

PURDUE COLLEGE OF ENGINEERING

HONORS PROGRAM

ANNUAL REPORT

— 2023-2024 —



PURDUE
UNIVERSITY®

College of Engineering
Honors Program

Vision Statement

The College of Engineering Honors Program seeks to cultivate diverse, inclusive, and visionary engineering leaders of the future, who reflect deeply on and generate solutions to global societal concerns and grand challenges of today and tomorrow.

Mission Statement

The College of Engineering Honors Program offers an exceptional learning experience and a nurturing educational community, provides access to academic and developmental support, and creates unique opportunities. The program attracts challenges, and empowers undergraduate students to pioneer complex real-world solutions to local and global concerns through the application of engineering principles, techniques, and systems. The program seeks to foster a climate supportive of student success, including interdisciplinary collaboration with the John Martinson Honors College, all disciplines in the College of Engineering, and among university academic, experiential learning, and success programs.



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FACTS & FIGURES

2023-2024 NEW BEGINNERS' ACADEMIC SUCCESS

The 2023-2024 cohort data demonstrate early academic outcomes of first-year engineering students participating in the College of Engineering Honors Program (CoEHP) and a carefully matched control group comprised of First-Year Engineering (FYE) students in all other engineering pathways. The groups were selected based on similar levels of prior academic preparation, including high school GPAs and standardized test scores, as well as demographic characteristics such as gender, residency, and ethnicity. These similarities allow for meaningful comparisons, highlighting the first-year experience as a critical structure to support success in the transition to college.

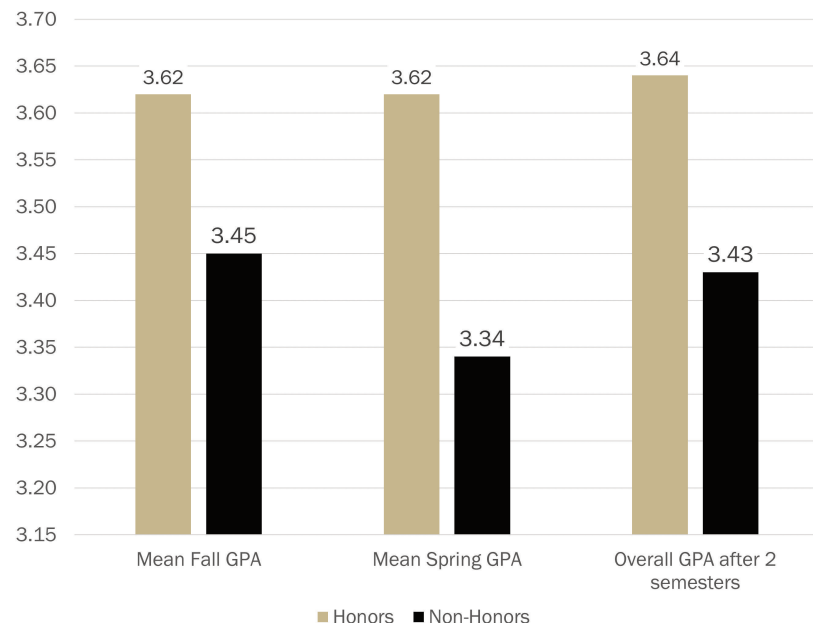


Figure 1: 2023-2024 honors cohort (gold) average a higher GPA compared to non-honors control cohort (black)

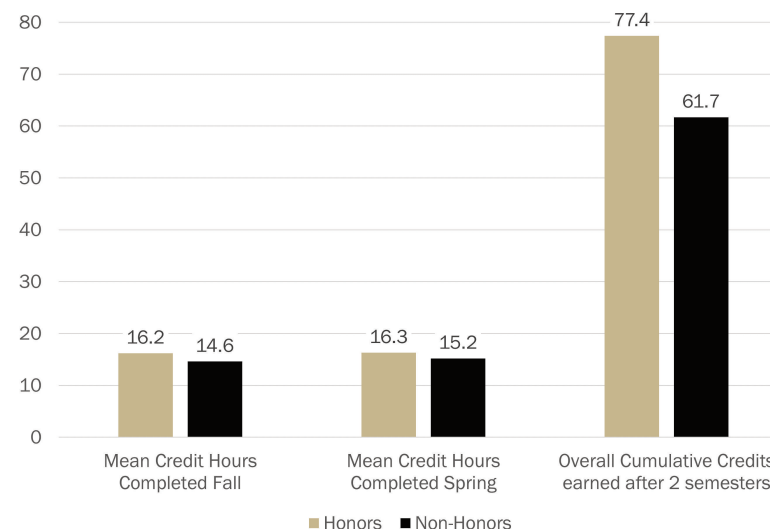


Figure 2: 2023-2024 honors cohort (gold) averages more credit hours per semester and higher overall cumulative credits compared to non-honors control cohort (black)

Table 1: High-school academic performance for 2024 honors cohort and non-honors control cohort

	Engineering Honors	Non-Honors
Core GPA	3.96	3.82
Math GPA	3.91	3.79
Science GPA	3.94	3.83
SAT Total	1484	1436
SAT-Math	764	738
SAT-Reading/Writing	726	699
ACT Composite	33.6	32
ACT English	33.8	32.3
ACT Math	33.9	32.1

Results of independent samples t-tests showed that 2023 new-beginner CoEHP students achieved significantly higher average semester GPAs and enrolled in more credit hours, reflecting engagement with the program's curriculum and resources. FYE students in other pathways also demonstrated strong academic performance, benefiting from the robust support offered to all engineering undergraduates.

