GRADUATE DEGREES IN SYSTEMS SCIENCE
DELVE INTO THE VAST WORLD OF COMPLEX SYSTEMS

WHY SYSTEMS SCIENCE?

The Systems Science graduate program at Binghamton University offers a unique, internationally recognized, highly transdisciplinary learning and research experience that provides you with concepts, principles and methods for understanding, modeling, analyzing, optimizing and improving various forms of complex systems. Such systems thinking and problem solving skills will be an invaluable asset when you blaze a new trail in any scientific, engineering, business, or management profession, within today’s increasingly complex world.

PROGRAMS OFFERED

- PhD in Systems Science
- Master’s in Systems Science
  - Health systems concentration
  - Health systems executive program in Manhattan
- Advanced Graduate Certificate in Complex Systems

REQUIREMENTS

Master’s in Systems Science (MS SS)

Students must complete the required courses while maintaining at least a B average.

Required courses
SSIE 500 Computational Tools
SSIE 501 Introduction to Systems Science
SSIE 505 Applied Probability and Statistics
SSIE 520 Modeling and Simulation
or SSIE 523 Collective Dynamics of Complex Systems

RESEARCH TOPICS

Mathematical Modeling of Systems
Intelligent Control and Optimization
Decision Making and Management
Agent-Based Modeling

Computational Social Science
Transdisciplinary Research
Computer Simulation
Soft Computing
Machine Learning
Statistical Modeling
Data Analytics

PhD in Systems Science (PhD SS)

Degree requirements:
- Satisfaction of the learning contract, including proficiency in teaching and residence requirements
- Pass a comprehensive exam
- Presentation of a colloquium on proposed research
- Acceptance of a prospectus outlining dissertation research
- Submission of a dissertation
- Defense of a dissertation at oral examination

Thesis option: 4 electives* plus 6 credits of thesis work followed by oral presentation and defense.
Non-thesis option: 5 electives* plus a project of at least 3 credits.

Sample electives
SSIE 506 Systems Problem Solving
SSIE 519 Applied Soft Computing
SSIE 617 Fuzzy Sets, Fuzzy Logic and Fuzzy Systems
SSIE 631 Foundations of Neural Networks

*At least one elective must be at the 600 level.

See course descriptions in the University Bulletin: bulletin.binghamton.edu.
ABOUT THE SSIE DEPARTMENT

The Department of Systems Science and Industrial Engineering offers a BS degree in industrial and systems engineering (ISE), MEng degrees in industrial engineering (IE) and systems engineering (SE) and MS and PhD degrees in Systems Science (SS) and Industrial and Systems Engineering (ISE). With about 230 undergraduate, almost 220 masters and more than 110 doctoral students, the department is growing in numbers and reputation. The department also offers a cutting-edge executive health systems program in Manhattan.

ABOUT THE WATSON SCHOOL

At the Watson School, industry partnerships, class projects and internship opportunities provide a wealth of hands-on experience for students. Our faculty brings considerable industry and research expertise to the classroom, where they mentor students as individuals in small classes. In the lab, they encourage student involvement and make breakthrough discoveries.

Students come to the Watson School from all over the country and the world, and they represent a wide range of backgrounds and interests. They graduate with broad-based skills and the entrepreneurial spirit to succeed in a variety of fields.

FACULTY AND RESEARCH

Attracting over $2.5 million dollars in research funding per year, our established faculty works collaboratively with over 24 global sponsors from industry and federal agencies. Binghamton University places great emphasis on innovative research and transdisciplinary areas of excellence, including Citizenship, Rights and Cultural Belonging, Health Sciences, Material and Visual Worlds, Smart Energy and Sustainable Communities.

EARN YOUR GRADUATE DEGREE REMOTELY

EngiNet, the Watson School’s Graduate Distance Learning Program, uses software to digitally capture both classroom lectures and presentation materials. The lectures are posted on the course management system. Students use the online media in conjunction with course materials posted on each course website. Online files are usually posted within 24 hours of being recorded.

For additional information about courses, tuition or registration, send an e-mail to enginet@binghamton.edu or call 607-777-4965 (toll free 1-800-478-0718).

FOR MORE INFORMATION

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