UNDERGRADUATE PROGRAMS IN
ENGINEERING AND COMPUTER SCIENCE

WHAT MAKES WATSON UNIQUE?

MODERN FACILITIES
More than $7 million in new equipment and computer facilities supports the computer science and engineering programs.

TOP RANKING
The Thomas J. Watson School of Engineering and Applied Science was named one of the top schools in the nation for computer science and computer engineering majors by The Princeton Review (2012).

INDUSTRIAL CONNECTIONS
Our strong industry links translate into unique student cooperative education and internship opportunities with some of the most technically advanced corporations in the nation. Upper-division students may seek summer industrial internships during our annual internship fair each spring. For more information, visit binghamton.edu/internships.

INTERNATIONAL OPPORTUNITIES AND PARTNERSHIPS
Students are prepared to work in a globalized economic world through international collaborations with universities across South and Southeast Asia and the Middle East. The Watson School has also joined Global E3, an international engineering exchange consortium, connecting Binghamton University students with institutions in 18 countries.

EXCEPTIONAL FACULTY
Watson students learn from and work with an outstanding and experienced faculty working in leading research areas. The Watson School is home to five active SUNY distinguished faculty who have achieved national or international reputation.

SUPPORT
A wide variety of resources, including tutorial sessions, are available to students who need additional, individualized help beyond that provided in our classrooms and labs.

DUAL MAJORS AND MINORS
Watson students choose from a wide range of dual majors and minors from across the University. Students may also choose combined BS/MS programs that offer both degrees at the end of five years, or pursue five-year BS/MBA programs available through the School of Management. For more information, visit binghamton.edu/som.

ACCREDITATION
The bachelor of science programs in bioengineering, computer engineering, electrical engineering, industrial and systems engineering, and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET. The bachelor of science program in computer science is accredited by the Computing Accreditation Commission of ABET.
WATSON SCHOOL PROGRAMS

ENGINEERING STUDENTS

• Students admitted to the Engineering program as freshmen initially enter the Engineering Design Division (EDD), which coordinates the first-year curriculum that introduces students to all branches of engineering.
• The Engineering Design Program encourages students to explore and discover the various fields within engineering and to make informed choices about their major.
• In addition to basic science and mathematics courses, a two-semester engineering sequence provides hands-on design experience combined with communications.
• Starting with sophomore year, students enroll in specific departmental courses in the chosen major.

For more information, visit binghamton.edu/engineering-design.

COMPUTER SCIENCE STUDENTS

• The Computer Science major begins in the freshman year, and students are offered an unusually broad program with many electives, preparing them for a variety of careers.
• The first computer science course is determined by each student's computer science background.
• All core CS courses have lab sections that feature hands-on assignments. Beginning CS course have small lab sections that ensure a high degree of attention to individual students in their formative stages.
• Students also have flexibility in choosing courses, giving students the opportunity to minor in areas such as the arts, business, math, music, languages, or the sciences.

COMPUTER SCIENCE FIRST YEAR COURSES
(taken by all freshman computer science students)

FALL
Calculus I
Chemical Principles
Exploring Engineering I
Engineering Communications I
General elective
Body/Wellness

Calculus II
General Physics I
Exploring Engineering II
Engineering Communication II
General Education elective
Body/Wellness

SPECIAL
Professional Skills, Ethics and CS Trends
Programming Concepts and Applications
Calculus I
Written communications course (a.k.a. Coming to Voice)

SPRING
Computer Systems I: Machine Organization
Calculus II
Social Science/Humanities Elective

WATSON ADVISING

The Watson School has a two-tiered advising structure, with faculty serving as the primary program advisors and the Watson Advising Office staff providing school and University-wide information. The Watson Advising Office offers drop-in hours, appointments, and various programs throughout the year to provide advice and assistance to students. For more information, visit binghamton.edu/watson/advising.

WATSON CAREER AND ALUMNI CONNECTIONS

The Watson Career and Alumni Connections office provides tailored tools and guidance to transform students engineering background into a career they are passionate about. They provide career advice, interviewing help, and resume and cover letter review via walk-in hours, appointment, or email. For more information, visit binghamton.edu/watson/student-services/career.

WATSON SCHOOL MAJORS

COMPUTER SCIENCE

Computer science stresses the design, analysis, implementation, management and application of large software systems, as well as systems combining both hardware and software. Watson’s Computer Science (CS) Department offers courses in software design, programming, hardware design and everything in between. Students begin-taking CS courses in their first semester and then specialize in areas such as software systems, networking, operating systems, Web-based systems, graphics, robotics, microprocessor-based design, and game design. For more information, visit cs.binghamton.edu.