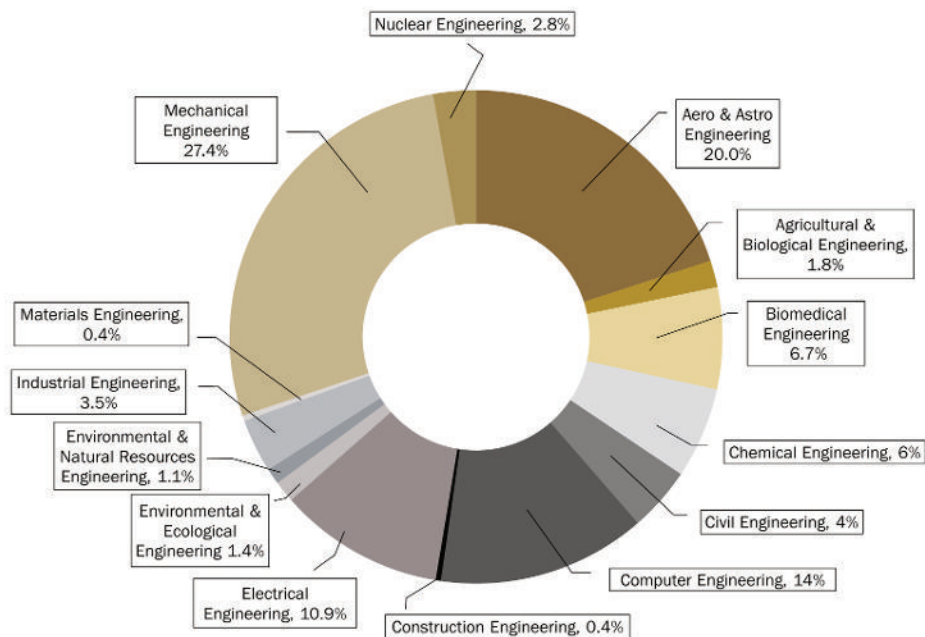


Figure 3: Engineering discipline distribution for 2023-2024 honors cohort.

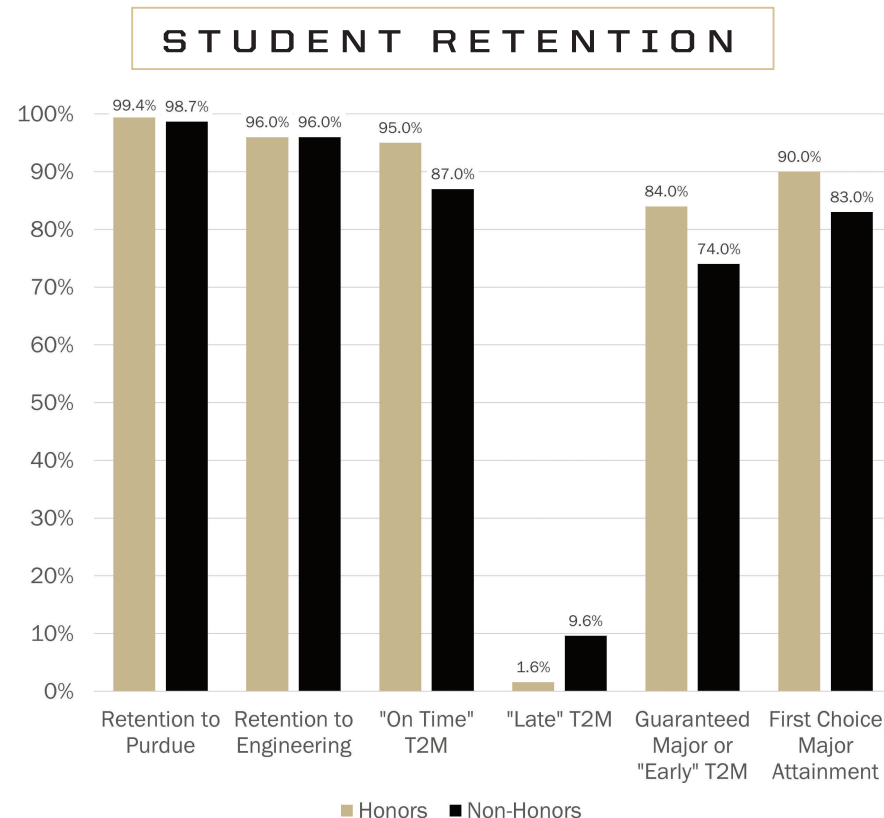


Figure 5: 2023-2024 honors cohort (gold) shows higher retention and transition to major (T2M) success compared to non-honors control cohort (black)

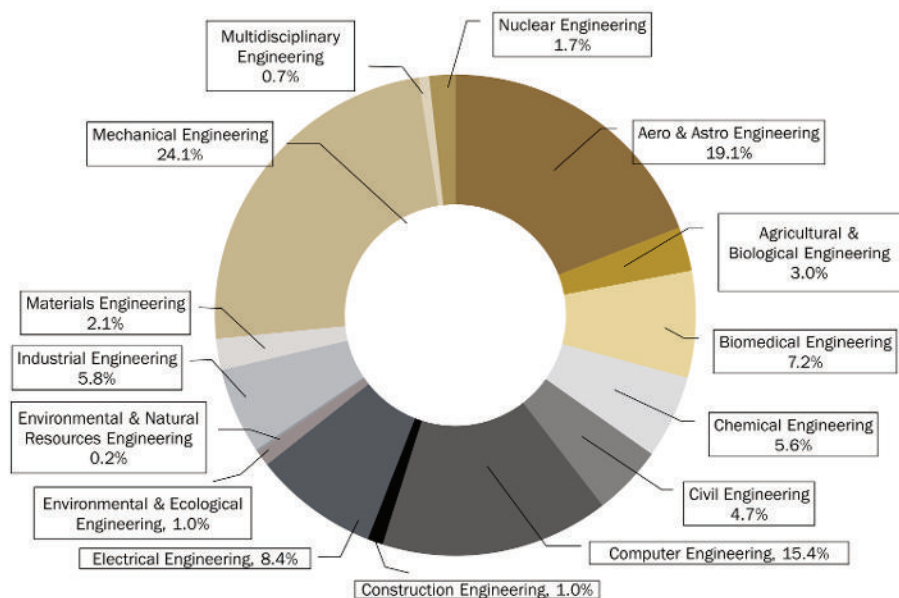


Figure 4: Engineering discipline distribution for 2023-2024 non-honors cohort.

DEMOGRAPHICS

Table 1: High-school academic performance for 2023-2024 honors cohort and non-honors control cohort

	Engineering Honors		Non-Honors	
Total	370	Percentage	3010	Percentage
Male	249	67%	2251	75%
Female	121	33%	759	25%
URM	26	7%	260	9%
Non-URM	343	93%	2750	91%
Resident	114	31%	556	18%
Non-Resident	241	65%	2018	67%
International	15	4%	426	14%

2017-2023 COHORT DATA

LONGITUDINAL OUTCOMES AND ENGINEERING PATHWAYS

Longitudinal data from 2017-2023 reveal continuing significant differences in academic performance between CoEHP participants and their matched peers who completed other FYE pathways. CoEHP students consistently achieved higher cumulative GPAs and enrolled in more credit hours per semester, suggesting greater academic engagement and persistence. The matching process controlled for prior academic preparation and demographic characteristics, ensuring that these differences reflect the impact of the CoEHP experience. Both groups demonstrated strong overall performance, highlighting the high-achieving nature of the study participants and the quality of support available across the College of Engineering.

