Center of Excellence for Energy
Senior Student Graduation Project Competition
Call for Proposals

Fall 2024–Spring 2025

Proposal Deadline: October 31, 2024

Arizona State University (ASU-US) established the Center of Excellence for Energy (COE/E) in Egypt with funding and support from the United States Agency for International Development (USAID/Egypt) in November 2021. COE/E is a partnership between ASU-US and three Egyptian partner universities (EPUs): Ain Shams University (ASU-EG), Aswan University (AU), and Mansoura University (MU).

Energy is the defining challenge of the 21st century. As part of COE/E, ASU-US and EPUs aim to conduct research in areas that meet Egypt's most critical energy sector needs—such as developing renewable and sustainable energy sources, progressing new technologies to help curb energy demand, studying implications for climate change and the environment, and formulating appropriate and timely policy responses.

COE/E is launching a call for proposals for the Senior Student Graduation Project Competition, focusing on providing hands-on research experience in an energy-related field to undergraduate students at each of the three COE/E Partner Universities: Ain Shams, Aswan, and Mansoura.

The project strongly encourages the participation of women, persons with disabilities, and applicants with socio-economic disadvantages.

The proposals should involve at least five senior students working in the energy area and must have at least one faculty member designated to supervise the project.

Funding:

- COE/E will sponsor 15 senior groups working on energy-related projects.
- COE/E will provide up to $500 USD per sponsored group to cover lab supplies, research materials, prototyping materials, and other necessary expenses.
- Awards: A competition will be held in May 2025, where each sponsored group will present and demonstrate their final project to a panel of university professors and industry experts.
    - First Prize: $1,250 USD
    - Second Prize: $750 USD
    - Third Prize: $500 USD

Eligibility Criteria:

- Open to graduating senior students at one of the three partner universities (ASU-EG, MU, AU) that are enrolled in a graduation project. Each group must consist of at least five students, with one member designated as the team leader.
- The project must focus on an energy-related topic, endorsed and supported by the supervising faculty. A support letter from the faculty supervisor is required.
- The project must address a significant challenge that will have an impact on energy-related issues in Egypt.
- Proposals must be submitted by the team leader.
- The template for the proposal with budgeting details is available through the following link and posted on the COE/E website:

Project Proposal Template

Deadlines:

- Proposal submission: October 31, 2024
- Presentation to the selection committee: November 14, 2024
- Project start: November 21, 2024
- Mid-point presentation to COE/E and university faculty: February 2025
- Final online presentation: July 1, 2025
- Awards ceremony: July 2, 2025

Proposal Package Evaluation:

Incomplete Packages: The packages that are not filled out entirely and/or missing any of the required supporting documents will not be evaluated further.

Complete Packages: The packages that are filled out and include all the required supporting documents will be deemed complete and will move on to the second phase.

Selection Process:

The proposals will be reviewed by a faculty and industry committee to evaluate each UROP proposal and budget based on the following criteria:

Criteria	Possible Score
Team members' technical capabilities and support from faculty	10
Technical merit	20
Innovation for new ideas	20
Approach and milestones (steps and deadlines)	10
Practical implementation/demonstration of the final product	10
Demonstrated commercialization potential or a business model	10
Use of advanced analysis and/or characterization tools	10

Contribution to addressing challenges in the energy sector	10
Total Possible Score	**100**

Those who achieve the highest scores will be selected to deliver a PowerPoint presentation to the selection committee, which will then provide final recommendations to the COE/E.

List of Potential Topics:

Senior UROP groups can propose projects in any energy-related area. While the following are some suggestions, the proposals are not limited to these areas.

Suggested Topics:

1. Energy Systems
    - Generation, grid & micro-grid, efficient generation, transmission, and distribution.
    - Energy storage, batteries, hydro storage, hydrogen production, etc.
2. Energy Efficiency and Automation
    - Efficient energy generation, transmission, and use
    - Energy management applications, smart homes and cities, smart distribution networks, energy systems monitoring and evaluation, etc.
    - Architecture, buildings, transportation, systems automation, sensors, etc.
3. Renewable Energy
    - Solar, bio, fuel cell, wind, hybrid system, geo, etc.
    - Applications, home & industry, water pumping, water desalination, etc.
    - Clean energy technology, green hydrogen, carbon neutral conversion of gas to hydrogen, etc.
4. Climate, Energy-Environment Interdependency, Sustainable Energy
    - Energy-climate change solutions, carbon footprint/neutralizing carbon, etc.
5. Energy-Water Nexus
    - Energy and water research with a focus on energy and electricity generation for water, desalination, clean energy for wastewater filtering, and related areas
6. Advanced Materials for Energy Applications
    - Development of new materials for solar cells, batteries, supercapacitors, fuel cells, and other energy storage technologies.
    - Research on thermoelectric materials and their applications in energy generation and waste heat recovery.
7. Smart Grid Technologies

- Development of smart grid infrastructure, integration of renewable energy sources, and enhancing grid resilience.
- Research on demand response, grid stability, and advanced metering infrastructure.

8. Energy Policy and Economics
    - Analysis of energy policies and their impact on energy systems in Egypt.
    - Economic modeling of energy projects, cost-benefit analysis, and investment strategies for renewable energy projects.