2022-2023

e4usa Credit and Placement Prospectus

Learn about college course credit and placement opportunities you can receive with Engineering for US All!
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About e4usa

Engineering for US All (e4usa) is an NSF-funded high school engineering program that opens engineering to a new generation of students and educators. Core to the e4usa mission is the nationwide expansion of student and teacher access to engineering, with intentional efforts to reach populations traditionally underrepresented in the field.

To date, e4usa involves 78 participating high schools with approximately 4,700 students.

e4usa students explore engineering in society, develop professional skills, and engage in community-focused engineering design experiences, all aimed at helping them see themselves as engineers.

e4usa provides a standardized educational curriculum for pre-college students to learn and demonstrate engineering principles, skills, and practices. The curriculum incorporates an authentic, design-based experience and affords students the opportunity to earn college credit at participating colleges and universities.
e4usa Curriculum

Engineering is all around us! e4usa empowers, engages, and excites students to use what they know and find what they are passionate about to take control and boldly influence the world.

The e4usa curriculum consists of 8 units. Each unit covers our four signature course threads to help students achieve the following course learning outcomes:

### Connect with Engineering

| CE.A | Iterate and evolve the definition of what it means to engineer and be an engineer. |
| CE.B | Recognize the value of engineering for all regardless of one's potential career. |
| CE.C | Explain and apply ethical considerations when exploring an engineering problem. |

### Engineering in Society

| ES.A | Explore the impacts of past engineering successes and failures on society as a whole. |
| ES.B | Recognize and investigate the world's greatest challenges and the role that engineering plays in solving these challenges (e.g., Engineering Grand Challenges, UN sustainability goals, etc.). |
| ES.C | Integrate diverse disciplinary thinking and expertise to inform design solutions that add value to society. |
| ES.D | Identify and analyze issues when bringing a solution to scale. |

### Engineering Professional Skills

| PS.A | Use various engineering communication methods. |
| PS.B | Collaborate effectively in a team. |
| **ED.A** | Identify and describe a problem that can be solved with a potentially new product or process. |
| **ED.B** | Identify appropriate stakeholders and content experts and evaluate their input. |
| **ED.C** | Plan and conduct research by gathering relevant and credible data, facts, and information. |
| **ED.D** | Articulate appropriate STEM practices and principles in the design. |
| **ED.E** | Evaluate solution alternatives and select a final design by considering assumptions, tradeoffs, criteria, and constraints. |
| **ED.F** | Use and recognize when to use computational tools. |
| **ED.G** | Create a prototype. |
| **ED.H** | Create and implement a testing plan to evaluate the performance of design solutions. |
| **ED.I** | Apply iteration to improve engineering designs. |
| **ED.J** | Articulate and reflect on how an engineering design process could be applied to solving a problem. |
Institutions Awarding Credit

At the start of the 2022-23 academic year, fifteen institutions in ten states have created pathways for students to receive college credit and placement for successfully completing the e4usa high school course.

Additional institutions are exploring ways to offer students credit and placement and we are excited to watch the list of states and institutions awarding credit grow in the near future.
Arizona State University

About Arizona State University

Arizona State University (ASU) is a top ranked research university in the greater Phoenix metropolitan area. The university is a model for the New American University, committed to excellence, access, and impact.

The Ira A. Fulton Schools of Engineering (FSE) is one of the largest and most comprehensive engineering programs in the U.S. FSE offers 25 undergraduate programs and 47 graduate programs housed within 7 schools:

- School of Biological and Health Systems Engineering
- School of Computing and Augmented Intelligence
- School of Electrical, Computer and Energy Engineering
- School for Engineering of Matter, Transport and Energy
- School of Manufacturing Systems and Networks
- School of Sustainable Engineering and the Built Environment
- The Polytechnic School

Fast Facts

Course: ASU 194 - Engineering for us all
Credits: 3 in University General Studies
Credit pathway: Concurrent Enrollment

Details: Students interested in earning credit for the course taught at their high school must complete an interest survey. Those completing the survey and submitting payment are enrolled in ASU 194. High school instructors submit a grade for the student at the end of the semester to a point of contact.

Point of Contact: Dr. Adam Carberry (adam.carberry@asu.edu) or Dr. Medha Dalal (medha.dalal@asu.edu)

Cost: $500

Other: The course has been approved under the general studies designation: Humanities, Arts and Design (HU) and is offered through the College of Integrative Sciences and Arts in collaboration with ASU Prep Digital. Students do not need to matriculate at ASU to earn credits.
Florida International University

About Florida International University

FIU is among the top 10 largest universities in the USA. Forbes magazine ranked Miami “America’s Cleanest City” based on its air quality, green spaces, drinking water, clean streets and recycling programs. It’s a perfect environment for learning, exploring and having some fun along the way. The student population comes from all 50 US states and 142 countries. You'll get to meet a variety of smart, interesting people from all around the world!