AVERAGE OVERALL GPA BY COHORT

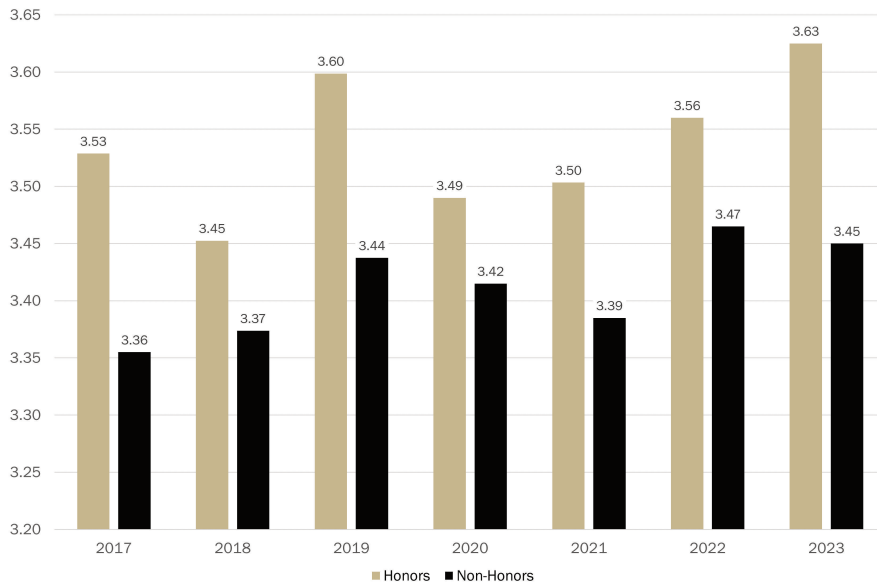


Figure 6: Each honors cohort (gold) from 2017 to 2023 averaged a higher overall GPA compared to non-honors control cohort (black)

AVERAGE CREDIT HOURS PER SEMESTER BY COHORT

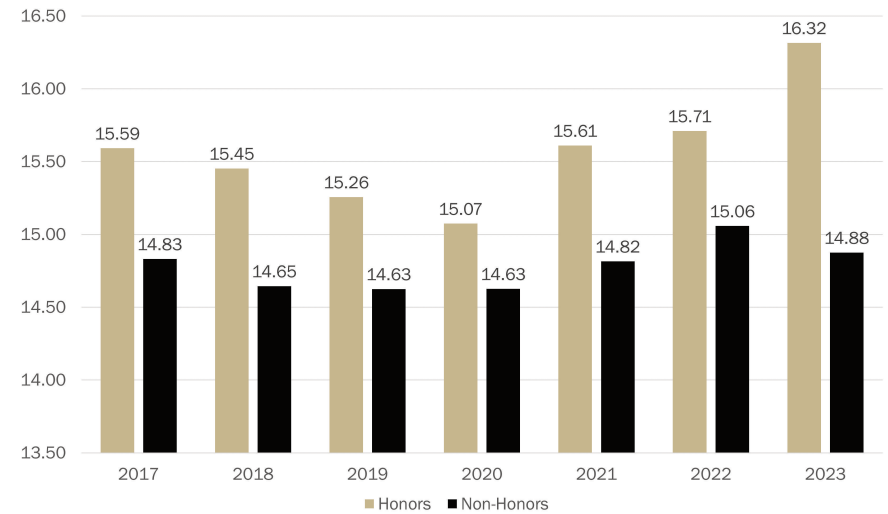


Figure 7: Each honors cohort (gold) from 2017 to 2023 took more credits per semester compared to non-honors control cohort (black)



ANDREW CUELLO

LEGACY THROUGH LEADERSHIP AND LEARNING

As a senior at Purdue University, Andrew Cuello exemplifies the art of balancing diverse passions and excelling across disciplines. Pursuing degrees in mechanical engineering and economics, Andrew has mastered a demanding academic workload and emerged as an exceptional leader. His ability to thrive while balancing his passions is a testament to foundation built during his first year in the College of Engineering Honors Program.



A first-generation college student hailing from Indianapolis, Andrew forged his academic path on groundwork provided by the College of Engineering Honors Program. With the program's support, he has successfully balanced ambition, resilience, and leadership, taking full advantage of the opportunities offered by Purdue's engineering honors community. His story reflects not just personal determination but also the impact of a community committed to fostering student success.

The transition to college can be daunting but personalized advising in the Engineering Honors Program offered Andrew the tailored support he needed to thrive. With specialized training to understand the needs of high ability first-year students, academic advisors in the College of Engineering Honors Program work to help students understand how their unique strengths and goals intersect. This intentional approach eased Andrew's anxiety about tackling the unknown in the College of Engineering Honors Program and empowered him to confidently navigate the rigorous first-year curriculum.

"Knowing I had someone who understood my goals and could help me reach them was reassuring. Even after I moved on to my engineering major, I knew I could still turn to them for advice."

The relationships Andrew forged with his peer mentors during his first year deepened his commitment to his academic and personal goals, providing encouragement to push through difficult moments. It also served as inspiration for Andrew to become involved as a peer mentor himself after he completed his first year and transitioned to mechanical engineering.

The College of Engineering Honors first-year curriculum, with the honors level 2-semester engineering design and physical science sequence helped Andrew develop essential problem-solving skills early on. Hallmarks of the academic curriculum are the high-impact practices that encourage students to engage with fundamental engineering concepts through

challenging team-based projects. This early immersion in team-based experiential learning and high-level thinking set Andrew on the path for success in his major and beyond.

One of the most profound impacts of Andrew's first-year experience was the sense of community he built with his peers. These relationships not only enhanced his learning experience but provided an emotional and social foundation that supported Andrew's success in college. It is a safe bet that these friendships will be lifelong and will continue growing as he moves into his future.

"The friendships I made in my first-year honors courses have been some of the most important connections I've made at Purdue. We pushed each other to succeed and supported each other during tough times."



