

The Future is N.E.A.R. program (Nanotechnology Education and Research) at North Penn is a custom designed STEM education endeavor engaging senior Engineering Academy students in the exciting world of nanotechnology, experimental design, and engineering research.

Students work in design teams to research and develop solutions to global challenges by capitalizing from the fundamentals of materials science, engineering, and nanotechnology utilizing a combination of their own creativity coupled with some of the latest published research available.

The N.E.A.R. program is woven into the Engineering Design and Development course of the Project Lead the Way program here at North Penn. It offers our students an opportunity to gain essential 21st century skills that prepare them to become successful leaders in a global technological society.

FRIDAY, MAY 20TH, 2022

NORTH PENN HIGH SCHOOL AUDITORIUM

SEVEN O'CLOCK P.M.

2021 - 2022 Engineering Design and Development

Nanotechnology & Engineering Research Teams

Welcome to the 17th annual North Penn High School Engineering Academy Nanotechnology and Engineering Symposium!

The evening will begin at 7:00pm in the auditorium with introductions to research from each of the teams. The students will bring you up to date with the research endeavors they have been performing throughout this school year. Following their presentations, the evening will continue in the auxiliary gymnasium where the students will offer poster presentations, interactive demonstrations of their research, and much more...



PolyCable Industries

Cody William Froshour Owen J. Mockus Jake M. Sparra



AguaFlo Filtration

Garrett Bradley Chonko Tyler Refford Caleb Matai Kala le'a Yanagawa Sajid Zahid



E-Force

Bryan Blanco Shakib Hasan Rauf Islam



Scott Alan Klein Timothy Edward Schwar Ryan James Woolaver



Solar Transparency

Jessica H. Baek Veronica D. Ott Charlotte V. Patterson Kaylee R. Spencer



SolarGenix

Nicholas Joseph DeMaria Mohammed Hoque Aidan E. Hoy Justin R. Yothers



Aqua-Tech

Thomas James Samojlowitsch Logan Hunter Tripler



Fire-Power

Daniel Thomas Gregory Zachary David Kline



Emily Catherine Allen Jada Elizabeth Beach Nicole Michelle Lostaunau



ThermoCharge

Jack Patrick Bailer Liam Thomas Barron Brenden Michael Ingling Shiven B. Patel



Tepics

Jonathan Henry Pfister Dominic Porrecca



NorthPenn Thermoelectrics

Ryan Joel Banha Russell Alexander Cole



Concussion Tech

Alen C. Jobi Dev N. Vyas



Jennifer Elizabeth Denning Justin Kwak Tanav Bhujang Thota



Hydroptimize

Ethan Charles Beck Christopher Thomas LaRosa Joshua Nicholas Platt



PiezoelectriX

Gregory P. Hartwig Justin Dara Ngorn Dylan Ryan Schurr **Abigail Thornton**



NanoMed NanoMed

Emily Margaret Blanchard Matthew Vincent Pedicone Sreenidhi Reddy Yaratha

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Nanotechnology & Engineering Research Teams



Emily Catherine Allen Heal X

Emily will be attending The University of Alabama as a Nursing major. She has completed all required courses in the Engineering Academy. She has also pursued a passion for figure skating for twelve years while competing in synchronized skating competitions for most of her career. Emily has competed nationally, as well as internationally at the Junior level.



Jessica H. Baek Solar Transparency

Jessica will be attending the University of Pittsburgh in the School of Computing and Information and will be majoring in Data Science. She was Vice President of E.P.I.C.S. club her junior year and class treasurer all three years. She has participated in our local MCSTA fair and placed in her category her sophomore and senior years moving to the regional DVSF fair.



Jack Patrick Bailer ThermoCharge

Jack will be attending Penn State University as an undecided student with the intent of pursuing a degree in finance. He has taken four engineering courses and has had an interest in engineering since middle school. Although engineering has always been present in Jack's life, he believes that his true passion lies within business. North Penn's Engineering program provided guidance in his academic exploration.



