



# Course Flow



## Lesson 1

About Me Quiz



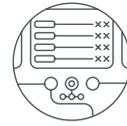
## Lesson 2

Designing the  
Ultimate Prototype



## Lesson 3

Connecting the  
Home of the Future



## Lesson 4

Building the  
Perfect Playlist



## Lesson 5

My Field Guide

The STEM workforce is expected to include **8.65 million** workers by 2018<sup>1</sup>.

Science and engineering career opportunities are **expected to grow at double the rate of growth** (20%) of the overall workforce<sup>2</sup>.

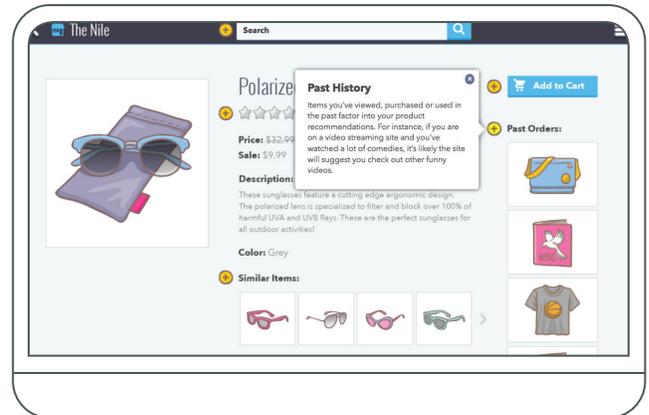
One key indicator determining high school graduates' interest in STEM is **learner interest entering high school**<sup>3</sup>.

## Learning Activity Highlights

**The Future of Manufacturing** - Sophisticated manufacturing technologies are shaping the way we design and build new products. In this activity, learners will explore the design process and topics in material science as they design and “3D print” a custom sneaker. Through experimenting with different material options and calibrating printer settings, learners will gain critical exposure to the topics and careers that are defining the future of manufacturing.

**Perfect Playlist** - While predictive algorithms play an increasingly important role in online behavior and daily decision-making, learners are often unaware of the impact their behavior has on what they see online. In this open-ended activity, learners act as “Head of Curation”, exploring collaborative and content-based filtering techniques to build the perfect musical playlist.

**For more information about bringing this program to your school or district, visit [everfi.com/k-12](http://everfi.com/k-12)**



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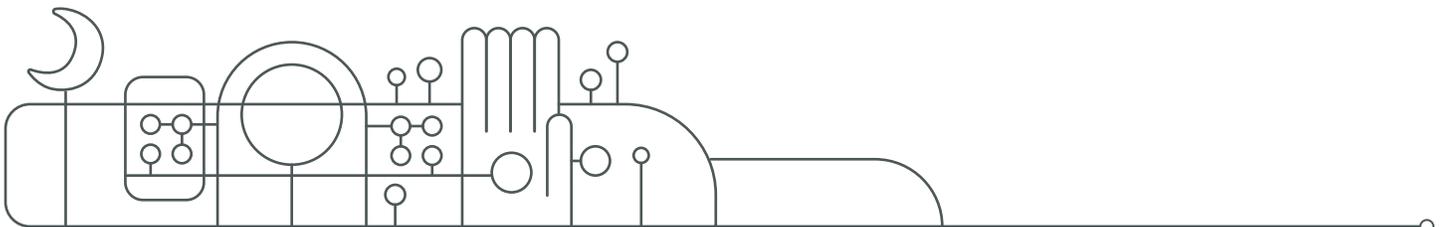
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1. STEMconnector, 2013.  
2. National Science Board, 2016.  
3. Tytler, eet al., 2008.

# Endeavor STEM Career Exploration

## Course Outline

Module	Topics	Module Description	Learning Objectives “Students will be able to...”
<b>Course Introduction and About Me</b>	<ul style="list-style-type: none"> <li>○ Course Introduction</li> <li>○ Self-exploration</li> <li>○ STEM Career Exploration</li> </ul>	Learners are introduced to the course and complete an interactive self- assessment where they dig deeper into their interests, skills, and aptitudes. Learners connect their resulting STEM profile to several career opportunities.	<ul style="list-style-type: none"> <li>○ Gain insight into their skills, interests, and aptitudes</li> <li>○ Identify STEM careers of interest</li> </ul>
<b>Designing the Ultimate Prototype</b>	<ul style="list-style-type: none"> <li>○ Engineering Design Process</li> <li>○ Materials and material science</li> <li>○ 3D printing process</li> <li>○ Testing and comparative data analysis</li> <li>○ STEM Career Exploration</li> </ul>	Learners explore advanced manufacturing techniques by designing and rapidly prototyping a custom sneaker. Through iterative design, learners will link the design process to the high-tech manufacturing techniques shaping the future of production. Learners will connect these skills to STEM careers in engineering and/or which require design and programming skills.	<ul style="list-style-type: none"> <li>○ Solve a virtual engineering problem from a set of constraints</li> <li>○ Explain the basic process for additive 3D printing</li> <li>○ Identify the steps of the design process and explain how it is utilized by designers and engineers</li> <li>○ Differentiate between synthetic materials and explain why one might be preferable to another</li> <li>○ Identify STEM careers that utilize engineering-related skills and identify one or more that might be of interest</li> </ul>
<b>Connecting the Home of the Future</b>	<ul style="list-style-type: none"> <li>○ Classifying data</li> <li>○ Interpreting/ analyzing data</li> <li>○ Password security</li> <li>○ Connected devices/IOT</li> <li>○ STEM Career Exploration</li> </ul>	Learners will explore the world to come by calibrating a connected home. Using a variety of data sources to achieve optimal settings, learners will adjust their smart thermostat, lighting control system, and intelligent refrigerator. For each of these activities, learners will interpret basic data sets (from utility bills, fitness tracker data, etc.) to make cost and energy efficiency decisions. Students also briefly explore the importance of protecting their personal information when using connected devices.	<ul style="list-style-type: none"> <li>○ Define the Internet of Things and describe its potential impact on day-to-day lives</li> <li>○ Identify appropriate visual data formats (scatter plot, line graph, bar graph, etc.) for specific data sets</li> <li>○ Understand the steps necessary to create a secure password</li> <li>○ Identify STEM careers that utilize data literacy-related skills and identify one or more that might be of interest</li> </ul>