Andrew's engagement with the College of Engineering Honors Program didn't stop after his first year. He took on leadership roles as a peer mentor, an ambassador, and a Peer TA, as well as leadership roles in other programs in the College of Engineering. In these roles, Andrew guided new students as they developed their own foundations for success, but also honed his skills in communication, leadership, and teamwork.

These experiences with new first-year Engineering Honors students, helping them tackle challenges and watching them grow, were some of the most rewarding moments of his college career. Andrew's leadership roles further developed his ability to work in teams, navigate complex group dynamics, and communicate effectively. These skills, nurtured within the Honors Program, became pivotal as he prepared for life after Purdue.

As Andrew approaches graduation, he reflects on his time in the College of Engineering Honors Program with gratitude and pride. The program provided him with more than just academic challenges - it gave him a community, mentors, technical skills, and leadership opportunities that prepared him to excel in both mechanical engineering and economics.

Andrew Cuello's journey is one of determination, growth, and leadership. From a new first-generation college student arriving on campus to an accomplished scholar completing two distinct and challenging bachelor's degrees, Andrew's path has been shaped by his exceptional strengths as well as the way he has leveraged opportunities, guidance, and community found in the College of Engineering Honors Program. His journey exemplifies the transformative power of a supportive academic community, and his legacy will continue to influence future generations of Purdue students.

SEMINAR FOR TOP ENGINEERING PROSPECTS

STEP

STEP STUDENT INTERN SPOTLIGHT



From left to right: Jack Martin, Gabi Layman, Melissa Hale, Suzanne Coolbaugh-Walker, Christian Tomao, and Grady Andrews.

JACK MARTIN

LEAD
ROLLERCOASTER
INTERN

AERONAUTICAL & ASTRONAUTICAL ENGINEERING '24

The STEP program has been one of the most formative and impactful experiences in my life. When I arrived on campus for my week of STEP as a participant the summer after my junior year of high school, I was terrified. I didn't know what to expect, and was worried that I wouldn't be able to handle the engineering work and that I wouldn't have fun on campus. As I settled in, I realized that I hadn't needed to worry. The campus atmosphere and staff were welcoming, knowledgeable, and fun, and I made connections with teammates and other participants – many of whom are now my Purdue classmates and good friends. Memories of my week at STEP as a participant have become a blur of long and challenging hours of work and a lot of laughing. There were definitely some late nights (one very late night) but the projects, campus and career exploration, friendships started during the program, and mentoring from STEP interns helped me build my engineering and team-working skills and solidified my choice to come to Purdue as an engineering student.



A year later, I had been admitted to the College of Engineering Honors Program. Again, I didn't know what to expect when I arrived on the Purdue campus, but my experience at STEP had shown me that I could be successful in a challenging engineering program, and that I could have a lot of fun in the process. I leaned on skills I developed during my week at STEP, like trusting my teammates, asking for help when I needed it, and being persistent (more of those very late nights). I also had mentors in Engineering Honors – older students who had finished their first year program, and faculty and staff I knew I could rely on. After finishing my first year, I have had a lot of fun being a mentor for first-year students myself. I finished my bachelor's degree in Aeronautical & Astronautical Engineering this spring, and just started the PhD program at Purdue in Mechanical Engineering.

Spending my summer as a lead instructional STEP intern seemed like a great way to cap my undergraduate experience at Purdue and give back to a program that had meant so much to me. I didn't expect that the STEP program would continue to challenge and reward me, years after I participated as a high school student, but it did! Developing instructional and project-based programming for a new group of rising high school seniors, training our instructional interns, and leading the STEP experience was as formative as my experience as a high school student attending STEP. I worked with a new team – 3 other lead instructional interns – and together we learned new skills that will support us as we continue on in our careers. We experienced more very late nights, and so much fun. I know memories of my second summer with the STEP program will be with me my whole life.

GABI LAYMAN

BIOMEDICAL ENGINEERING '26

LEAD **ARDUINO**
INTERN

Coming in as a lead instructional intern for STEP this past summer, I was not sure what to expect. Due to COVID, I was not able to experience the program as a high school senior, so this was my first encounter with STEP. Little did I know how much this program would impact my education and career, or how much fun I would have along the way. I have enjoyed being a peer teaching assistant in the Engineering Honors first-year course (ENGR 16100 and 16200) as well as a peer mentor for first-year students, so it felt like a natural thing to apply to be a lead instructional intern with STEP.



My time this summer as a STEP instructional intern challenged me to develop technical and communication skills, gave me unexpected and deep friendships, and allowed me to support high school students as they learned design fundamentals, teamwork, and explored engineering as a possible career. I refined my own knowledge and gained additional applied experience with physics, computer aided design, 3D-printing, robotics, and programming. I also had the opportunity to plan and lead an in-depth project to introduce students to computer programming and Arduinos, and gained valuable experience teaching large groups of students. Possibly best of all, I got to introduce our STEP attendees to Purdue and the Engineering Honors Program in general.

As a first-year student, and then a peer teaching assistant and mentor, I have experienced the challenges and rewards of the Engineering Honors Program from multiple perspectives. I have seen that while the academic experience is central for students, forming new relationships and exploring Purdue and engineering in general are equally important. I was excited to apply skills that I have developed in a leadership role with STEP, and the experience was incredible. One of the most rewarding things was that the high school students attending STEP felt comfortable enough to ask me questions about my college experience and Purdue in general, which I was excited to share. Watching the students develop new technical and social skills, grow their educational experience, and get a preview to the Purdue College of Engineering Honors Program was an incredible privilege.

CHRISTIAN TOMAO

AERONAUTICAL & ASTRONAUTICAL
ENGINEERING '25

LEAD **ROBOT**
INTERN

Being a part of the STEP program sparked me to improve myself as an engineer, teacher, and leader - and to develop my passion for robotics. In truth, my experience as a lead instructional intern may have changed my career trajectory, and certainly challenged me to grow as a leader in ways I could not have anticipated. When our team of lead instructional interns and College of Engineering Honors Program (CoEHP) staff began developing our goals and student learning outcomes for STEP 2024, we decided to completely update the robotics materials and final

team-based project. My role as the robotics lead was to redesign the entire robotics element of the STEP program, train the other STEP interns to mentor and guide the rising high-school participants, provide lectures on the basics of mechatronics to participants, and to introduce, mentor, and direct a robotics project for the teams of student participants to complete. I immediately wanted to give my full effort into turning the robotics project into something that would inspire every student to become an engineer.