Ryan Joel Banha North Penn Thermoelectrics

Ryan will be attending Penn State University for Aerospace Engineering, pursuing a near lifelong love for the subject. He has completed four courses offered by the North Penn Engineering Academy. He plans on working as an intern at Lockheed Martin during the summer in his college years.



Liam Thomas Barron ThermoCharge

Liam will attend Penn State to pursue a degree in Mechanical Engineering. Liam found his passion for engineering in his earliest days of his schooling and has completed 5 courses in the North Penn Engineering Academy. As secretary of the North Penn Auto Club, he plans to find a career innovating in the automotive industry.



Jada Elizabeth Beach Heal X

Jada will be attending West Virginia University for Biomedical Engineering and will be on their D1 all-girl cheer team. She has finished all the courses required in the engineering academy. She was a state ranked gymnast, a varsity cheerleader during her junior year, and a captain of the team in her senior year. She is currently the president of the Women In Engineering Club and the secretary for the Engineering Projects in Community Service (EPICS) Club.



Ethan Charles Beck Hydroptimize

Ethan will be attending the Pennsylvania State University in the College of Earth and Mineral Sciences majoring in materials science and engineering. He has completed five courses in the Engineering Academy, was a member of the E.P.I.C.S club, and a member of the International Research Team, in his senior year. Ethan was also an athlete on the golf team all four years.



Emily Margaret Blanchard NanoMed

Emily will be majoring in bioengineering at the University of Pittsburgh. The Engineering Academy has developed her passion for research in the biomedical community. She was section leader for the Marching Knights in her Junior year and is the current Percussion Captain and Vice President. For two years, Emily was co-captain of the robotics team, the Gearaffes, and is the communications officer in E.P.I.C.S.



Bryan Blanco E-Force

Bryan will be attending Drexel University as a undecided Engineering student with plans to transfer to Materials Science and Engineering. He has taken four engineering courses and has an appreciation for work in the Energy and Materials Science sectors of engineering. Bryan also has had a fondness for singing and is a part of the Men's Choir and Chamber Singers.



Garrett Bradley Chonko AquaFlo Filtration

Garrett will attend Temple University to pursue a degree in Mechanical Engineering. Garrett has completed five North Penn Engineering Academy courses and gained an interest in combustion engines and 3D modeling. Garrett aspires to work in the automotive industry after college and pursue his dreams of becoming an engineer.



Russell Alexander Cole North Penn Thermoelectrics

Russell will be attending Montgomery County Community College working toward a degree in mechanical engineering. He has completed six engineering courses. Russell was the president of the S.G.S club. Russell also helped to give ear loop holders to medical personnel during the virtual school year.



Nicholas Joseph DeMaria SolarGenix

Nicholas will be attending Gwynedd Mercy University and will be majoring in computer engineering. He has completed four courses in the North Penn Engineering Academy and plans to continue to apply what he has learned in college. The engineering courses have shown him how much positive impact an engineer can have in today's life.



Jennifer Elizabeth Denning Wair

Jennifer plans to take a gap year, move to California to attend community college, and transfer to University of California to major in Mechanical Engineering. She has completed 4 Engineering Academy. She found a passion for learning through a multitude of STEM courses and plans to continue this passion throughout her education.



Cody William Froshour PolyCable Industries

Cody will be attending King's College for Civil Engineering in the fall. He has completed five engineering courses during his time at North Penn Highschool. Cody is excited to move forward more with his research while in College.



Daniel Thomas Gregory Fire-Power

Daniel will be attending Penn State University to major in engineering. Ever since his first taste of engineering courses in middle school, Daniel has had a passion for the study. He has completed 5 Engineering Academy courses and is excited to continue his studies in college. He was a member of Key Club and Model Aviation Club for two years.



Gregory P. Hartwig PiezoelectriX

Greg will be attending West Chester University to major in Computer Science and Engineering. He has completed four courses in the Engineering Academy. Greg was a member of the E.P.I.C.S club during his senior year.