FIU’s College of Engineering and Computing is South Florida's leading engineering education resource. Our students enjoy the benefits of many small classes, experiential learning opportunities and close interaction with WorldsAhead faculty. Through internship opportunities in the industry and hands-on research activities in our cutting-edge laboratories, our graduates are prepared to hit the ground running in their chosen careers.

Learn more by visiting https://cec.fiu.edu/

Fast Facts

Course: EGS 1006: Introduction to Engineering
Credits: 3
Placement: Engineering Topics
Credit pathway: Pathway Syllabus will be evaluated by faculty in the Department of Mechanical and Materials Engineering on a case-by-case basis
Details: The Department of Mechanical and Materials Engineering will do a full review of the syllabus.
Point of Contact: Dr. Bruk T. Berhane (bberhane@fiu.edu)
Cost: $0
Other: For instructions on how to initiate the process visit: Academic Advising - FIU College of Engineering and Computing
About Lincoln Memorial University

Lincoln Memorial University was founded in 1897 as a living memorial to Abraham Lincoln. LMU is located in Harrogate, Tennessee, where Tennessee, Kentucky, and Virginia merge at the Cumberland Gap, approximately 55 miles north of Knoxville, Tennessee. We are proud of our beautiful, historic, 1,000-acre wooded campus with 43 academic, administrative, and residential buildings.

The Lincoln Memorial University School of Engineering offers:

- Personalized academic advising
- Small class sizes
- Intern and co-op opportunities
- Relationship building with industry personnel

For more information on what the engineering program has to offer visit: https://www.lmunet.edu/school-of-engineering/index

Fast Facts

Course: ENGR 100 Engineering Portal
Credits: 1
Credit pathway: Dual Enrollment
Details: Enrollment in an e4usa-affiliated high school course.
Point of Contact: Dr. Ryan Overton (ryan.overton@lmunet.edu)
Cost: Standard tuition and fee rates offset by state/school district support.
Other: Learn more by visiting https://www.lmunet.edu/school-of-engineering/index
**Fast Facts**

**Course:** ENGR 110: Engineering For US All  
**Credits:** 3 in the General Education Program  
**Credit pathway:** Concurrent Enrollment  
  **Details:** Evaluation consists of 1) e4usa high school engineering design portfolio review and 2) 980 SAT score (Critical Reading and Mathematics) or 19 ACT composite  
**Point of Contact:** Carl White  
  (carl.white@morgan.edu)  
**Cost:** Standard tuition and fee rates offset by state/school district support.  
**Other:** For instructions on how to initiate the process visit:  

**About Morgan State University**

Morgan State University, founded in 1867, is a Carnegie-classified, doctoral, high-research institution providing instruction to a multiethnic, multiracial, multinational student body and offering more than 125 academic programs.

As Maryland’s Preeminent Public Urban Research University, Morgan fulfills its mission to address the needs and challenges of the modern urban environment. Located in a charming residential area of northeast Baltimore, Morgan’s impressive, 152-acre campus features state-of-the-art facilities geared toward innovative teaching and learning in the 21st century. Designated as a National Treasure by the National Trust for Historic Preservation, this National Treasure offers a safe and inviting learning environment with easy access to the best the city has to offer.

The Clarence M. Mitchell Jr. School of Engineering has four accredited undergraduate engineering programs in the areas of Civil Engineering, Electrical and Computer Engineering, Industrial and Systems Engineering, and Transportation Systems Engineering.
Purdue University

About the Purdue Polytechnic Institute @ Purdue University

The Purdue Polytechnic Institute (PPI) is one of the 10 academic colleges of Purdue University in West Lafayette, Indiana. The college embraces the connection of people of diverse backgrounds, experiences and thoughts, and leverages innovative learning methods, real-world experiences and industry partnerships to produce graduates uniquely qualified for technology-driven careers.

There are more than 30 undergraduate degrees offered through the PPI, so students can choose an area of study that matches their hobbies and interests. These degrees cover areas such as:

- Engineering Technology Education
- Aviation
- Engineering Technologies
- Construction Management
- Technology Management
- Computing & Graphics

Fast Facts

**Course:** TECH 12000: Design Thinking in Technology

**Credits:** 3 credits in the university’s core Science Technology & Society curriculum component. Also, the course is the first-year design course for most majors within the Purdue Polytechnic Institute.