The redesign process was driven by my vision for a fully engaging and dynamic robotics challenge. I proposed the idea of transforming the basic line-following robot task into a Pac-Man-inspired bracket competition, which became the foundation for the new project. With the support and collaboration from my teammates (other lead interns and CoEHP staff), we refined the challenge into something we're all very proud of. The new project featured a large game board (complete with pac-dots!) and strategic-based tasks that teams could choose to complete, adding layers of strategy and skill development to the competition. The robotics project served as the final activity in a weeklong camp experience for high-ability rising high school seniors interested in engineering.

Being an instructional lead for STEP also allowed me to build connections and friendships with my fellow interns and Honors Engineering staff. I learned so much from them. Engaging with students and offering insights into engineering and life at Purdue motivated me to become an ambassador for the Engineering Honors Program and a peer mentor for first-year Engineering Honors students. I want to continue helping others and forming new connections, just as I did during STEP.

The STEP program didn't just impact the students—I gained invaluable experience, developed professionally, and had a lot of fun along the way. It's an experience I will never forget, and I am grateful for how much it has shaped my future path.



AERONAUTICAL & ASTRONAUTICAL ENGINEERING '24

LEAD 3-D PRINTING INTERN



Joining STEP this past summer as an lead instructional intern, I remembered back to being a high school junior, and very excited to attend the STEP program; I was going to see what Purdue was like and to see what engineering at college was all about. Unfortunately, this was March 2020, and COVID-19 broke out, resulting in STEP being canceled after I was accepted. Although I didn't have the opportunity to attend STEP as a high school senior, I was very excited to have the opportunity as a lead intern show students what it means to be an engineer and to be in the Engineering Honor

After completing my first year in the Engineering Honors Program, and then serving as a peer teaching assistant for the ENGR 16100 and 16200 courses, I looked forward to applying my skills with a younger group of students. I didn't expect how much working with the other instructors to prepare and lead all of the educational and project-based content for more than 240 high school seniors would broaden my personal skill set and challenge me to revisit areas of engineering I haven't explored since freshman year. This opportunity also allowed me to reinforce my communication skills and meet a lot of incredible people, both students and staff, who I will remain friends with for a long time.

The three weeks of STEP provided me some of the most rewarding experiences of my entire life. Seeing the passion and effort put into all of the projects and events by the students made me excited to get up and back to work every day. In the classroom, having the opportunity to teach the students about computer aided design and 3d printing, I was able to see the creativity and ingenuity in each of the students' designs. Out of the classroom, I was able to engage with the students, share experiences I have had at Purdue, and learn about their passions for engineering and Purdue. For me, the best part of the week was Friday night as the students put in their last bit of effort into the robot project and pushed themselves as hard as they could; it definitely brought back memories of pulling (near) all-nighters doing engineering coursework throughout college.

Through STEP, I improved my technical skill set, meet a lot of incredibly talented students and staff, and helped students learn what it means to be an engineer and what it means to be in the Purdue Engineering Honors Program.

STEP FACTS & FIGURES

2.21/3.00

2024 Pre-STEP student confidence
with engineering fundamentals

2.74/3.00

2024 Post-STEP student confidence
with engineering fundamentals

"Through STEP, I found a passion for engineering and made friends I will never forget!"

"STEP really gave me confidence that I am meant to do engineering. I learned what skills I will need to have and what more I could do in high school to stand out more from other engineering prospects."

"STEP was a crucial building block in my understanding of the engineering world, and a major help in deciding what I wanted to do in college."

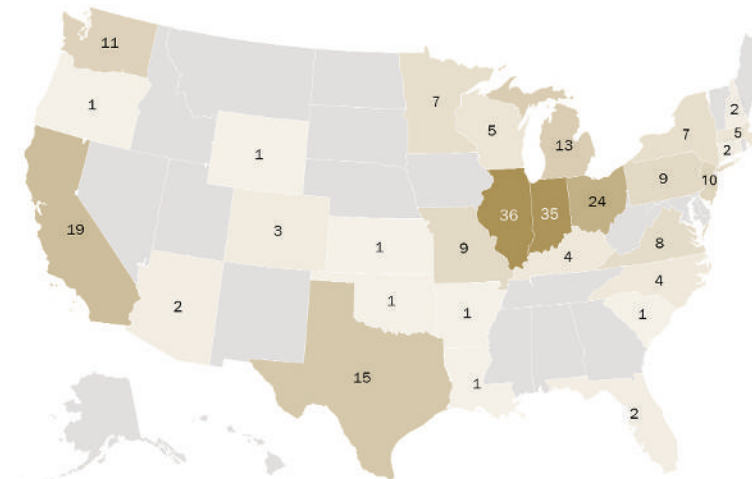


Figure 7: 2024 STEP Student attendance by state.

91%

of STEP students
applied to Purdue

84%

of those who applied
were admitted

62%

of those admitted
matriculated to Purdue

63%

of those matriculated to
Purdue then matriculated to
Engineering Honors Program

PURDUE'S STEP PROGRAM SPARKS EXPLORATION, CREATIVITY, AND TEAMWORK AMONG RISING HIGH SCHOOL SENIORS

The Seminar for Top Engineering Prospects (STEP), hosted by Purdue University's College of Engineering Honors Program, welcomed over 240 high-achieving high school seniors from across the world this July. Over three weeks, students from 30 states, along with participants from Colombia and India, gathered in West Lafayette. During their week on campus, participants immersed themselves in the rigorous and collaborative world of engineering, explored how their strengths and interests align with engineering majors, and gave college life in a highly selective program a test-run.

During the program, teams of four students faced a series of distinct and challenging projects, culminating in a multifaceted design competition. The experience was eye-opening for many, including Emilia Giraudo from Villanova, Pennsylvania, who joined STEP to explore her interest in mechanical engineering.

"I don't think I've ever experienced something that made me so happy to work and think," Giraudo shared, reflecting on the intensive conceptual material and application to collaborative projects developed and delivered by College of Engineering Honors Program interns.