Shakib Hasan E-Force

Shakib plans to attend Penn State University to study Mechanical Engineering. As a child, he was inspired by his older brother, who studied engineering at the time. After completing the Engineering Academy courses Shakib recognized he wanted to pursue mechanical design further. Shakib participates in a variety of cultural clubs outside of school to raise awareness about his heritage.



Mohammed Hoque SolarGenix

Mohammed will be majoring in Mechanical Engineering in Temple University's College of Engineering. After completing several Engineering Academy courses, he developed a strong interest in engineering. Outside of school, Mohammed enjoys taking on new challenges and expanding his knowledge to help him along his journey at Temple.



Aidan E. Hoy SolarGenix

Aidan will be attending the Kutztown University of Pennsylvania and will be majoring in Elementary Education K-6. He has completed four courses in the North Penn Engineering Academy. He hopes to utilize the effective teaching styles from his teachers throughout his school years to become a successful educator.



Brenden Michael Ingling ThermoCharge

Brenden will be attending West Virginia University in the Statler College of Engineering to major in Mechanical Engineering. He has completed 5 Engineering Academy courses, was a key contributor in his thermoelectric research group, and became proficient in advanced microscopy. Brenden plans to fill a career in the automotive engineering industry.



Rauf Islam E-Force

Rauf will be attending Montgomery County Community College to major in Engineering Science. He has completed five courses in the Engineering Academy. Rauf has always had a passion for creating and building things. He likes to disassemble and rebuild devices and instruments. It has always been Rauf's dream to develop a gadget that will help people in the everyday world.



Alen C. Jobi Concussion Tech

Alen will be majoring in Aerospace Engineering at Penn State's College of Engineering. He completed 4 courses in the Engineering Academy which has helped him build skills and prepare him for the challenges he will face as an engineer. The academy has increased his interest in engineering planes which is why he chose to do aerospace engineering.



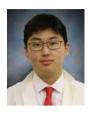
Scott Alan Klein Process-X

Scott will be attending the University of Maine with a major in Mechanical engineering. Scott was inclined to choose engineering because of his time with North Penn's Engineering Academy and his enjoyment of building things. Scott was a member of the swim and water polo team for all four years of high school.



Zachary David Kline Fire-Power

Zachary was a member of Key Club and the Bowling team for two years, becoming league champions in his senior year. Outside of school, he is an Eagle Scout and a nationally ranked Irish Dancer. Zach will be furthering his education at Lafayette College, majoring in Electrical and Computer Engineering.



Justin Kwak Wair

Justin will be attending Penn State's Engineering program with plans to obtain a degree in Electrical Engineering. He has completed five courses in the Engineering Academy. The engineering academy has helped Justin to develop a passion for improving the human condition through science.



Christopher Thomas LaRosa Hydroptimize

Chris will be attending Western Michigan University to major in Aviation Flight Science. He will go on to pursue his passion for aviation. It has been a dream of his to learn how to fly and become a pilot for a very long time. He completed five courses in the Engineering Academy. He played varsity Baseball and Golf, and during his senior year, he was a member of the International Research Team, the Unified Bocce Team, and the Special Olympics Club.



Nicole Michelle Lostaunau Heal X

Nicole will be majoring in Bioengineering at Syracuse University. Engineering courses began in 9th grade for her and she completed all required courses in the North Penn Engineering Academy. She ran track for all four years of high school and ran varsity since her sophomore year. Track sparked an interest in body mechanics, resulting in an interest in prosthetics.



Owen J. Mockus PolyCable Industries

Owen will be attending the University of Colorado, Boulder to major in Aerospace Engineering. He has taken 5 courses in the Engineering Academy. He found his love for engineering in 9th grade when he took his first basic engineering class. He plans to work for a large Aerospace firm such as General Dynamics, Boeing, or Lockhead Martin.



