RENEWABLE ENERGY AND SUSTAINABILITY SYSTEMS

Graduate Program Head
Jeremy Gernand

Program Code
RESS

Campus(es)
World Campus (M.P.S.)

Degrees Conferred
Master of Professional Studies
(M.P.S.)

The Graduate Faculty
View (https://secure.gradsch.psu.edu/gpms/?searchType=学术program&prog=RESS)

The RESS professional master's program (MPS-RESS) is an online, interdisciplinary master's degree program designed to prepare professionals in the fields of renewable energy and sustainability systems to lead the world's transformation from an unsustainable, fossil energy economy to a renewable, sustainable basis of operation. For example, attaining an ambitious national goal of 25% of energy from renewable resources by the year 2025 in the U.S. requires a tremendous increase in renewable energy production and use in ways that are sustainable, environmentally sound, and reliable. The MPS-RESS program is designed to address the critical need for professionals with relevant expertise in renewable energy and sustainability systems.

The program provides broad coverage of topics related to renewable energy and sustainability systems while providing in-depth coverage of related technologies and policies. Students are required to follow a focused curriculum that combines requisite rigor with flexibility appropriate to a rapidly changing field. Students take a number of core program courses that provide an in-depth understanding of the sustainability framework relevant to energy and sustainability systems and, in consultation with their program advisor, select additional courses from a broad array of electives designed to meet their individual learning goals. While not required to do so, students may choose from one of two program tracks: one which provides specialized technical instruction in various aspects of renewable energy systems while the other focuses on sustainability management and policy. A comprehensive Scholarship and Academic Research Integrity (SARI) plan embeds ethics and integrity training both at the start and at the end of the master's program. A capstone course or capstone research experience with an EME faculty member is required of all students that serves to aggregate the material learned and provide a summative educational experience within the framework of a semester long group-based project.

Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission (https://gradschool.psu.edu/graduate-admissions/how-to-apply/). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (https://gradschool.psu.edu/graduate-education-policies/).

Applicants for the RESS program should be familiar with you and comfortable discussing your goals. Applications will be evaluated by the MPS-RESS Admissions Committee on the basis of your academic record, your previous professional experience, your goals, and your ability to perform at the graduate level.

• Official transcripts from all post-secondary institutions attended
• Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) score, if applicable
• Three letters of recommendation. The individuals writing letters should be familiar with you and comfortable discussing your professional and/or academic strengths and accomplishments.
• Vita or resume
• Statement of Purpose: A statement of professional experience and goals (up to 500 words)
• Nonrefundable application fee

Admissions Process

Applications will be evaluated by the MPS-RESS Admissions Committee based on the applicants' technical qualifications for the program relative to their area of interest, their previous educational experience, and English Language proficiency. In general, successful applicants are expected to have earned a junior/senior grade-point average of at least 3.0 on a 4.0 scale. Applicants with a marginal record are encouraged to first complete a related Graduate Certificate before applying for admission to the MPS-RESS program. Exemplary performance in the graduate certificate will be taken into consideration for possible admission into the MPS-RESS program, but completion of a certificate does not imply or guarantee admission into a degree program.

Degree Requirements

Master of Professional Studies (M.P.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Policies (https://gradschool.psu.edu/graduate-education-policies/).

The MPS-RESS degree is conferred upon students who earn a minimum of 33 credits of course work at the 400, 500, or 800 level while maintaining an average grade-point average of 3.0 or better in all course work, including at least 18 credits at the 500 or 800 level (with at least 6 credits at the 500 level), and who complete a culminating experience (capstone course or scholarly paper) in consultation with a graduate adviser. The program curriculum includes:
• 12 credits of core courses,
• 18 credits of electives, and
• a 3-credit capstone course (EME 589) or scholarly paper (EME 596).

Substitutions for required courses, either with resident-education courses, alternate online courses, or courses from other institutions, will be considered on a case-by-case basis, and must be petitioned and approved by the Program Chair, with input from the student's adviser.

The language of instruction at Penn State is English. English proficiency test scores (TOEFL/IELTS) may be required for international applicants.

See GCAC-305 Admission Requirements for International Students (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/gcac-305-admission-requirements-international-students/) for more information.
Renewable Energy and Sustainability Systems

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOET 533</td>
<td>Ethical Dimensions of Renewable Energy and Sustainability Systems</td>
<td>3</td>
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<tr>
<td>EME 504</td>
<td>Foundations in Sustainability Systems</td>
<td>3</td>
</tr>
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<td>EME 801</td>
<td>Energy Markets, Policy, and Regulation</td>
<td>3</td>
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<tr>
<td>EME 802</td>
<td>Renewable and Sustainable Energy Systems</td>
<td>3</td>
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**Required Courses**

**Additional Courses**

Additional courses that will count as electives towards this degree can be chosen from a list of approved elective courses maintained by the graduate program office. This listing includes 2 program tracks that provide focused instruction in a given aspect of renewable energy and sustainability systems.

**Culminating Experience**

Choose one of the following:

- EME 589 Management and Design of Renewable Energy and Sustainability Systems (Capstone Course) 3
- EME 596 Individual Studies (Scholarly Paper) 3

**Total Credits** 33

**Minor**

A graduate minor is available in any approved graduate major or dual-title program. The default requirements for a graduate minor are stated in Graduate Council policies listed under GCAC-600 Research Degree Policies (https://gradschool.psu.edu/graduate-education-policies/) and GCAC-700 Professional Degree Policies (https://gradschool.psu.edu/graduate-education-policies/), depending on the type of degree the student is pursuing:

- GCAC-611 Minor - Research Doctorate (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-611-minor-research-doctorate/)
- GCAC-641 Minor - Research Master’s (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-641-minor-research-masters/)
- GCAC-709 Minor - Professional Doctorate (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-700/gcac-709-professional-doctoral-minor/)
- GCAC-741 Minor - Professional Master’s (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-700/gcac-741-masters-minor-professional/)

**Learning Outcomes**

1. Execute and evaluate sustainability or renewable energy systems using baseline, techno-economic, life cycle, or cost/benefit analyses.
2. Demonstrate fundamental understanding of the principles of energy science, including resource availability and conversion technologies.
3. Demonstrate an appreciation for the commercialization process relative to project and product development.
4. Demonstrate the ability to make sound decisions in complex situations.
5. Evaluate sustainability decisions in the broader context of society’s interests.

**Contact**

- World Campus
  - Graduate Program Head: Jeremy Michael Gernand
  - Director of Graduate Studies (DGS) or Professor-in-Charge (PIC): Erich William Schienke
  - Program Contact: Noelle Fetzer Capparelle
  - Program Website: View (https://www.ress.psu.edu/)

- World Campus
  - Student Aid: World Campus students in graduate degree programs may be eligible for financial aid. Refer to the Tuition and Financial Aid section (https://www.worldcampus.psu.edu/tuition-and-financial-aid/) of the World Campus website for more information.

**Courses**

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.