COMPUTER ENGINEERING

Computer Engineering (CoE) focuses primarily on the design of computers, emerging as a bridge between electrical engineering and computer science. The role of the computer engineer includes the design, analysis and implementation of computing technology, as well as its integration into devices and systems that use computers as components or tools. As a result, graduates work in many industries, including aerospace, automobiles, computer, defense, electronics, information technology, networking and telecommunications. For more information, visit ece.binghamton.edu.

BIOENGINEERING

Bioengineering (BE) aims to educate 21st century workforce by encouraging innovation and entrepreneurship. It offers students with solid training in core engineering skills encompassing biotechnologies, biomedical devices, biomechanics, nanobiotechnology, biomolecular and tissue engineering, bioinstrumentation, and bioinformatics. BE provides students with in-depth training in specific areas through four tracks in biomedical science and engineering: pre-med, biomedical devices, biomechanics, nanobiotechnology, and computational biosystems. For more information, visit bioeng.binghamton.edu.

ELECTRICAL ENGINEERING

Electrical Engineering (EE) is one of the broadest and largest engineering disciplines. Many electrical engineers work in the design, analysis and application of electrical and electronic components, circuits and systems. Others focus on the analysis, design and application of information processing systems such as communication systems, medical imaging and military sensors. Students may focus on the atomic level manipulation of microelectronic devices or on the design of integrated circuits, electronic circuits, or systems that process signals and information. For more information, visit ece.binghamton.edu.

INDUSTRIAL AND SYSTEMS ENGINEERING

Integral to American industry and economic growth, Industrial and Systems Engineering (ISE) focuses on the design of processes and systems rather than of products or things. By integrating engineering skills, business skills and people skills, we study complex systems and look for simple solutions. Watson ISE students learn design and analytical skills, as well as serve as project managers and on multidisciplinary teams. The curriculum is excellent preparation for future employment or graduate studies. For more information, visit sise.binghamton.edu.

MECHANICAL ENGINEERING

Mechanical engineers design and analyze manufacturing plants, industrial equipment and machinery, heating and cooking systems, motor vehicles, aircraft, watercraft, robotics, medical devices and more. Our Watson School ME curriculum offers a balance among theory, design and laboratory experience in the areas of thermofluids, mechanics, dynamic systems, design and materials, and provides excellent preparation for the many ME career paths or for graduate studies. For more information, visit me.binghamton.edu.

MECHANICAL ENGINEERING

MECHANICAL ENGINEERING

WATSON ADVISORS

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[Image 21x524 to 642x832]
[66x207](taken by all freshman engineering students)
[66x219]DESIGN COURSES
[66x231]ENGINEERING DISCOVERY AND
[66x254]binghamton.edu/engineering-design.
[66x264]For more information, visit
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[66x467]STUDENTS
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[75x300]Starting with sophomore year, students
[75x315]rience combined with communications.
[75x336]ics courses, a two-semester engineering
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[75x382]determined by each student's computer
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[75x428]ing Design Division (EDD), which coordinates
[75x449]Students admitted to the Engineering pro-
[75x450]gram as freshmen initially enter the Engineer-
[75x451]ing Design Division (EDD), which coordinates
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[75x466]enroll in specific departmental courses in
[75x467]the chosen major.
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For more information, visit binghamton.edu/engineering-design.

ENGINEERING DISCOVERY AND DESIGN COURSES
(taken by all freshmen engineering students)

FALL
Calculus I
Chemical Principles
Exploring Engineering I
Engineering Communications I
General elective
Body/Wellness

Calculus II
General Physics I
Exploring Engineering II
Engineering Communication II
General Education elective
Body/Wellness

SPECIAL
Professional Skills, Ethics and CS Trends
Programming Concepts and Applications
Calculus I
Written communications course (a.k.a. Coming to Voice)

SPRING
Computer Systems I: Machine Organization
Calculus II
Social Science/Humanities Elective
Science Course

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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!

UNDERGRADUATE RESEARCH OPPORTUNITIES

Students who participate in undergraduate research have the opportunity to delve into a focused area of interest, while gaining meaningful hands-on experience applying technical skills while putting their analytical and critical-thinking abilities to practice.

Research opportunities abound for students in the Watson School. There are independent projects with faculty or organized programs such as the:

• National Science Foundation Research Experiences for Undergraduates Program
• U.S. Department of Education McNair Scholars Program
• National Science Foundation Louis Stokes Alliances for Minority Participation Program
• Howard Hughes Medical Institute Undergraduate Interdisciplinary Research Program
• National Institute of Standards and Technology Summer Undergraduate Research Fellowship Program

Students who participate in undergraduate research projects enter the workforce with a jump on their fellow graduates. They have worked with leading researchers, co-authored published papers and given conference presentations. To learn more about undergraduate research opportunities, visit binghamton.edu/watson/research.