

National Youth Leadership Forum: Explore STEM Alumni

2022 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