**Credit pathway:** Departmental Proficiency Exam

**Details:** A Proficiency Exam may be available for students who have earned a grade of B or better in their e4usa course. Qualifying students will then submit their e4usa high school engineering design portfolio for review to ensure there is evidence that the course learning objectives were met. An additional student interview may be requested for further clarification related to their achievement of the course learning objectives.

**Point of Contact:** Dr. Greg Strimel (gstrimel@purdue.edu)

**Cost:** $30

**Other:** Students must matriculate to Purdue University to earn credits.
Regent University

About Regent University

Regent’s Engineering & Computer Science Department, with its highly marketable, innovative curriculum, equips students with the knowledge and skills employers seek. Named a National Center of Academic Excellence in Cyber Defense for the B.S. in Cybersecurity by the National Security Agency and the Department of Homeland Security, Regent’s award-winning degree programs integrate leading-edge instruction with the exploration of ethical, spiritual and social responsibility.

Founded in 1978, Regent enrolls more than 13,000 students annually on its 70-acre campus in Virginia Beach, Virginia, and online around the world. Ranked among top national universities (U.S. News & World Report, 2022), degree programs are presented from a Christian worldview and help you develop credentials and character that set you apart and build your career.

Learn more at www.regent.edu/learnmore

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Fast Facts

**Course:** ENGR 201 Engineering Foundations 1  
**Credits:** 3 Credit Hours  
**Credit pathway:** Departmental Proficiency Exam consisting of:  
1. An e4usa high school engineering design portfolio review.  
2. A 30-minute written examination.  
   **Point of Contact:** Dr. Cheryl Beauchamp | cherbea@regent.edu  
**Cost:** $75  
**Other:** Students must matriculate at Regent University to earn credits. To initiate the process, visit regent.edu/learnmore.
Saint Louis University

About Saint Louis University

Founded in 1818, Saint Louis University is one of the nation’s oldest and most prestigious Catholic institutions. Rooted in Jesuit values and its pioneering history as the first university west of the Mississippi River, SLU offers nearly 13,000 students a rigorous, transformative education of the whole person. At the core of the University’s diverse community of scholars is SLU’s service-focused mission, which challenges and prepares students to make the world a better, more just place.

Saint Louis University formed the School of Science and Engineering in 2022, merging the existing engineering and aviation programs housed in Parks College with select natural and applied science departments to better meet the future needs of its students and faculty. The college emphasizes authentic, hands-on experiential learning and boasts programs in an array of engineering and science disciplines:

- **Engineering:**
  - Aerospace, Biomedical, Civil, Computer, Electrical, and Mechanical
- **Sciences:**
  - Aviation Science, Chemistry, Computer Science, Earth & Atmospheric Sciences, Physics

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**Fast Facts**

- **Course:** ESCI 1709 - Introduction to Engineering
- **Credits:** 2 credits
- **Credit pathway:** Credits granted for participation in e4usa upon admission
  - **Details:** Credit granted for participation in e4usa for students with a grade of C or better
  - **Point of Contact:** Dr. Scott Sell, Associate Dean for Undergraduate Education (scott.sell@slu.edu)
- **Cost:** No additional cost for credit in ESCI 1709
- **Other:** Students must matriculate at Saint Louis University to earn credits. To initiate the process visit: [https://www.slu.edu/admission/index.php](https://www.slu.edu/admission/index.php)
South Mountain Community College

About South Mountain Community College

One of the ten schools in the Maricopa County Community College District, South Mountain Community College is located in Phoenix, Arizona. The Engineering program offers two pathways for Engineering students (AS for university transfer, and AAS for job placement for technicians who may decide to transfer to a university after working in industry), as well as Dual Enrollment opportunities with local high schools.

The Engineering AS transfer program focuses on Civil Engineering, Electrical Engineering, Industrial Engineering, Mechanical Engineering, and Engineering Technology. The AAS program focuses on Engineering Technology.

