



FAIRFIELD UNIVERSITY GRADUATE PROGRAMS



APPLIED DATA SCIENCE

PROGRAM DESCRIPTION

The School of Engineering's Master of Science in Applied Data Science (MSADS) is an interdisciplinary program that equips students from a broad range of academic backgrounds and professional domains with the scientific methods, processes, and systems to extract knowledge and insights from data in structured and unstructured forms.

At its core, the MSADS program employs techniques and theories drawn from many fields within the broad areas of statistics and computer science; in particular, the subdomains of machine learning, classification, cluster analysis, uncertainty quantification, computational science, data mining, databases, and visualization. The curriculum is rigorous and integrated with industry projects through Fairfield's signature Capstone course-sequence, enabling students to obtain hands-on, team-based experience working on yearlong, real-world projects in controlled environments.

Fairfield's MS in Applied Data Science is unique in that it allows students to build in-depth data science knowledge in specialized areas of concentration, while equipping graduates with the advanced technical skills to analyze, interpret, and turn data into actionable insights. Students benefit from:

- Teaching and research in an environment that is conducive to achieving educational excellence.
- Exposure to data science and analytics techniques, tools, and methodologies.
- Exposure to specialized domain-related data science issues.
- Fundamental discovery in data science and analytics.
- The ability to attain the highest standards in professional and ethical practice.

In sum, students will acquire the skills and real-world knowledge to succeed in applied data sciences through an in-depth exposure to the methodologies and tools of data science. A sequence of required courses, elective courses, and a final team-driven Capstone project provide depth and breadth to the learning experience.

The MSADS program draws students from many different backgrounds. Some come from engineering and computing. Others come from specific domain backgrounds such as biology, healthcare, behavioral sciences, or business. All have a desire to use data to make deeper connections within their field and drive decision-making.

Companies across industries and governments reap the benefit of using skilled data scientists to tackle complex Big Data challenges. Career opportunities for MSADS graduates include commercial, financial, health, and manufacturing sectors, as well as for-profit and not-for-profit organizations.

Examples of employment opportunities for MSADS graduates include:

- Applied Data Science Enterprise Professional
- Big Data Consultant
- Business Intelligence Reporting Professional
- Data Analyst
- Data Controller
- Data Mining or Big Data Engineer
- Health Data Analyst
- Statistician
- Research Data Scientist

Data is ubiquitous in the modern world, and data scientists with skills and knowledge to analyze that data are a valuable, sought-after resource.

Fairfield's MSADS program is designed to accommodate busy schedules, especially for students already in the workforce. Our small class sizes allow for individualized learning under the supervision of our dedicated and expert faculty, who know each student by name and provide personalized mentoring to encourage the highest level of success possible. Graduate students also benefit from immersion into campus cultural activities through specially organized, free-of-charge museum visits and arts performances.

COURSE OF STUDY

The Applied Data Science graduate program consists of 30 credits (10 courses) as follows:

- 4 Applied Data Science Required Courses (12 credits)
- 2 Concentration Courses (6 credits)
- 2 Elective Courses (6 credits)
- 2 Capstone Courses (6 credits)

REQUIRED COURSES

The four required applied data science courses cover core computer science and statistics techniques:

- Applied Statistics I
- Visual Analytics
- Data Warehouse Systems
- Data Mining and Business Intelligence



Fairfield University

School of Engineering

CONCENTRATION COURSES

With their advisor's guidance, MSADS students select a concentration from one or more specialization areas in which they have an interest. Two-course concentrations currently include computational analytics ("Pattern Recognition" and "Database Management Systems") or health analytics ("Healthcare Economics and Marketing" and "Finance and Quality Management in Healthcare Organizations"). Additional individual areas of interest such as bioinformatics, business analytics, social analytics, or behavioral analysis may be discussed with the advisor.

ELECTIVE COURSES

Electives may be chosen from computing technical courses ("Artificial Intelligence," "Algorithms," "Advanced Database Concepts," "Applications and Data Security"), mathematics courses ("Applied Statistics II," "Probability Theory," "Statistics Theory"), Independent Study, or any other graduate-level course from a concentration or another area, under advisement of the department chair or academic advisor.

CAPSTONE COURSES

The year-long capstone sequence (two courses) provides MSADS graduate students with hands-on, real-world applied data science experiences, customizable to their academic and/or professional interests.

GRADUATE PROGRAM DIRECTOR

Dr. Adrian Rusu
Phone: 203-254-4000, x2736
E-mail: rusu@fairfield.edu

Dr. Rusu serves as the faculty advisor for students in the Software Engineering program and is the appropriate person to contact with questions, or to learn more. For a complete faculty listing, see www.fairfield.edu/soefaculty.

PREREQUISITES AND FOUNDATION COMPETENCIES (ADMISSION REQUIREMENTS)

The MSADS degree requires students to have competencies that will allow them to pursue graduate coursework. Knowledge and/or experience in data science, programming, and specific domains is necessary. Gaps in knowledge and experience can be remedied by introductory computing and/or domain-specific bridge courses. These additional prerequisites are determined on an individual basis and communicated at the time an offer of admission is made.

Students who are accepted into the program with bridge requirements should complete the bridge courses in the first semester with a grade of B or higher to satisfy the bridge requirement. Students may take graduate level courses and bridge courses at the same time. Bridge courses do not count for credit towards the degree.

