial concepts into functional designs and 3D walkthroughs and explore career options in this hands-on introductory-level course |
| **Esports and the History of Video Games** | In this course, students will learn about the technologies and design principles that have been the foundation the development of video game technology over the last 50 years. Students will examine and discuss the impact of video games on culture and the economy. Students will learn about the current gaming and e-sports landscape, including strategies and techniques of top teams and individuals. This course will also discuss the risks and dangers of video games and understand how to set appropriate time and content parameters. Finally, the course will identify career paths and opportunities for those who are passionate about gaming. |
| **Flying Cars and the Future of Transportation****(one semester)** | This course introduces students to the newest and most cutting edge futuristic transportation technologies out there. Students gain familiarity with the history of transportation development and understand a framework with which to evaluate new transportation modes. Then the course dives into 10 different technologies on the horizon. Students examine the technologies, the pros and cons of each mode, and explore potential career paths in these emerging fields. |
| **Foundations of Programming****(two semesters)****Requires Windows PC** | Foundations of Programming (FoP) will teach students the fundamentals of programming using the computer language Python. The course provides students with the concepts, techniques, and processes associated with computer programming and software development. Students will also explore the many programming career opportunities available in this high-demand field.This course is part of a program of study that provides coherent and rigorous content needed for progression in the Information Technology career cluster. |
| **Game Design****(one semester)****Requires Windows PC** | This course is for anyone who loves gaming and wants to design and build original games from scratch. Students learn how to use popular game-development software to create engaging, interactive games in a variety of styles. After learning about game genres, students learn about all aspects of the game-design process. From there, it’s on to a series of increasingly challenging hands-on projects that teach all the elements of successful game development. |
| **Graphic Design****(one semester)****Requires Windows PC** | This is a project-based course, which means you will be producing artwork and not just reading about it. Especially towards the end of the course, you will be expected to create projects that will take you several days, and at times a week or longer. The project results will only be as good as the time and effort you put forth. It is important to accept feedback and make changes in your drafts so that your final project is the best it can be. Some projects will be turned in digitally, some will be hand made, and some will allow you to choose either approach. Make sure you have an image editing program and quality arts materials before you begin. **Software Needed (choose one):*** [Adobe Photoshop](http://www.adobe.com/creativecloud/catalog/desktop.html) (there is a cost associated, Mac OS X, Windows)
* [GIMP](http://www.gimp.org/downloads/)  (free downloadable, Mac OS X, Windows, GNU/Linux)
* [Pixlr](https://pixlr.com/editor/) (free browser-based program, Mac OS X, Windows, GNU/Linux, Chrome OS)
* Optional vector image editor- [Adobe Illustrator](http://www.adobe.com/creativecloud/catalog/desktop.html) (there is a cost associated, Mac OS X, Windows)

**Hands-On Materials:*** Xacto knife
* scissors
* markers
* pencil
* pens
* good paper note pad
* colored pencils
* dotted line paper
* construction paper
* glue stick
* ruler
* scanner or camera so you can transmit photos/images of your finished work
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| **Manufacturing Introduction****(one semester)** |  In this course, you’ll learn about the types of manufacturing systems and processes used to create the products we buy every day. You’ll also be introduced to the various career opportunities in the manufacturing industry including those for engineers, technicians, and supervisors. As a culminating project, you’ll plan your own manufacturing process for a new product or invention! If you thought manufacturing was little more than mundane assembly lines, this course will show you just how exciting and fruitful the industry can be. |
| **Middle School Coding 1b, Creating a Game****(one semester)** |  |
| **Middle School Coding 1a, Introduction****(one semester)** | In Middle School Coding 1a, you will learn all about the technology you use in your day-to-day life as well as explore how the internet functions. Get an introduction to the basics of computer science and discover how to create and build your very own website using HTML and CSS. You’ll also become familiar with programming languages like JavaScript and Python Programming. You will leave the course with your very own portfolio of work that will showcase your skills and all that you’ve created.  |
| **Game Design, Creating a Game****(one semester)** |  |
| **Game Design, Introduction****(one semester)** |  |
| **Procedural Programming****(two semesters)****Requires Windows PC** |  |
| **Python Multiplayer Adventure****(one semester)** **Requires Windows PC** | In this course there are six modules teaching students the Python language. This course assumes no prior coding knowledge as students follow the lessons to program multiple complete programs in Python |
| **Robotics****(one semester)** | The Cubit Exploring Technology STEAM Course curriculum immerses students in learning robotics through a series of creative projects solving real-world problems. This course has been specifically designed with STEAM career paths in mind, formulated to support students in key skills needed to pursue these fields. Through these projects, students will put into practice key concepts and skills in science, technology, engineering, art, and mathematics. Students learn to design, code, construct, and refine robotic solutions to current issues in six fields of engineering and technology. Lessons for each project give students the tools needed to create their individualized culminating project design. At the conclusion of each unit, students create a working prototype and prepare a presentation explaining and marketing their design |
| **Small Engine Repair****(one semester)** | This course is not a “how to” course on rebuilding engines or improving performance. It is designed for you to be able to figure out just what makes that engine run. You’ll achieve this through a series of readings and quizzes as well as an optional hands-on assignment. This is what you’ll be able to do when you are finished with this course:1. Identify the key systems and components that enable small engines to operate.
2. Analyze mechanical problems to determine the best method of repair.
3. Summarize the skills needed in various small-engine-related careers.
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| **The Internet of Things****(one semester)** | First, we had the internet of computers. Then with the advent of email and social media, along with mobile technology, it became the internet of people. Today’s world is increasingly becoming the internet of things. With advances in battery power, sensors, and computer chips, more and more devices are being connected to the internet. This will allow them to be monitored, controlled, and used more effectively for people and businesses. This course will examine the trends and opportunities surrounding the Internet of Things (IoT). Students will learn about the technologies, hardware, and software that underpin the Internet of Things. The course will examine a variety of end-market applications in our homes, businesses and cities. Finally, students will learn about the many career opportunities that the Internet of Things will enable. |
| **Wearable and Implantable Technologies** **(one semester)** | From hearing aids to pedometers to smart watches, humans have made and worn devices to overcome physical deficiencies, count their steps, and communicate. With the continue miniaturization of chips and sensors, combined with increasing sophistication of artificial intelligence, wearable technology has proliferated into countless end-markets. This course will introduce students to wearable technologies and the components and software that make these technologies possible. The course will also evaluate several applications of wearable technologies in various industries. Finally, the course will examine and discuss the implications of wearable technology, including its pros and cons, and potential implications to our health, privacy, and society. |