Learn more at: https://www.southmountaincc.edu/degrees-certificates/engineering

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Fast Facts

**Course:** ECE 150 - Exploring Engineering and its Impact on Society  
**Credits:** 3  
**Credit pathway:** Transfers to university as a Humanities course (HU). Dual Enrollment transfers for college credit.  
**Details:** Open for Engineering and non-Engineering students.  
**Point of Contact:** Dr. Carl Whitesel (cwhitesel@southmountaincc.edu)  
**Cost:** 3 credits tuition + low course consumables fee  
**Other:** Students must matriculate to Arizona State University to earn transfer credits. Credits apply as HU credits for the SMCC programs.
Tennessee State University

**Fast Facts**

**Course:** e4usa students receive credit for ENGR 1020 Freshmen Engineering Seminar with a successful completion of the course. Students may also submit a portfolio of their CAD work for consideration of credit for ENGR 1151 Computer Engineering Graphics and Analysis

**Credits:** ENGR 1020: 1 hr. and ENGR 1151: 1 hr.

**Credit pathway:** dual credit

**Details:** Evaluation consists of 1) e4usa high school engineering design portfolio review and 2) 900 SAT (Verbal and Math Scores Only) and 19 ACT

**Point of Contact:** Dr. Catherine Armwood-Gordon (carmwood@Tnstate.edu)

**Cost:** $0

**Other:** Other students may be reviewed/considered by our Continuing & Distance Education Office for possible credit.

**About Tennessee State University**

Tennessee State University is a world-class university known for academic excellence, incredible students, inspiring faculty, exceptional value and an amazing campus and community. For more than half a century, the College of Engineering at Tennessee State University has provided a quality education in engineering, technology, and computer science with a mission to increase the diversity of tomorrow’s technical workforce.

The College of Engineering offers full-time undergraduate programs leading to the Bachelor of Science degree in the fields of:

- Applied & Industrial Technologies
- Computer Science
- Architectural Engineering
- Electrical Engineering
- Civil Engineering
- Mechanical Engineering

Learn more by visiting: [https://www.tnstate.edu/engineering/index.aspx](https://www.tnstate.edu/engineering/index.aspx)
The College of New Jersey

Fast Facts

Course: TST161: Creative Design - Engineering
For US All
Credits: 4 credits
Credit pathway: Dual Enrollment

Details: Credit granted for participation in e4USA course for students earning a C or higher, taking the course in 11th grade or later

Point of Contact: Debra Gulick (gulickd@tcnj.edu) or Manuel Figueroa (manuel.figueroa@tcnj.edu)

Cost: $550
Other: To apply for admission to TCNJ, visit: https://admissions.tcnj.edu/apply/

About The College of New Jersey

TCNJ’s School of Engineering students are a high-achieving group of diverse, creative thinkers and problem-solvers with the drive, passion, and intellect to revolutionize the world around us. Here, engineering talents and interests are developed in a rigorous curriculum and supported by a faculty of teacher-scholars to launch a new generation of industry breakthroughs, meaningful change, and impactful citizenship.

The School of Engineering offers full-time undergraduate programs that lead to Bachelor of Science degrees in the fields of:

- Biomedical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Engineering Science
- Integrative STEM Education
- Mechanical Engineering
- Technology & Engineering Education
University of Hawai‘i at Mānoa

About University of Hawai‘i at Mānoa
College of Engineering

Established in 1907, the University of Hawai‘i at Mānoa is the largest and oldest of the 10 UH campuses. Mānoa offers hundreds of undergraduate, graduate and professional degrees; a strong, vital research program; and nationally ranked NCAA Division I athletics. UH Mānoa is a R1 research university of international standings.

The College of Engineering at UH Mānoa is “dedicated to world-class education and research. We produce the entrepreneurial and innovative human and intellectual capital required to be competitive in an increasingly technological and global society. Through our graduates and our research, we provide people and discoveries to transform lives and to support vibrant, knowledge-based economies. We are inspired by the principles of sustainability and resilience, flavored by our unique island environment.”

- Civil & Environmental Engineering
- Electrical & Computer Engineering
- Mechanical Engineering

Fast Facts

Course: ENGR 196 Freshman Vertically Integrated Project
Credits: Variable, 1-3 credits, based on thoroughness and complexity
Credit pathway: Concurrent enrollment or upon matriculation to College
Details: Students interested in earning credits MUST sign up for this course while taking the e4usa course at their respective high school. Upon payment for the UHM CoE course and submission of a report for the e4usa course to the high school instructor, the grade submitted by the high school instructor will be transmitted to the point of contact in the College for official grade submission.
Point of Contact: Song K Choi, PhD (schoi@hawaii.edu)
Cost: Standard tuition and fees, and possible ways to offset the costs will be explored
Other: State and College scholarships may be available for e4usa programs
The University of Indianapolis

About The University of Indianapolis

We believe the R. B. Annis School of Engineering at UIndy is one of the most innovative engineering programs nationwide. Our faculty members embody an attitude of service to our students and partners. We work with our students in our DesignSpine program to ensure that our students are involved in authentic, industry-driven engineering projects from the beginning of their program.