Justin Dara Ngorn PiezoelectriX

Justin will be attending Drexel University to major in Mechanical Engineering. He completed 5 courses in the Engineering Academy and decided to continue his path in the world of Engineering. His dedication and passion for Engineering has been developed throughout his high school years. Justin has also been a part of the Football team since his freshmen year and participated in many North Penn Activities.



Veronica D. Ott Solar Transparency

Veronica will be attending the Rochester Institute of Technology to major in Electrical Engineering. She has completed five courses in the North Penn Engineering Academy as well as three technology course classes. She discovered her interest in electrical engineering through the Engineering Academy's Digital Electronics course.



Shiven B. Patel ThermoCharge

Shiven will be attending Drexel University to study Design and Engineering. As a child, Shiven was always fascinated with tinkering with various toys and lego sets inspiring a world of mechanical wonder. During his time in the Engineering Academy, Shiven learned various skills involving digital electronics, computer integrated software and basic engineering principles pertaining to the field. Shiven Plans to pursue a career in automotive design.



Charlotte V. Patterson Solar Transparency

Charlotte will be attending the Pennsylvania State University in the College of Engineering. She completed five courses in the Engineering Academy and has participated as an active member in the Academy's International Research Team, Women in Engineering Club, and Engineering Projects in Community Service (EPICS) Club. Charlotte is a four-year letter winner and captain for North Penn's girl's volleyball team, as well as an active manager for the boy's volleyball team.



Matthew Vincent Pedicone NanoMed

Matthew will be attending Carnegie Mellon University to pursue a major in environmental engineering. He completed four courses within the North Penn Engineering Academy. He is the president of E.P.I.C.S. alongside being a member of the International Research Team and Female Authors Book Club.



Ionathan Henry Pfister Tepics

Jonathan has taken an assortment of Technology and Engineering courses starting in 9th grade. He will be attending Montgomery County Community College with a major in Mechanical Engineering. He has completed 5 of the courses in the Engineering Academy and plans pursuing mechanical engineering to aid in his love for all things cars.



Joshua Nicholas Platt Hydroptimize

Joshua will be attending Penn State University at Main campus to major in Nuclear Engineering with the intended focus on Nuclear Fusion Reactors and their applications. He has completed 5 courses in the Engineering Academy, has been a member of the North Penn Marching Knights for 5 years, and has been a member of the North Penn Winter Percussion for 3 years.



Dominic Porrecca Tepics

Dominic will be attending Shippensburg University to major in mechanical engineering. He has completed 5 courses in the Engineering Academy. He plans to pursue a career in mechanical engineering utilizing his passion for hands-on development. Dominic plans on joining the Shippensburg Esports Team.

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Tyler Refford AquaFlo Industries

Tyler plans to attend Pennsylvania College of Technology to major in Mechatronics. He was inspired to pursue this degree in engineering from his Digital Electronics class and Robotics having hands-on learning at NPHS.



Thomas James Samoilowitsch Aqua-Tech

Thomas will be attending Embry Riddle Aeronautical University to obtain a degree in Space Flight Operations. He has completed four courses in the Engineering and plans to pursue a career in the Aviation or Space Flight industry. For three years of his high school years, Thomas was a part of the Air Force JROTC.



Dylan Ryan Schurr PiezoelectriX

Dylan will be attending Virginia Tech to study General Engineering, with an interest in Mechanical Engineering. He has completed 4 courses in the Engineering Academy and plans to use the skills he acquired to be successful at Virgina Tech. Dylan has been a part of the North Penn Wrestling Team from 10th to 12th grade and the Track/Field and Football teams in 9th grade.



Timothy Edward Schwar Process-X

Tim will be attending Virginia Tech with a major in general engineering. After completing multiple courses in the engineering academy, Tim was inspired to pursue a degree in engineering due to the resources and handson learning offered by NPHS. Tim was a member of the swim and water polo team for all four years of high school.



