Iowa State University has more than 100 majors that provide virtually unlimited academic opportunities. In this brochure you’ll find information about your specific area of interest and a family of related majors that you may want to explore during your adventure here at Iowa State. Please use the contact information listed inside and let us help you discover your passions, unlock your potential, and enjoy the adventure.

A strong foundation forms a solid career
Looking for a university that invests in your success? Iowa State graduates rank high in career placement.

Each year, Iowa State hosts annual career fairs and career-development events. Last year, more than 450 employers conducted over 7,000 interviews with engineering and industrial technologies students. The College of Design devotes two gallery rooms on the first floor to career fairs. Liberal Arts and Sciences hosts a joint career fair with the College of Business.

Innovative faculty encourage creativity
Corporate and government partnerships with Iowa State faculty provide you with unique opportunities to participate in research impacting your future. Iowa State ranks second among universities in the nation for the number of top technology products honored by R&D magazine. This means that you participate in developing some of the most innovative technologies in the field.

As a student, you may intern at any one of Iowa State’s research facilities, such as the internationally recognized Virtual Reality Application Center, where faculty and students develop virtual reality technology.

Real-world partners build professional experience
Opportunities to establish professional contacts enhance your education and career placement. Last year, nearly 150 corporate and industry partners participated in internship programs. As an engineering or computer science student, you may have the opportunity to work with Iowa State’s partners in education—organizations such as NASA, Shell, John Deere, Ford, Rockwell Collins, General Mills, Cargill, and Sauer-Danfoss.

Resource centers bridge theory and practice
To facilitate faculty efforts in research and development, Iowa State has established a variety of professional engineering centers that train students. Among these are the Analog and Mixed Signal VLSI Design Center in Electrical and Computer Engineering, the Materials Assessment Research Group, and the Center for Transportation Research and Education.
Selecting the best academic department for you

You will find that math, sciences, computer science, and engineering courses included in your first year curriculum prepare you for many of the programs listed in this brochure. This allows you to explore a broad range of career options in the early stages of your studies. Your faculty advisor will work with you to design your curriculum and make certain you take advantage of the opportunities Iowa State offers you—specialized courses, cooperative learning programs, internships, research projects, student support groups, and learning communities. Regardless of which field you choose to study, you will have access to cutting-edge research and technologies that prepare you to be competitive in the workforce. For more information, please contact the person listed for each department or call the Iowa State University Office of Admissions at 800 262-3810.

Aerospace Engineering

John B. Jacobson
Department of Aerospace Engineering
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www.aere.iastate.edu

Assimilated in the design programs is a focus on the hands-on experiences. This is a hands-on curriculum with high quality laboratory experiences and team-based engineering design methods. You may specialize in either power and machinery engineering, animal production systems engineering, or land and water resources engineering. If you choose the power and machinery option, you will study functional analysis and design of agricultural field machinery, agricultural tractor power, instrumentation, agri-industrial application of electric power and electronics, and fluid power engineering.

You will study with faculty members whose contributions to the field have earned an international reputation for everything from directing projects for NASA to analyzing tornadoes. You will also have the opportunity to join Make To Innovate (M:2:I), a hands-on program teachings students how to design and operate aerospace systems.

Agricultural Engineering

Steven Mickelson
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www.abe.iastate.edu

As an agricultural engineering student you will learn how to design systems that directly impact peoples’ lives. You will explore the biological, physical, and engineering sciences and apply your knowledge to solving problems using agricultural and biological engineering design methods. You may specialize in either power and machinery engineering, animal production systems engineering, or land and water resources engineering. If you choose the power and machinery option, you will study functional analysis and design of agricultural field machinery, agricultural tractor power, instrumentation, agri-industrial application of electric power and electronics, and fluid power engineering.

The animal production systems engineering option allows you to focus on all aspects of animal production including structural design and analysis, environmental control options for housed animals, and air quality issues associated with animal production. In the land and water resources engineering option, you will study the design and evaluation of soil and water conservation systems, GIS and natural resource management, and principles of environmental engineering.

Agricultural Systems Technology

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www.abe.iastate.edu/undergraduate-students/agricultural-systems-technology

As an agricultural systems technology major you will apply a systems-approach to technology management, which prepares you to oversee and optimize machinery, biological processes, and rapidly developing and changing systems in agriculture.

This is a hands-on curriculum with high quality laboratory experiences and team-based environment that will prepare you for challenging and rewarding careers. Key laboratories include diesel engines, fluid power hydraulics, biomaterials, biofuels, plastics, metals, manufacturing, automation/robotics, electronic controls, and precision agriculture. Iowa State’s state-of-the-art facilities provide access to industry-standard hardware and software ensuring that you graduate with competitive, marketable skills.

