



SUSTAINABLE AND RESILIENT ENERGY ENGINEERING GRADUATE CERTIFICATE

The **SUSTAINABLE AND RESILIENT ENERGY ENGINEERING CERTIFICATE** provides a comprehensive educational experience for engineering students interested in advanced energy generation, storage, grid resiliency technologies, and end-use sectors. This is an important step for development of the energy workforce for this critical industry, and by working closely with industry partners this will ensure that the student experience reflects the future needs of energy. This program enables specialized experience for graduate students in College of Engineering that showcases their interest and enhances their educational experience. At the completion of this certificate program, students will demonstrate proficiency and improvement in their knowledge and understanding of sustainable and resilient energy systems, critical thinking skills, and communication, both written and oral.

Who Should Participate?

Working professionals, military members, students at other universities worldwide, and current on-campus students who leave the Gainesville area to complete an internship, externship, or co-op (single or multiple terms) can participate in MAE Certificate Programs through the MAE EDGE distance learning platform.

All courses are offered through the online UF EDGE (Electronic Delivery of Gator Engineering) platform, which makes continuing your education possible no matter where you live or work! There are no campus visits required to earn this UF MAE graduate level certification, and the certificate conferred is identical to that earned as an on-campus graduate student.

What is the Admissions Process?

Distance Learning Professionals: Generally, for MAE certificate program admission, you need a bachelor's degree (BS) in engineering, science, technology, or a closely related discipline with a 3.0 undergraduate GPA, or you need a minimum of five years of professional employment experience in an engineering discipline (NOTE: a GRE exam score is not required for certificate program admission).

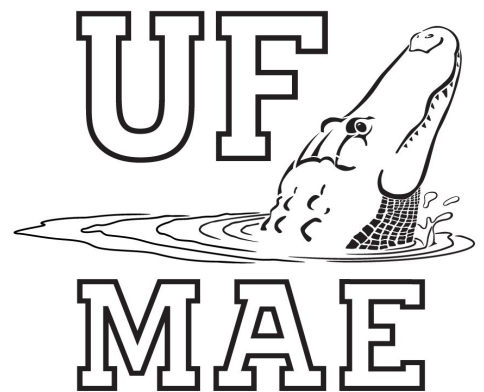
All applicants must apply online at the Office of Admissions: 1) complete the application <http://www.admissions.ufl.edu/apply/more#certificates>, 2) remit the \$30 application fee, 3) submit official transcripts from your prior BS degree institution, and 4) complete the residency information and verification process. Once your application has been reviewed by the Office of Admissions, your information will be referred to the MAE Student Services Office for an admission decision. *New students* should use the following link: <https://student.ufl.edu/cgi-bin/eaglec>.

UF On-Campus Graduate Students: Currently enrolled UF graduate students may apply for admission to any MAE EDGE graduate certificate program offered to our distance learning professionals. For admission eligibility, you need a 3.0 graduate GPA in engineering, science, technology, or a closely related discipline.

All applicants must apply online at the Office of Admissions: <http://admissions.ufl.edu/apply/more>. No application fee is assessed for currently enrolled, degree seeking students. Once the Office of Admissions has reviewed your application, your information will be referred to MAE Student Services for an admission decision.

You **SHOULD APPLY** for certificate programs as early as possible to ensure you gain admission into the program; you **MUST APPLY** for certificate programs no later than the Graduate School midpoint deadline in the term you wish to certify. See Individual Term Calendars (<http://gradcatalog.ufl.edu/content.php?catoid=11&navoid=2421>) to determine the midpoint deadline of your degree candidate term.

NOTE to UF On-Campus Graduate Students: Enrollment in certificate coursework may be on-campus or via the EDGE distance learning platform (for students participating in an internship, externship, or co-op.)



www.mae.ufl.edu

Certificate Structure

The **SUSTAINABLE AND RESILIENT ENERGY ENGINEERING CERTIFICATE** consists of 3 required courses (9 credit hours). Lectures are available online in streaming and downloadable video, all semester, making it easy for students to review lectures before exams. Degree seeking and Certificate students view courses online, submit coursework online, and interact with professors using e-mail, telephone, and course websites via CANVAS. Students are never required to travel to campus, and course exams are proctored via internal employer supervisor, external testing agency, local 2-year or 4-year higher education institution, etc. For any questions about MAE Certificate Program or the UF EDGE distance learning platform, please contact the MAE Graduate Student Services Office: GradAdvising@mae.ufl.edu or 352-294-1184.

Curriculum Requirements—Students complete 3 of the following courses

EML5465—Energy Management for Mechanical Engineers*

Energy use analysis in building envelopes, mechanical systems, and industrial processes. Energy conservation strategies and design techniques. Alternative energy applications.

*prerequisite: consent of instructor

EML5516—Design of Thermal Systems*

Modeling of thermal equipment; system simulation; optimization, search methods, thermal system design and optimization using dynamics, geometric, and linear programming; simulation of large systems, vector and reduced gradient searches.

*prerequisite: (EGN3353C and EML4140) or equivalent

EML6417—Solar Energy Utilization*

Fundamentals of solar radiation; basic heat transfer and thermodynamic topics with solar engineering applications; solar concentrating devices and flat plate solar absorbers; state of the art solar technologies, thermal storage, concentrating power generation systems, thermochemical storage, electrochemical storage technologies, photovoltaic systems.

*prerequisite: EML3100 or equivalent

EML5605—Advanced Refrigeration*

Analysis and design considerations for vapor compression, absorption, steam-jet, thermoelectric, and air refrigeration systems.

*prerequisite: EML4601

EML6451—Energy Conversion

Converting available forms of energy into mechanical and electrical forms; energy conversion schemes, including conventional cycles in unusual environments. MHD, photovoltaics, thermionic and thermoelectric conversion and fuel cells.

EML6466—Industrial Energy Management*

Fundamentals of energy management: energy-policy-development, equipment energy usage (electric and thermal), process and equipment efficiencies, analyze industrial processes and optimize their energy use. Critical evaluation of new technology for use from technical and economical perspectives.

*prerequisite: EML3100 or equivalent

EML6606—Advanced Air Conditioning

Air-conditioning systems selection and system design; air-handling techniques including noise control, cleaning, and temperature and humidity control; modern technological development and economic analysis.

Completion Requirements

MAE Graduate certificate participants must 1) achieve certificate admission, 2) earn a grade of B or better in each course used to fulfill certificate requirements, and 3) file an application for certificate by the deadline with the Office of the University Registrar at ONE.UF during the final term of enrollment in a certificate course (<https://one.ufl.edu/dashboard/>). To file an application, select Certificate/Degree Application under My Record on the left menu.

Contact Information

For additional information, please contact the MAE Student Services Office:

EDGEStudentServices@mae.ufl.edu

For information on course content and professional development outcomes, please contact:

Jonathan Scheffe, Associate Professor, Department of Mechanical & Aerospace Engineering Email: jscheffe@ufl.edu.