Jake M. Sparra PolyCable Industries

Jake will be attending Virginia Polytechnic Institute and State University in the Myers-Lawson School of Construction. He completed five courses in the Engineering Academy. His favorite course was Engineering Design and Development where he learned the value of teamwork and methods to develop and test solutions to engineering problems. He is very determined to pursue his career and is always looking to better himself as a student as well as a person.



Kaylee R. Spencer Solar Transparency

Kaylee will be attending the College of Engineering at Purdue University to major in Aeronautical and Astronautical Engineering. She completed five courses in the Engineering Academy. She was the President of Mock Trial her senior year, and their team made it to the district semifinals. She was also a member of the E.P.I.C.S Club and International Research Team.



Abigail Ruth Thornton PiezoelectriX

Abigail will be attending Clemson University to major in Computer Science. She completed five courses in the Engineering Academy and has developed a passion for research. She is currently president of the North Penn Marching Knights where she has been a snare drummer for four years as well as a member of Winter Percussion for three years. She has also been a member of the National Honor Society.



Tanav Bhujang Thota Wair

Tanav will be attending Steven's Institute of Technology to major in Computer Science. He completed 5 courses in the Engineering Academy, developing an interest in Artificial Intelligence and Game Design. He was part of FRC Team 5404 for 3 years as Head of Programming for the last 2 years. He is a member of the NPHS Mock Trial team, SGA Senate, the E.P.I.C.S. club. As personal projects, he works on creating video games and building autonomous drones.



Logan Hunter Tripler Aqua-Tech

Logan will attend Penn State Abington in the 2 +3 program to obtain a degree in Civil Engineering. After experiencing the field for the first time in middle school, this sparked his interest and led him to completing four classes in the engineering academy. Logan has developed an interest in working with his hands and learning the science and physics about how the world functions.



Dev N. Vvas Concussion Tech

Dev will be attending Penn State University to earn a Bachelor's degree in Mechanical Engineering. Ever since 9th grade, he discovered his passion for engineering where the Engineering Academy helped him to develop his skills to think like an engineer. Dev plans to pursue Mechanical Engineering to utilize his passion of finding solutions with hands-on work.



Ryan James Woolaver Process-X

Ryan plans to attend The Pennsylvania State University to major in Electrical Engineering. He was inspired to pursue a degree in electrical engineering from his digital electronics class. Ryan was a part of the swimming and water polo teams for all his four years of high school.



Caleb Matai Kala le'a Yanagawa AquaFlo Filtration

Caleb will be attending Drexel University to pursue a degree in Materials Science and Engineering. Ever since taking a design and woodshop class in ninth grade, Caleb has developed a strong passion for engineering in all forms and has taken 5 engineering courses. Caleb hopes that his contributions can improve the conditions of people around the world.



Sreenidhi Reddy Yaratha NanoMed

Sree will be attending the University of Maryland studying Computer Science with a focus in Machine Learning. He has completed four courses in the North Penn Engineering Academy. He was the President of Science Olympiad, Bass in Men's choir/Chamber Singers, and Cabinet Member of North Penn Young Democrats.



Justin R. Yothers SolarGenix

Justin will be attending Montgomery County Community College for two years, then transfer to a university to pursue a degree in electrical engineering. He has taken 4 courses in the North Penn Engineering Program. He played hockey for all four years of high school and was the captain of the team his senior year.



Sajid Zahid AquaFlo Filtration

Sajid will be attending Temple University College of Engineering after high school to pursue a degree in Mechanical Engineering. It always has been his childhood dream of having a career in Aerospace. He completed a total of five courses in North Penn's Engineering Academy. Sajid has been in North Penn's National Honor Society for two years and is the treasurer of the Auto Club.

Research Team Presentation Order

Auditorium | 7:00 PM

Below are the 17 EDD research teams and the order they will be presenting their research this evening. At the conclusion of the presentations in the auditorium, the audience and teams will move to the auxiliary gymnasium for poster sessions, live demonstrations, and snacks.