FORMAL ADMISSION PROCESS

Applications to the graduate program are accepted on a rolling basis. Applications are reviewed by the Graduate Admission Committee. Students seeking admission must complete and submit the following online:

1. A completed online application (www.fairfield.edu/soeapp)
2. A non-refundable \$60 application fee
3. A professional résumé
4. Personal statement describing intent for studying in the program
5. Official transcripts from all universities/colleges attended (All foreign transcripts must be evaluated by an approved evaluating service. A list of approved evaluators is available at www.fairfield.edu/eval.)
6. Two recommendation letters, one of which must be from a current supervisor or professor, completed online
7. All international students whose native language is not English must demonstrate proficiency in the English language by taking either TOEFL or IELTS exams. For admission to the graduate school, a TOEFL composite score of 550 for the paper test, 213 for the computer-based, 80 on the internet based test or an IELTS score of 6.5 is strongly recommended. Scores must be sent directly from the Educational Testing Service (TOEFL) or www.IELTS.org. Fairfield's ETS code is 3390.

Submit transcripts and any other documents that cannot be uploaded to:

Fairfield University
Office of Graduate Admission
Kelley Center
1073 North Benson Road
Fairfield, CT 06824

TRANSFER STUDENTS

Transfer credit will be considered for graduate coursework earned with a grade of B or better. No more than six credits may be transferred.

MANDATORY IMMUNIZATIONS

Connecticut State law requires each full-time or matriculated student to provide proof of immunity or screening against measles, mumps, rubella, varicella (chicken pox), meningitis and tuberculosis. Certain exemptions based on age and housing status apply. Matriculating students are defined as those enrolled in a degree seeking program. More detailed information and the required downloadable forms are available online at www.fairfield.edu/immunization. Completed forms should be submitted directly to the Student Health Center. Although this is not required to complete an application, you must provide proof of immunity/screening prior to course registration. Please consult your private health care provider to obtain the necessary immunizations. Questions may be directed to the Student Health Center: 203-254-4000 ext. 2241 or e-mail health@fairfield.edu.

NON-MATRICULATED STUDENT STATUS

Non-matriculated status may be granted to individuals who have not completed the admission process but wish to begin taking courses, or who are not seeking a degree or certification. Individuals wishing to enroll as non-matriculated students must submit:

1. A completed application (Apply online at www.fairfield.edu/soeapp.)
2. A non-refundable \$60 application fee
3. A written request to the Graduate Program Director, specifying the semester for which this status is requested
4. Official transcripts verifying that a baccalaureate (or higher) degree with a grade point average of 3.0 or higher has been earned

Non-matriculated student status is granted for 9 credits only. Students seeking admission must complete the formal application process by the end of their 9 credit limit in order to continue with their studies. Individuals enrolled as non-matriculated students cannot enroll for more than six credits each term, cannot register on a full-time basis, and are not eligible for any tuition aid or financial support. Upon formal admission to the Graduate Program, credits earned while a non-matriculated student will be applied toward the master's degree, provided the courses were approved by the faculty advisor and the grade received in each course was a B or better. Successful completion of coursework does not automatically guarantee formal admission.

NON-DEGREE STUDENTS

Students who hold master's degrees and who are interested in taking courses for professional and/or personal continuing education may be admitted as non-degree students. Individuals wishing to enroll as non-degree students must submit:

1. A completed application (Apply online at www.fairfield.edu/soeapp.)
2. A non-refundable \$60 application fee
3. A written request to the Graduate Program Director, specifying the semester for which this status is requested
4. Official transcripts verifying that a master's degree has been earned

Courses taken under this status will not be considered toward fulfillment of degree requirements.

TUITION/FINANCIAL AID

Academic Year 2018-19
Tuition: \$825 per credit hour

A graduate education can provide countless professional and personal rewards in the future. However, the costs associated with earning a master's degree may be challenging. Many students need to look beyond their own financial resources or the resources of their employer for assistance. There are many ways to finance a graduate education, including graduate assistantships, federal direct loan programs and our Veterans Pride Program, which are all discussed at www.fairfield.edu/gradfa.

SCHOLARSHIPS

The School of Engineering provides merit-based, research, and practical experience scholarships for MSSE students based on their academic performance at Fairfield University. Other types of employment, including technology-based, are available on-campus.

OFFICE OF FINANCIAL AID

Advisors from the Office of Financial Aid are committed to helping students find the options that best suit each of their needs. We encourage all Fairfield University graduate students to contact the Financial Aid office with any questions or to make an appointment to speak with a counselor.

FINANCIAL AID CONTACT INFORMATION

Phone: 203-254-4125
Fax: 203-254-4008
E-mail: finaid@fairfield.edu

FINANCIAL AID OFFICE OPERATIONS

Days: Monday-Friday
Hours: 8:30 a.m.-4:30 p.m.
Location: Aloysius P. Kelley, S.J. Center

MORE INFORMATION

ADMISSION QUESTIONS

Questions about the application process should be directed to the Office of Graduate Admission.
Phone: 203-254-4184
Fax: 203-254-4073
E-mail: gradadmis@fairfield.edu

OFFICE OPERATIONS

Days: Monday-Friday
Hours: 8:30 a.m.-4:30 p.m.
Location: Aloysius P. Kelley, S.J. Center

SCHOOL OF ENGINEERING WEBSITE

www.fairfield.edu/engineering

ONLINE CATALOG

For detailed course descriptions and other University information, please refer to our online catalog www.fairfield.edu/catalogs.