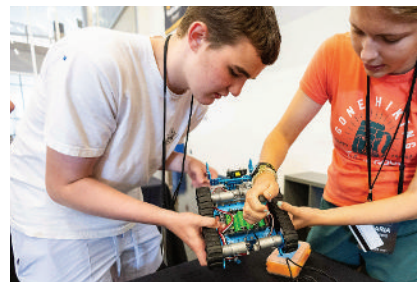
STEP offers participants a preview of the demanding First-Year Engineering Honors Program at Purdue. The program's daily schedule is packed with activities, including introductions to Purdue's rich history, courses on design, coding, and 3D printing, and various daily lab challenges. Students engage in hands-on projects like building a roller coaster, programming a song on an Arduino board, and the final competition - constructing and operating an autonomous robot. With the support of current Engineering Honors students, participants are encouraged to push the boundaries of innovation.

This emphasis on creativity and problem-solving resonated with Giraudo, who initially hesitated to take creative risks. Her team's first roller coaster design fell short, leading them to pivot to a more reliable approach at the last minute. While the revised design met the challenge requirements, the experience ignited their innovative spirit. They continued to develop unique and unexpected designs throughout the week, much to the delight of their Purdue mentors.

By the time they reached the final robot competition, Giraudo's team was determined to think outside the box. They created a robot with a built-in conveyor belt to move blocks swiftly and efficiently, a distinctive feature that contributed to their success in the challenge.

"It was amazing to invent something that no one else did and have it work very successfully. Now I know that it's OK to be creative. It's OK to make mistakes, and it's OK to have a new idea, even if it fails."

Emilia Giraudo | Villanova, PA



Evan Sommer



Elliott Gefroh

The program also emphasized the importance of teamwork in engineering. For Evan Sommer from Wildwood, Missouri, the transition from solo to collaborative work was a key learning experience.

"Many of us are used to taking over group projects in high school because we're driven to learn," Sommer explained. "At first, it was difficult to work together because we naturally found ourselves taking charge. But by the end of the week, we became a well-functioning team who had a lot of fun."

STEP's challenges mirror those that Purdue engineering students face throughout their first year, giving participants a genuine taste of what lies ahead. For Elliott Gefroh of Newcastle, Washington, the program provided valuable insights into effective teamwork and exposed him to new engineering skills.

"My team bonded, and we were able to bring out different ideas from each other's experiences," Gefroh said. "First, make sure that you're bonding with your team. Then you'll be able to work as a team effectively."

Gefroh's experience constructing an autonomous robot with his team left a lasting impression, influencing his future academic pursuits.

"Building the robot, making it autonomous, and driving it around taught me a lot about both engineering and teamwork," he said. "Visiting Zucrow Labs, where we saw rockets being tested, really pushed me toward studying either aerospace or mechanical engineering."

For Sommer, a highlight of the week was coding an Arduino board to play a song. His team programmed the microcontroller to sync audio with lights, choosing "Kill Bill" by SZA for their project.

"Coding the Arduino board was a new experience for me," Sommer said. "Purdue is now one of the main schools I want to attend."

Giraudo, who arrived at STEP with a strong interest in mechanical engineering, found her horizons broadened by the program.

"I've always wanted to do mechanical engineering, but STEP also opened my mind to nuclear engineering," she said. "Talking to real engineers and women in the field during our tours confirmed my passion for engineering and the work ethic required in this field."

ENGR 16X

ENGR 16100 - HONORS INTRO TO PHYSICS & ENGINEERING I
ENGR 16200 - HONORS INTRO TO PHYSICS & ENGINEERING II

ENGR 16100 & 16200 Updates

In 2023-24, the Engineering Honors instructional team performed a major updating of the materials in the 16X Project 3 kits. These kits contain construction supplies (in the form of Lego bricks, wheels, gears, and other items), motors, sensors, and microprocessors that can be used to build robots capable of performing tasks specified in each semester's project. The team identified more modern and better supported electronics components for the kits.

Various electronics platforms were tested in Summer 2023, and by the Fall it was determined that the Lego SPIKE robotics platform provided a solid solution for supplying over 100 project kits while maintaining robust prototyping capabilities. We partnered with Lego Education to obtain discounted pricing for most of the sensors, motors, and microprocessor components used in the kits. Representatives from Lego Education came to the Fall 2023 Project 3 demonstration to watch how the student teams used the previous kits. They came away impressed by the both the strong technical abilities of the students and the exciting ways they were using the electronics, solidifying the company's desire to support our program further.

The kits were also updated to a Raspberry Pi 4 single-board computer as the "brains" of the robot, along with replenishing the reserve of existing sensors produced by Saeed Studio. These more robust, up-to-date project kits can support students in designing creative prototype solutions to challenging robotics problems.

Former ENGR 16X students played an integral role as summer interns for this updating project, performing software development to support the project kit platforms and helping to develop new curriculum materials associated with using the kits. This provided even more educational opportunities for students to use their knowledge gained from ENGR 16X and subsequent classes to impact our future engineers.



Graduate & Peer Teaching Assistants

The College of Engineering Honors Program's ENGR 16100 and 16200 course sequence offers first-year students an academically rigorous foundation in engineering design, physics, computer programming, teamwork, and analysis. These 4-credit honors courses engage students in the engineering design process, encouraging them to collaborate with peers on complex problems that require innovative, team-based solutions. Alongside developing critical technical skills, students gain valuable experience in project management, teamwork, and problem-solving, which are essential for their future engineering studies.

The courses are designed to challenge students and provide opportunities for growth, particularly through experiences that test their ability to handle setbacks and adapt. College of Engineering Honors Program instructional staff, graduate teaching assistants (GTAs), and peer teaching assistants (PTAs) play a key role in supporting students, offering instruction, feedback, mentorship, guidance, and support in regular office hours and special academic preparation sessions. PTAs are students who have successfully completed the Engineering Honors Program, including ENGR 16100 and 16200. They are trained by the instructional staff and graduate TAs to help deliver course content and assist students.

PTAs and GTAs offer 10 hours each week of evening office hours in the classroom on the residential side of campus for convenience, and they also offer virtual office hours through the program's Discord server. Additional academic preparation sessions are hosted before exams, for a total of 6.5 hours of additional supplemental support. The skills and resilience developed through this first-year experience lay a strong foundation for future academic and professional success.



