



SCIENTIFIC COMPUTING GRADUATE CERTIFICATE

The **SCIENTIFIC COMPUTING CERTIFICATE** emphasizes areas of complex multiscale multi-disciplinary problems and their resolution by computation. The certificate program will allow modern engineers and scientists to simultaneously: learn how to effectively perform large-scale scientific simulations; manage and analyze voluminous datasets; identify key quantities of ultimate significance to final decision; reduce the voluminous data to focus on these key quantities; rigorously establish uncertainties in the prediction of the key quantities; evaluate probabilistic risks and rewards involved in the final decision making.

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).

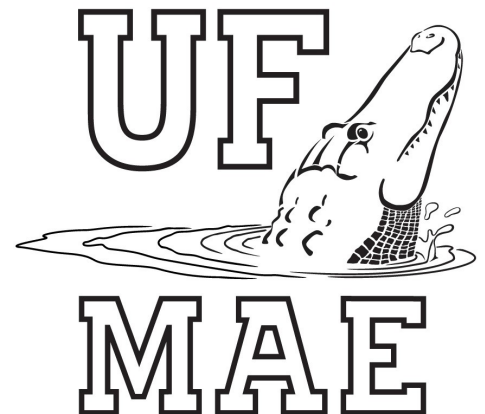
All applicants must apply online at the Office of Admissions: 1) complete the application <http://www.admissions.ufl.edu/apply/more#certificates>, 2) remit the \$30 application fee, 3) submit official transcripts from your prior BS degree institution, and 4) complete the residency information and verification 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 **SCIENTIFIC COMPUTING CERTIFICATE** consists of 1 required course and 2 electives (3 total 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 Student Services Office: grad@mae.ufl.edu or 352-392-0962.

Curriculum Requirements—Students complete 1 required and 2 elective courses

EML6XXX (REQUIRED) — Verification, Validation and Uncertainty Quantification and Reduction (VVUQ)

CEN5035, Software Engineering
CEN6070, Software Testing and Verification
CES5010, Probabilistic and Stochastic Methods in Civil Engineering
COP5556, Programming Language Principles
COP5618, Concurrent Programming
EEL6533, Data Analytics and Decision Sciences
EEL6763, Parallel Computer Architecture
EGM6342, Fundamentals of Computational Fluid Dynamics
EGM6352, Advanced Finite Element Methods
EGM7819, Computational Fluid Dynamics
EMA6803, Classical Methods in Computational Materials Science
EMA6804, Quantum Methods in Computational Materials Science
EMA6808, Error Analysis and Optimization Methodologies in Materials Research
EML5526, Finite Element Analysis and Application
EML6386, Computational Nanomechanics and Nanomaterials
EOC6850, Numerical Simulation Techniques in Coastal and Ocean Engineering
ESI6529, Digital Simulation Techniques
ESI6546, Stochastic Modeling and Analysis

*see course catalogue for course descriptions (<http://gradcatalog.ufl.edu/>)

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: Dr. S. Balachandar, Institute of Computational Engineering (ICE), University of Florida Email: bala1s@ufl.edu.

