

OPERATIONS RESEARCH AND ENGINEERING GRADUATE CERTIFICATE

Banner Code: EC-CERG-OR

Systems Engineering and Operations Research

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Fairfax Campus

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Admissions & Policies

Admissions

Computational Modeling Concentration

For admission to the certificate with a Computational Modeling concentration, applicants must meet minimum entrance requirements for the MS in operations research (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/operations-research-ms/>), the MS in statistical science (<http://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/statistical-science-ms/>), or the PhD in computational sciences and informatics (<http://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-sciences-informatics-phd/>).

Military Operations Research Concentration

Admissions requirements for the certificate with a Military Operations Research concentration are identical to those for the Operations Research, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/operations-research-ms/>).

Predictive Data Analytics Concentration

The certificate with Predictive Analytics concentration will be open to all students who hold a BS degree in scientific and engineering disciplines from an accredited university program, with a minimum GPA of 3.0. Students who are already enrolled in a master's program must submit a secondary certificate form to enroll in this certificate with concentration program; all others must apply for graduate admission to this certificate with concentration program.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates (<http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-8>).

Courses taken for the Computational Modeling certificate can count toward a master's degree in operations research or statistics or a PhD in computational sciences and informatics (<http://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-sciences-informatics-phd/>). One must be concurrently enrolled in the program for courses to count toward the certificate and the other degree.

Requirements

Certificate Requirements

Total credits: 12-15

This certificate may be pursued on a part-time basis only.

Students must complete all requirements within a concentration.

Concentration in Computational Modeling (CCM)

Code	Title	Credits
OR 541	Operations Research: Deterministic Optimization	3
OR 635	Discrete System Simulation	3
OR 682	Computational Methods in Engineering and Statistics	3
	or MATH 685 Numerical Analysis	
Select one from the following Electives:		3
CSI 744	Linear and Nonlinear Modeling in the Natural Sciences	
OR 542	Operations Research: Stochastic Models	
SYST 611	System Methodology and Modeling	
SYST 683	Modeling, Simulation, and Gaming	
ECE 521	Linear Systems and Control	
MATH 673	Dynamical Systems	
Total Credits		12

Concentration in Military Operations Research (MOR)

Certificate candidates must complete five courses, with an average grade of B or better, for a total of 15 graduate credits.

Code	Title	Credits
OR 541	Operations Research: Deterministic Optimization	3
OR 635	Discrete System Simulation	3
OR 651	Military Operations Research I: Cost Analysis	3
OR 652	Military Operations Research Modeling II: Effectiveness Analysis	3
SYST 683	Modeling, Simulation, and Gaming	3
Total Credits		15

Concentration in Predictive Data Analytics (PDA)

Code	Title	Credits
OR 541	Operations Research: Deterministic Optimization	3
OR 568	Applied Predictive Analytics	3
One from the following:		3
OR 542	Operations Research: Stochastic Models	
OR 604	Data-driven Large-scale Optimization	

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OR 635	Discrete System Simulation	
One from the following:		3
CS 504	Principles of Data Management and Mining	
CS 584	Theory and Applications of Data Mining	
<hr/> Total Credits		12