SUPPORTING JOHN MARTINSON HONORS COLLEGE CURRICULUM REQUIREMENTS

FALL 2023/SPRING 2024 HONORS CONTRACTS & SECTIONS

161 STUDENTS SUPPORTED BY COLLEGE OF ENGINEERING FACULTY & INSTRUCTORS

Aeronautical and Astronautical Engineering

James Goppert & Dengfeng Sun
David Arnas
Dengfeng Sun

Biomedical Engineering

Elseje Pinaar
Craig Goergen
Michael Linnes
Deva Chan
Krishna Jayant
Yunjie Tong
Luis Solorio
Charles Babbs
Inez Hua

Civil Engineering

Nursat Jung

Electrical and Computer Engineering

Meng Cui & Jason McKinney
Yung-Hsiang Lu & Xiaolian Wang
Jungfei Li
Vishal Shrivastav
Jeffery Siskind
Meng Cui & Jie Zhu
Yi Ding & Qiang Qiu
Irith Pomeranz

Environmental & Ecological Engineering

Inez Hua

Industrial Engineering

Mohamed Salama
Hua Cai
Gary Cheng

Mechanical Engineering

James Jones
Francisco Montalvo & Morgan Murphy
Morgan Murphy
Luz Sotelo
Carl Wassgren

Materials Engineering

Rodney Trice

Nuclear Engineering

Allen Garner

Honors College Curriculum Requirements

To graduate with an honors designation on their diploma, honors students must complete the John Martinson Honors College curriculum requirements specific to their catalog year.

Students Admitted to the JMHC in their First Year

Required Credits: 24 honors credits

A. 2 credits of the Honors First Year Experience series (HONR 19901 in Fall, 1 credit + HONR 19902 in Spring, 1 credit)

B. 3 credits of additional HONR course(s)

C. 19 honors elective credits

Scholarly Project

A student must engage in a sustained project, either on or off campus, in which the student creates new knowledge. Results of this research or creative project should be presented in a public forum.

If students opt to do so, College of Engineering Honors program staff offer sufficient opportunities for students to complete **all** of the required 19 credit hours of honors coursework that aren't specified as HONR credit:

- ▶ 8 credits of CoE required core honors coursework (ENGR 16100+16200)
- ▶ 1 credit of FYE-Honors seminar in transition to college and GRIT+ support (ENGR 10301-H)
- ▶ 6 credits of leadership honors coursework as peer mentors for FYE-Honors students (ENGR 40400-H)
- ▶ Varying honors credit via optional elective coursework developed and taught by CoEHP team
- ▶ Varying honors credit via Honors Contracts supported by our program staff
- ▶ Varying honors credit via undergraduate research encouraged by our student services staff

INITIATIVES

Discord Orientation Program

Since 2020, the College of Engineering Honors Program has offered a virtual opportunity for first-year Engineering Honors students to connect with each other and develop community during the summer before arriving on campus. We opted to utilize Discord, which is a social media platform familiar to many high school students as a gaming application, and we have run a Discord server for our first-year students since the COVID-19 pandemic, when many functions of the university needed to become virtual.

Our College of Engineering Honors Discord server has provided orientation and community building opportunities for incoming first-year students for years. What began as a virtual solution during the pandemic has grown into a central part of our transition programming. However, 2024 marked a leap forward for our orientation programming. We enlisted a team of six student interns, who have all been active in our peer mentoring program, to set goals for an orientation program that supports students' successful transition to college, develop and launch activities and actively engage with new students on the server through the summer.

This year, the Discord server became more than just a space for students to ask questions and share information—it transformed into an interactive hub where the interns created activities, hosted weekly events, and facilitated meaningful conversations. From major-specific Q&A

sessions to fun, community-building activities like Minecraft sessions, the interns ensured that students felt connected before even stepping foot on campus.

The interns played a central role in making the Discord community a welcoming and supportive environment. They didn't just answer questions; they initiated discussions and encouraged incoming students to get involved in conversations about academic life and engineering majors. One of the most successful activities were the "Ask Me Anything" exploration sessions, where students could learn more about the different engineering fields, student activities and extracurriculars, ways to arrange the furniture in the Honors College residence hall rooms, best spots on campus for studying, and any other topic they were thinking about.

This shift in programming—placing student interns at the forefront—allowed the first-year students to feel more comfortable and engaged during the summer, a time when the gap between preregistration and the start of the semester can make things feel particularly uncertain. By interacting with peers and mentors throughout the summer, students began building a sense of belonging and support that helped ease their transition to college.

As the academic year approached, the interns continued to play a key role, ensuring that students were prepared for the challenges of their first semester. The success of this year's program has set a new standard for how we approach orientation and community building, with plans to continue the use of student interns in the future. Our Discord server, powered by the dedication of our interns, has become a vital bridge between high school and university life, ensuring that our first-year students feel supported from the start.

GRIT+ & Transition to College Seminar

For new Engineering Honors students, the ENGR 10301-Honors seminar provides essential tools for navigating their first year at Purdue. Developed and taught by Senior Academic Advisor Nikki Mosher, this 1-credit-hour course focuses on GRIT+ principles and offers guidance on transitioning to the challenges of university life. The course also features Engineering Honors Ambassadors, who help students connect their academic and career goals with extracurricular opportunities such as undergraduate research, co-ops, internships, and study abroad. Furthermore, students are introduced via guest speakers to various campus programs, such as the Center for Career Opportunities, Academic Success Center, Study Abroad office, Office of Professional Practice, and the Engineering Undergraduate Research Office. By linking student ambitions with practical activities, the seminar fosters a sense of direction and engagement early on.

The seminar also integrates Carol Dweck's Mindset, exploring the concept of growth mindset—an important reminder for high-achieving students that perfection isn't required, especially when adapting to new environments. Discussions around this framework encourage students to embrace challenges as opportunities for growth, helping them develop resilience and confidence in their academic journeys. The combination of practical support and strengths-based development ensures that students leave the course equipped not only for academic success but for personal and professional growth.



Under 3.0 Intervention

For students whose first semester in the College of Engineering Honors Program doesn't meet their expectations, we offer a targeted intervention designed to help them recalibrate and succeed moving forward. All students who earn below a 3.0 GPA in their first semester are invited to meet with their academic advisor during the first two weeks of the spring semester. In these hour-long one-on-one sessions, advisors and students work together to identify the challenges of the previous semester, clarify academic and personal goals, and develop strategies to ensure a more successful second semester.