1. PolyCable Industrie	1.	Pol	vCable	Industries	S
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2. AquaFlo Filtration

3. E-Force

4. Process-X

5. Solar Transparency

6. SolarGenix

7. Aqua-Tech

8. Fire-Power

10. ThermoCharge

11. Tepics

12. North Penn Thermoelectrics

13. Concussion Tech

14. Wair

15. Hydroptimize

16. PiezoelectriX

17. NanoMed

"A vision without resources is just a hallucination..."

Dr. Joseph DeSimone, 2008 Lemelson -MIT Prize Recipient

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North Penn School District





North Penn School District Board of School Directors

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Mark Keagy, Nate Snyder, Science Department

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Drexel University

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Dr. James Perkins



University of British Columbia, Vancouver, Canada

Dr. Marcus Johns



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Thank You Hitachi High-Tech America!

HITACHI Inspire the Next

Inspire STEM Education Outreach Program





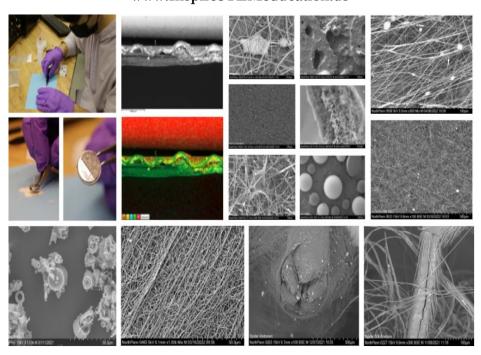
THANK YOU FOR GIVING VISION TO OUR RESEARCH ENDEAVORS!!!

Robert Gordon | Vice President, Hitachi High-Tech America

Lori Harvey | Manager, STEM Outreach Hitachi High-Tech America

Nathan Bradshaw | Program Specialist, STEM Outreach Hitachi High-Tech America

To learn more, please visit their website at: www.InspireSTEMeducation.us



Thank You North Penn Educational Foundation!



THANK YOU NORTH PENN EDUCATIONAL FOUNDATION FOR YOUR FINANCIAL SUPPORT!

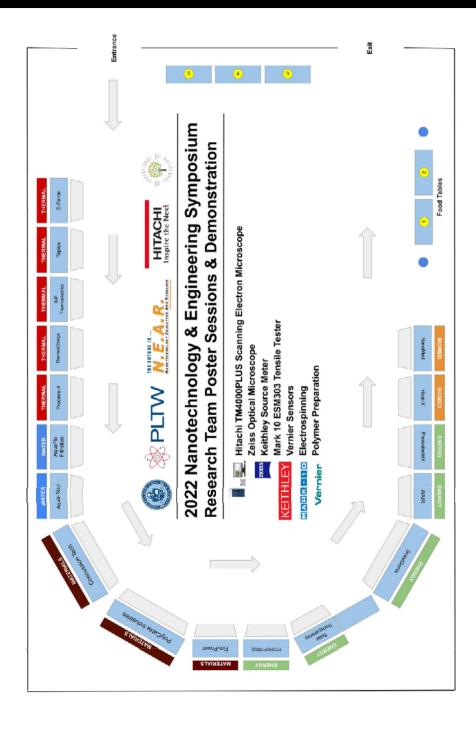
WE COULDN'T DO IT WITHOUT YOU!!!

The North Penn School District Educational Foundation, a 501c (3) corporation, is a collaborative effort among individuals committed to enriching the education and lives of more than 13,000 students in each of the North Penn School District's (NPSD) 18 schools, every single day.

Often referred to as "the Foundation," our mission is to motivate and inspire students and staff in the North Penn School District through innovative projects and opportunities that enhance educational experiences and resources.

To learn more about the foundation or to help, please visit their website at: www.npennedfoundation.org

Auxiliary Gymnasium Poster Session and Demonstrations



2021-2022 Nanotechnology and Engineering Symposium



Cover Image:

Hydroptimize | Polycaprolactone Nanofibers, 500X, 03.23.2022



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