

Undergraduate Grainger Center for Electric Machinery and Electromechanics (CEME) Research and Leadership Program

Description

The Grainger Center for Electric Machinery and Electromechanics (CEME) at the University of Illinois is dedicated to enhancing education, technology and understanding, and research activities in fundamental topics of electric machinery and electrical energy. World-wide, about 2/3 of all electrical energy feeds electric motors, and more than 99% of electricity is supplied through electric machines. Major CEME research areas include design of machines, efficiency enhancement for electric motors, high-reliability energy supply designs for buildings and small power systems, energy conversion for alternative resources such as solar, wind, and wave power, research to develop new semiconductor materials for power applications and machines, and other innovations in electrical energy.

The CEME Research and Leadership Program gives undergraduate students an opportunity to experience state-of-the-art energy research and lead innovative projects through active involvement in the CEME. Awardees collaborate with internationally renowned CEME faculty and research teams in a unique research program with world-class facilities. Involvement in research enhances classroom experiences and helps develop creativity and engineering leadership skills. Awardees work on the cutting edge where new discoveries are being made, with the chance to contribute to innovations, scientific explorations, and inventions intended to bring revolutionary changes to energy. They participate in a community of graduate students, faculty, and staff who learn, create, and serve together. Students gain leadership opportunities in team projects such as the Solar Decathlon and are encouraged to work as summer interns on campus or in industry. The intent of the program is to support awardees throughout their undergraduate career, but reapplication is required each year. Ideally, three students, a sophomore, a junior, and a senior, are supported every year. Freshmen are especially encouraged to apply.

The Program supports students with a CEME Undergraduate Research and Leadership Award of \$10,000 per academic year. Awardees are expected to devote an average of ten hours per week on research projects in CEME laboratories during the academic year, successfully complete CEME-related courses summarized below, and actively participate in a leadership role in a range of CEME programs. Students will be encouraged and supported to publish and present original work at major national and international conferences. Award winners are eligible to reapply for subsequent years during their undergraduate program.

Course requirements are to meet all requirements of the electrical engineering curriculum. The technical electives taken within the curriculum must include:

- All of ECE 330, ECE 333, ECE 431, ECE 464, ECE 469, ECE 476, ECE 486
- Selections from among ECE 432, ME 300, ME 405, ME 485, MSE 280, CEME projects offered through ENGR 491.

Requirements for new applicants

1. Must be a U.S. citizen or permanent resident.
2. Freshmen currently enrolled in electrical or computer engineering at the University of Illinois at Urbana-Champaign are eligible to apply. (The award is effective for the subsequent academic year.)

3. A completed application form, obtained from room 4060 ECEB or online at <http://ceme.ece.illinois.edu>, along with a resume. The resume should show evidence of leadership or academic excellence such as participation in the James Scholar Program or other honors programs, internships, research activities, or leadership in community organizations.
4. Transcript for college-level academic studies, plus high school transcript for freshman and sophomore applicants.
5. An essay not exceeding two pages, double-spaced, discussing your interests in electrical energy and energy conversion, prior relevant experience, your curriculum objectives, and how you feel your academic goals coincide with the mission of the CEME.
6. Three letters of support, including at least one from a faculty member at the University of Illinois. Letters should highlight the applicant's experience or potential for research and leadership in areas of interest to the CEME and discuss how the applicant compares with peers. Please have the letter writers send letters to the CEME at the address below. Email support letters can also be sent to CEME coordinator Kevin Toomey: ktoomey2@illinois.edu
7. Grade-point average of 3.0 or higher on a 4-point scale.
8. Applications and letters must be submitted no later than 5:00pm on Tuesday, April 15, 2027, for full consideration. Applicants are responsible for ensuring that the application and letters are completed and delivered on time. Applicants will be notified about the outcome after April 30, 2027.
9. Send all materials virtually to ktoomey2@illinois.edu or, if you are in the building, bring them to the ECEB Facilities desk addressed to:
Grainger Center for Electric Machinery and Electromechanics
Undergraduate Research and Leadership Program
4060 ECEB, MC-702
University of Illinois at Urbana-Champaign
Department of Electrical and Computer Engineering
306 N. Wright St.
Urbana, IL 61801

Requirements for current awardees

1. Freshmen currently enrolled in electrical or computer engineering at the University of Illinois at Urbana-Champaign are eligible to apply. (The award is effective for the subsequent academic year.)
2. A completed application form, obtained at <http://ceme.ece.illinois.edu>, along with an updated resume.
3. An essay not exceeding two pages, double-spaced, discussing your interests in electrical energy and energy conversion, your experience in the Undergraduate Grainger Center for Electric Machinery and Electromechanics Research and Leadership Program, and updated discussion of your curriculum objectives and academic goals.
4. At least one letter of support, not from a previous letter writer, sent to the CEME address below. Email support letters can also be sent to CEME coordinator Kevin Toomey: ktoomey2@illinois.edu
5. Grade-point average of 3.0 or higher on a 4-point scale.
6. Applications and letters must be submitted no later than 5:00 pm on Tuesday, April 15, 2027, for full consideration. Applicants are responsible for ensuring that the application

and letters are completed and delivered on time. Applicants will be notified about the outcome after April 30, 2027.

7. Deliver all materials virtually to ktoomey2@illinois.edu or if you are in the building, bring them to the ECEB Facilities desk addressed to:
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