Verizon Innovative Learning Lab Program
Digital Product Innovations

Course Overview

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Entrepreneurship +
Innovation Institute
Arizona State University

Course length

This course will take approximately 10 weeks (assuming five 50-minute class periods per week).

Course overview

Welcome to Digital Product Innovations. This is a "Time Travel" themed course that creatively empowers middle school students to become changemakers in a digital economy. Students will practice prototyping, graphic design, 3D modeling, and 3D printing through four hands-on units (we call our units Eras to stick with the time travel theme) and sustainability-themed projects.

All student-facing content is self-paced and interactive; however, we recommend finding the best balance between synchronous and asynchronous learning for your classroom.
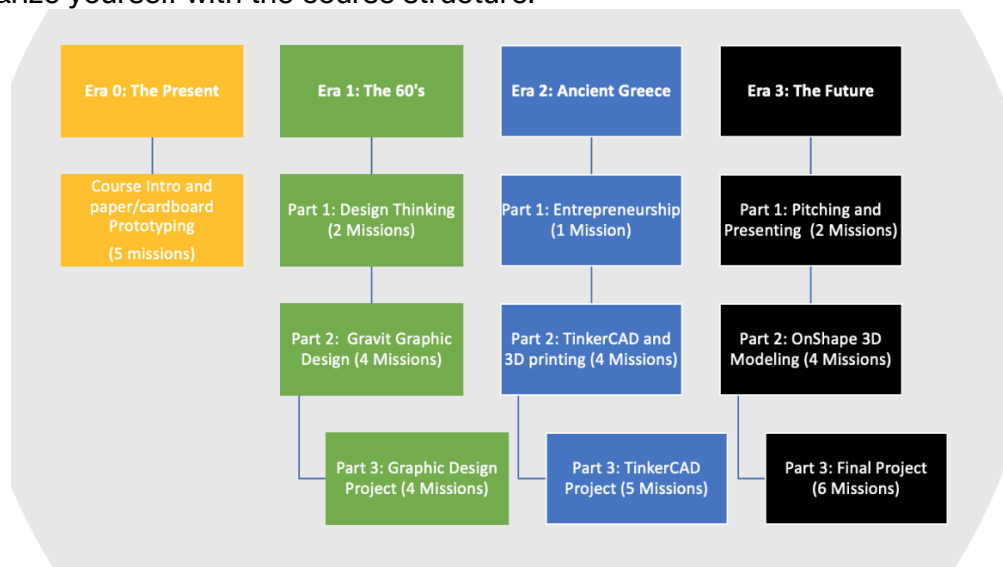
Main course objectives

Students will be able to:

- Define sustainability and solve various sustainability challenges.
- Utilize the Design Thinking process to solve real world problems.
- Develop an entrepreneurial mindset to recognize opportunities and materialize ideas.
- Create prototypes of solutions using various recycled materials.
- Leverage graphic design to solve sustainability challenges.
- Apply digital 3D modeling to solve sustainability challenges.
- Bring digital ideas to life with 3D printing.

Before you begin

- Review the Getting Started Guide.
- Review the Technology Whitelist and send it to your IT department.
- Ensure you and your students have access to Canvas and course content.
- Familiarize yourself with the course structure:

Era 0: The Present	Era 1: The 60's	Era 2: Ancient Greece	Era 3: The Future
Course intro and paper/cardboard Prototyping (5 missions)	Part 1: Design Thinking (2 Missions)	Part 1: Entrepreneurship (1 Mission)	Part 1: Pitching and Presenting (2 Missions)
	Part 2: Gravit Graphic Design (4 Missions)	Part 2: TinkerCAD and 3D printing (4 Missions)	Part 2: OnShape 3D Modeling (4 Missions)
	Part 3: Graphic Design Project (4 Missions)	Part 3: TinkerCAD Project (5 Missions)	Part 3: Final Project (6 Missions)

Best practices

- This is YOUR course: customize it and facilitate it to best meet your own students' needs.

- Set norms and routines for the course: will students enter class and begin completing a lesson independently? Will students work in pairs? Perhaps you will "present" each lesson at the front of the room.
- Keep students accountable and evenly paced. Perhaps students cannot move on to the next lesson until their activity has been graded.
- View student guides and activities 1-2 days before teaching them! You are not expected to be an expert at the content and technology in this course, but you are expected to learn alongside your students and help them troubleshoot!
- Develop organized systems for technology: how will students label and store their prototypes? How will students submit their files to be 3D printed?
- Train a "technology team": a group of 2-3 responsible students you can task with managing the 3D printer and other technology.
- This course can be taught remotely; however, identify if a lesson needs additional modification for remote instruction. For example: if students are creating prototypes, encourage them to use trash or recyclables they can find around their home.
- 3D printing can be a slow and "finicky" technology. Try to print multiple student projects at a time, and ensure students design their 3D models using best practices.

We are so happy to have you and your students participate in this course and learn about emerging technology. Take this curriculum and technology and run with it! We can't wait to see what you and your students will create!