Grounded in the principles of positive psychology, this intervention leverages students' strengths rather than focusing solely on deficits. The personalized approach encourages students to reflect on their unique talents and how they can apply them more effectively, while also introducing them to academic and personal resources that can support their progress. Whether the issues stemmed from time management, study habits, or adjusting to the university environment, the intervention provides practical solutions tailored to the individual student.

While it may be surprising to hear that a single one-hour meeting could lead to lasting improvements, our data shows its powerful impact. Students who participate in these spring consultations see significant improvements in their GPA, compared to peers with similar academic backgrounds who do not attend. This positive effect is sustained, with students experiencing ongoing academic success one, two, and three semesters later. This intervention proves that even a brief, targeted support can have a profound influence on long-term academic success.

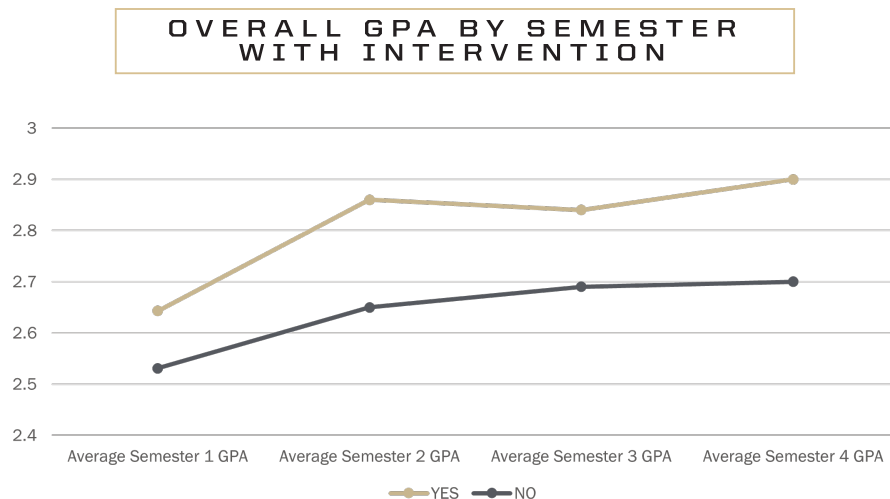


Figure 7: Students with intervention (gold) averaged an overall higher GPA by semester compared to students without intervention (blue)

Peer Mentors

Beyond the first year, College of Engineering Honors students can stay involved as mentors. To support this, the student services team created a 1-credit-hour honors course, ENGR 404H, for mentors to take each term they serve. This fall, nearly 80 peer mentors from diverse honors majors are participating, bringing unique skills and specialties to celebrate.

In ENGR 404H, students share learning experiences with first-year students, blending academic knowledge with personal insights. The course begins and ends each semester with mentor-led activities, fostering connection and camaraderie. MaKenzie Campbell, Lead Academic Advisor, provides training to support mentors' leadership development and address key topics for first-year success, such as time management, mental health, course registration, experiential opportunities, mindset development, transitioning to a major, and long-term engagement. Mentors also meet with their mentees outside class to build stronger relationships.

The CoEHP student services team maintains strong connections with students even after they transition to their majors, emphasizing that genuine connection is central to effective mentorship. Many first-year students aspire to become mentors themselves, inspired by the positive impact their mentors have had. These interactions leave a lasting impression on both mentees and mentors.



Ambassadors

The Engineering Honors Program proudly features our Engineering Honors Ambassadors, a group of accomplished students who have successfully navigated the first-year engineering honors curriculum and transitioned into their chosen engineering majors. Under the guidance of Senior Academic Advisor Nikki Mosher, these ambassadors actively engage in a variety of outreach and recruitment initiatives throughout the academic year, including notable events such as Purdue's For Me, Women in Engineering's Exploring Engineering, and Family Weekend. They serve as valuable resources, readily available to address questions from prospective students and their families, fostering a welcoming and informative environment.

These ambassadors represent diverse engineering disciplines—Mechanical, Aerospace, Electrical, Industrial, and Civil—and bring unique skills shaped by their first-year honors curriculum, study abroad, leadership roles, internships, co-ops, the Honors College, and advanced coursework. Their experiences are further enhanced by their involvement in the Honors College and rigorous upper-level coursework.

Through their dedication and passion, our Honors Ambassadors not only exemplify the values of the Engineering Honors Program but also inspire future generations of engineers.

MEET THE TEAM



JACQUELINE LINNES
Director



SUZANNE
COOLBAUGH-WALKER
Associate Director



TIMOTHY WHALEN
Associate Director



KENZIE CAMPBELL
Lead Advisor



ANGEL ENRIQUEZ
Lecturer



MELISSA HALE
Program Manager



NIKKI MOSHER
*Senior Academic
Advisor*



RICK WOMACK
Lab Manager

AWARDS & HONORS

Bravo+ Award, June & December 2023

Melissa Hale was recognized for her exceptional service to the College of Engineering at the December 2023 College of Engineering Bravo+ awards ceremony, and Timothy Whalen was recognized for his exceptional service to the College of Engineering in June 2023. Derived from the university-wide Bravo Awards program established in 2013, the Bravo+ honors excellence across all university areas and job functions by recognizing extraordinary employee achievements at every scale. Both Melissa and Timothy are held in the highest esteem by their colleagues, and support the success of the College of Engineering Honors Program.

National Academic Advising Association Outstanding Advising Program Award

The College of Engineering Honors Program's academic advising team at Purdue University received the prestigious NACADA Outstanding Advising Program Global Award for 2023-2024. This recognition, awarded by NACADA: The Global Community for Academic Advising, highlights the team's innovative and exemplary practices that significantly enhance academic advising services. Competing in an international context, the team was celebrated for its profound impact on students and commitment to delivering exceptional student services programming. Suzanne Coolbaugh-Walker, MaKenzie Campbell, and Nicole Mosher will be presented with the award at the NACADA annual conference in Pittsburgh, PA in October 2024.

Conference Presentations

In June 2023, College of Engineering Honors program instructional team presented multiple sessions at the American Society for Engineering Education's annual conference in Baltimore, MD.

In October 2023, the College of Engineering Honors Program's academic advising team presented an interactive session titled Bridging the Gap: Using a Discord Server to Onboard and Engage First-Year Students at the National Academic Advising Association's annual conference in Orlando, FL.





College of Engineering Honors Program

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