

*National Youth Leadership Forum:
Explore STEM Alumni*

2021 Sample Schedule*

DAY ONE: Arrival of Scholars and Program Welcome

Registration and Check-in

Program Orientation

Keynote Address

DAY TWO: Many Worlds – Virtual and Planetary

Simulation: Define and Understand Your Challenge

MEDICINE STRAND: Use air pressure experiments to learn about the lungs

ENGINEERING STRAND: Use 3D design to learn about oxygen chambers

Immersion Experience: Welcome to the Cave

Be immersed in 3D Virtual Reality Worlds, including the landscape of Mars, at the Villanova Immersive Studies Cave

Maker Centers: Start Designing Your Prototypes and Creating Your Maker Documentary

DAY THREE: Creating Structure – Engineering and Prototyping

Simulation: Ideate and Start Prototyping

MEDICINE STRAND: Participate in a sheep lung dissection and elaborate on your breathing apparatus prototype design

ENGINEERING STRAND: Experiment with various materials and elaborate on your oxygen chamber prototype design

Immersion Experience: Take on Structural Engineering

Get a handle on building materials by making and breaking concrete cylinders at Villanova's Structural Engineering Teaching & Research Laboratory

Maker Centers: Build Your Prototype

(continued on reverse)

DAY FOUR: Advancement – Testing, Troubleshooting, and Robotics

Simulation: Test and Troubleshoot

MEDICINE STRAND: Put your breathing apparatus to the test and see if it will withstand Mars

ENGINEERING STRAND: Put your oxygen chamber to the test and see if it can hold up on Mars

Immersion Experience: A Look Inside Robotic Surgery

Participate in a site visit experience with Dr. David Lee, a pioneer in robotic surgery at Penn Presbyterian Medical Center, during which he will moderate a recorded robotic surgery that he previously performed and discuss the importance of this new field.

Maker Centers: Iterate on Your Prototype and Make Adjustments

DAY FIVE: Success – Preparing for the Future

PAIRIN Survey Strengths Report

Simulation: Finalize and Prepare

MEDICINE & ENGINEERING STRANDS: Finalize your prototype and Maker Documentary and prepare for the closing presentation

Immersion Experience: Villanova's Red Thumbs Martian Garden

Hear from Edward Guinan, PhD and Scott Engle, PhD, and tour a greenhouse and telescope observatory. With no vegetation on Mars, humans will need a sustainable source of food if they hope to survive. These two scientists are discovering which plants might be best suited to grow on the red planet.

Looking Forward: Closing Address and Certificate Presentation

DAY SIX: Farewell and Departure

Final Group Meetings

Simulation: Presentations

MEDICINE & ENGINEERING STRANDS: Present your prototype and your Maker Documentary

Departures

**This sample schedule is provided as an example of the overall quality and scope of the experience offered. The 2021 specific schedule, locations, and details may be modified.*

Due to the coronavirus pandemic, we are in the process of evaluating certain program elements for 2021 to ensure that they meet the most current public health standards and guidance. The safety and security of our students is always our top priority.