Module	Topics	Module Description	Learning Objectives “Students will be able to...”
<b>Building the Perfect Playlist</b>	<ul style="list-style-type: none"> <li>○ Classifying data</li> <li>○ Interpreting/ analyzing data</li> <li>○ Content filtering</li> <li>○ Collaborative filtering</li> <li>○ STEM Career Exploration</li> </ul>	Learners act as curation engineers at a music software company, analyzing content and user data to determine a perfect playlist. Along the way, they learn about how recommendation engines collect information about users from online behavior.	<ul style="list-style-type: none"> <li>○ Explain how recommendation engines utilize different types of data to predict user preferences</li> <li>○ Distinguish between content and collaborative filtering</li> <li>○ Identify how data might be utilized for recommendation engines</li> <li>○ Identify STEM careers that utilize data literacy-related skills and identify one or more that might be of interest</li> </ul>
<b>Medical Machines</b>	<ul style="list-style-type: none"> <li>○ Gathering patient data</li> <li>○ Analyzing patient history</li> <li>○ Conducting physical exams</li> <li>○ Diagnostic machines</li> <li>○ STEM Career Exploration</li> </ul>	Learners act as doctor at a medical practice, gathering and analyzing patient information to diagnose each patient. Along the way, they learn how to use diagnostic tools and medical machines to make an accurate diagnosis and understand the day-to-day job of a doctor.	<ul style="list-style-type: none"> <li>○ Explain the process by which a physician gathers and uses data to treat a patient</li> <li>○ Understand how aspects of a physical exam contribute to accurate assessment of patient’s condition</li> <li>○ Identify three types of imaging, how they work, and their purposes</li> <li>○ Identify STEM careers in the medical field and how they may be of interest</li> </ul>
<b>Data Champions</b> <i>*new for 2019-2020*</i>	<ul style="list-style-type: none"> <li>○ Qualitative and quantitative data</li> <li>○ Bivariate data</li> <li>○ Make decisions using data</li> <li>○ Technology &amp; data collection</li> <li>○ STEM Career Exploration</li> </ul>	Learners are asked to make decisions when faced with data related challenges. Through problem-based learning, learners will compare sets of data and use technology to gather and track data. Learners will connect these data analysis skills to STEM careers which require research, the scientific method, and analysis of data.	<ul style="list-style-type: none"> <li>○ Define dependent and independent variables</li> <li>○ Using historical data, predict outcomes based on data</li> <li>○ Observe bivariate data to evaluate performance</li> <li>○ Compare qualitative and quantitative data</li> </ul>
<b>Game Development Studio</b> <i>*new for 2019-2020*</i>	<ul style="list-style-type: none"> <li>○ The software development process</li> <li>○ The video game design process and roles</li> <li>○ Build and maintain a timeline</li> <li>○ Computer science terms</li> <li>○ Evaluate and apply decision-making criteria</li> </ul>	Learners are shown the game design process using best practices in software development. Through the lens of a game producer learners are asked to problem solve, apply and use tools to get work done, and to make decisions within defined limitations.	<ul style="list-style-type: none"> <li>○ Describe the benefits of using standard software development methodologies</li> <li>○ Develop a project timeline</li> <li>○ Evaluate and select programming languages based on criteria</li> <li>○ Identify tools needed to perform tasks</li> </ul>
<b>My Field Guide</b>	<ul style="list-style-type: none"> <li>○ STEM Career Exploration</li> <li>○ About Me</li> </ul>	Learners explore different career opportunities based on their interests, skills, and course progress. In addition to the careers selected for the learner, learners can also access this resource at any point during their course.	<ul style="list-style-type: none"> <li>○ Identify STEM careers of interest</li> <li>○ Identify next steps for careers of interest</li> </ul>