OPEN TO ALL MAJORS

Systems science provides you with the concepts, principles and methods for understanding the nature of systems problems and proficiency in actual systems problem solving.

You’ll delve into problem classes such as systems modeling and simulation, systems analysis and synthesis, as well as various problems associated with the simplification of overly complex systems to make them manageable.

The program emphasizes the complementary use of mathematical, computational and heuristic approaches to solving systems problems. Students learn to analyze assumptions under which various methods are applicable, with the aim of selecting methods that best fit the problem.

REQUIREMENTS

Master’s in Systems Science (MS SS)

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

Required courses
- SSIE 501, Introduction to Systems Science
- SSIE 505, Introduction to Applied Probability and Statistics
- SSIE 506, Systems Problem Solving
- SSIE 520, Modeling and Simulation

Thesis option: 4 electives* plus 6 credits of thesis work followed by oral presentation and defense.

Non-thesis option: 6 electives* plus a project of at least 3 credits.

Sample electives
- SSIE 519, Applied Soft Computing
- SSIE 517, Fuzzy Sets Uncertainty and Information
- SSIE 523, Collective Dynamics of Complex Systems

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

PhD in Systems Science (PhD SS)

Degree requirements include:
- satisfaction of the learning contract, including proficiency in teaching and residence requirements
- satisfaction of the comprehensive qualifying requirement
- presentation of a colloquium on proposed research
- acceptance of a prospectus outlining dissertation research
- submission of a dissertation, and
- defense of a dissertation at oral examination

Course descriptions are available in the University Bulletin at bulletin.binghamton.edu.

RESEARCH AREAS

Fuzzy Logic
Knowledge Discovery and Data Analytics
Uncertainty Theories

Health Systems
Soft Computing
Intelligent Control
Decision Making

Complex Systems
Dynamical Networks
Social Economic Systems
Social Networks

This coursework is also available as an Advanced Graduate Certificate program in Complex Systems Science and Engineering (CX).
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 in Systems Science (SS) and Industrial and Systems Engineering (ISE). With about 200 undergraduate, 135 masters and 70 doctoral students, the department is growing in numbers and reputation. The department also offers a cutting edge executive health systems program in Manhattan.

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 overall has placed 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. For more information on the department and its contributions to these efforts please visit ssie.binghamton.edu.

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 jkinzer@binghamton.edu or call 607-777-4965 (toll free 1-800-478-0718).

FOR MORE INFORMATION

SS Graduate Director, Dr. Hal Lewis: hlewis@binghamton.edu

ABOUT THE WATSON SCHOOL

With an innovative curriculum and real-world approach, the Thomas J. Watson School of Engineering and Applied Science at Binghamton University prepares engineering and computer science students to embrace new challenges and create the future.

The Watson School offers bachelor’s, master’s and doctoral programs in eight fields of study including bioengineering, biomedical engineering, computer science, computer engineering, electrical engineering, industrial and systems engineering, mechanical engineering and systems science. For all students, the Watson School experience is characterized by a special blend of creative thinking, professional opportunities and a focus on finding solutions to real problems.

Located in Binghamton, N.Y., we’re ideally situated in the high-tech heart of the state. Industry partnerships, class projects and internship opportunities provide a wealth of hands-on experience for graduate and undergraduate students alike.

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. We’re eager to tell you more about the Watson School experience. Contact us for more information, or apply today!