- Computer Engineering
- Electrical Engineering
- Industrial and Systems Engineering
- Mechanical Engineering
- Software Engineering
- Computer Science
- General Engineering

Learn more at:
https://www.uindy.edu/cas/engineering/

Fast Facts

Course: ENGR 199 - Pre Engineering Experience

Credits: 1 for e4usa, up to 4 if students have other experience

Credit pathway: Credit granted for participation in e4usa upon admission

   Details: Credit granted for participation in e4usa for students with a grade of B or better, taking the course in 10th grade or later.

Point of Contact: Dr. Kenneth Reid, Associate Dean of Engineering (reidk@uindy.edu)

Cost: No additional cost for credit in ENGR 199

Other: Scholarships available for e4usa participants: see
Engineering for US All - University of Indianapolis (uindy.edu) for details
University of Maryland

About University of Maryland

Located nine miles from the Nation’s Capital, The University of Maryland is the Flagship Institution of the State of Maryland.

The A. James Clark School of Engineering offers full-time undergraduate programs leading to the Bachelor of Science degree in the fields of:

- Aerospace Engineering
- Biocomputational Engineering
- Bioengineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Fire Protection Engineering
- Materials Science and Engineering
- Mechanical Engineering

Learn more by visiting https://eng.umd.edu/prospective-students

Fast Facts

Course: ENES 192: Engineering For US All
Credits: 3 in General Education Scholarship in Practice (DSSP)
Credit pathway: Departmental Proficiency Exam
  Details: Proficiency Exam consists of 1) e4usa high school engineering design portfolio review and 2) a 30-minute written examination.
  Point of Contact: Kevin Calabro (kcalabro@umd.edu) or Jackelyn Lopez Roshwalb (roshwalb@umd.edu)
Cost: $30
Other: Students must matriculate at University of Maryland to earn credits. To initiate the process download the Credit By Exam form at https://ltsc.umd.edu/forms
University of New Mexico School of Engineering

About Engineering at UNM

Enrollment: 2000 undergraduate, 700 graduate students

One of only 74 engineering programs in the US to receive the ASEE Bronze Award for Diversity

An R1 (high research activity) university and an Hispanic-Serving Institution

Many opportunities for undergraduate research experiences

Over $36 M in annual research expenditures

Centers of Excellence include:
- Center for Biomedical Engineering
- Center for Water and the Environment
- Center for Engineered Resilience and Ecological Sustainability
- Center for Advanced Research Computing
- Center for Micro-engineered Materials

Fast Facts

Course: ENGR 195
Credits: 3 semester credit hours of general university credit
Credit pathway: Dual enrollment credit
Details: Enrollment in an e4usa-affiliated high school course
Point of Contact: Charles Fleddermann, cbf@unm.edu
Cost: Free to New Mexico students
Virginia Tech

About Virginia Tech

Located in Blacksburg, VA, next to the Jefferson National Forest, Virginia Tech (VT) has been providing degrees in engineering since 1872. VT is one of largest producers of engineering graduates in the nation and has consistently ranks in the top 20 of engineering schools by US News & World Report.

VT students can earn BS degrees in 14 areas of engineering and computer science including: Aerospace Engineering, Biological Systems Engineering, Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Computer Science, Construction Engineering Management, Electrical Engineering, Industrial & Systems Engineering, Materials Science & Engineering, Mechanical Engineering, Mining & Minerals Engineering, and Ocean Engineering.

For more information visit: https://eng.vt.edu/

Fast Facts

Course: ENGR 2464: Engineering Fundamentals for Scientists
Credits: 2 in Interdisciplinary Engineering and Science (IES) Minor for Life Science majors
Credit pathway: Credit by Examination
  Details: Evaluation consists of 1) a review of e4usa portfolio materials and 2) a 1-hour examination (primarily multiple choice with a few short answer questions)
Point of Contact: College of Engineering Academic Affairs (coeacademicdean@vt.edu)
Cost: Free
Other: Students must be admitted to Virginia Tech to earn credits. To apply for admission to Virginia Tech, visit https://vt.edu/admissions/undergraduate/apply.html.
# Stay Connected

There are many ways to stay connected with e4usa! Visit the links below to follow e4usa:

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<td>Follow us on Twitter for e4usa highlights and opportunities!</td>
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<td>Visit our YouTube page to learn more about the e4usa program.</td>
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<td>Read a summary of our latest news from e4usa.</td>
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Acknowledgments

Engineering for US All (e4usa) is supported by the National Science Foundation under NSF Award Numbers 1849430 and 2120746. Any opinions, findings, conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect those of the National Science Foundation.