A degree in agricultural systems technology will open doors to rewarding careers and employment in agribusiness, agricultural machinery industries, biotechnology companies, environmental organizations, production agriculture companies, manufacturing industries, and government agencies.

Architecture

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The Architecture program at Iowa State consistently has a reputation of being one of the best architecture programs in the Midwest. The five-year accredited bachelor of architecture degree consists of a one-year preprofessional program and a four-year professional segment. When you major in architecture you are encouraged to participate in interdisciplinary studio courses that will stimulate creative architectural design by promoting the understanding of design culture, space, materials, structures, and mechanical systems. You will have access to extensive, computer-based design labs and innovative faculty research in the use of computers in design.

The program integrates opportunities for service, providing hands-on design and renovation opportunities. In addition to the community projects, students have designed and built a number of permanent presentation and services spaces in the College of Design. You are encouraged to exhibit your work locally, regionally, and nationally. Our highly respected graduates find positions throughout the United States in private practice and related fields such as historic preservation and urban planning.
As a biological systems engineering (BSE) student you will learn to integrate life sciences with engineering to solve problems related to, or using, biological systems. These biological systems may include microbes, plants, animals, humans, and/or ecosystems. You will also learn about fundamental principles of engineering and life-sciences.

You will use your understanding of engineering to analyze organisms or ecosystems, and your knowledge of biological systems to inspire and inform their designs.

The BSE degree program is student-focused and derives strength from the broad, hands-on training provided to students in the program. You will learn to use engineering methods to address societal needs related to biorenewables production and processing, water quality, environmental impacts of the bioeconomy, food processing, and biosensors. In so doing you will be prepared for professional practice and post-graduate educational opportunities.

Four distinct options are available: biorenewable resources engineering, bioenvironmental engineering, food engineering, and pre-professions/pre-graduate. You will experience all the subjects in a hands-on teaming environment using modern engineering tools and equipment. Many opportunities also exist for studying and working abroad in countries such as Brazil, Germany, Poland, Taiwan, China, and Uganda.

As a chemical engineering major you will use science, experience, creativity, and ingenuity to deal with chemical and physical changes of matter and the conversion of energy.

The department provides a broad range of chemical engineering courses, as well as the opportunity to work with engineers at the Ames Laboratory of the U.S. Department of Energy, which conducts physical and chemical science research related to energy technologies.

Your coursework will prepare you for employment in areas including product development, market research, economic feasibility studies, chemical process design and supervision, operation, chemical plant construction, and pollution control and energy conservation.

Civil engineers monitor public safety, health, and productivity; they plan, design, and supervise construction, operation, and maintenance of public and private facilities. Iowa State’s civil engineering program is one of the 10 largest in the United States in number of graduates, and features distinguished faculty with awards in teaching, advising, research, and publishing. The capstone design courses are conducted in an office environment, and laboratory classes provide hands-on applications in groups of three to five students.

Your coursework will introduce you to the various areas of civil engineering, such as structural, environmental, geotechnical, materials, transportation, and surveying.

As a civil engineer you will investigate complex engineering situations, preparing you for many career paths including transportation engineer; highway designer and planner; city, county, or sanitary engineer; Army Corps engineer; construction supervisor; soil engineer; surveyor; or forest engineer.

Computer engineering deals with all aspects of computer systems, including design, construction, operation, and testing. Your coursework will fascinate, inspire, and prepare you for learning in a variety of professional capacities.

Your learning options include computer architecture, in which you will learn about the components in a system and their properties, such as speed and reliability; networking and security, which entails how to transfer information efficiently and securely by learning how to model, design, and analyze systems; software engineering studies, which includes designing new software or improving its scope and capabilities; and VLSI (very large-scale integrated) circuits, in which you will develop circuits that include high-speed or low-power parts.

Iowa State’s computer engineering program offers unique educational support, including labs for hands-on learning, collaborative problem-solving in the Active Learning Complex, learning communities, an optional internship program, professional engineering societies, and honor programs.

As a computer engineering graduate you will be prepared for a career in various industries ranging from health care, renewable energy, and retail, to security, gaming and telecommunications.

For undergraduates are available in the department.

Current starting salaries for graduates with a 4-year degree in computer science average $65K/year. Iowa State graduates in computer science have 99% job placement before graduation, and jobs are available in nearly every industry. Students typically participate in paid summer internships at companies that also hire our graduates for full-time jobs.
As a construction engineering student you will learn to identify the best methods and techniques of construction to determine construction costs and schedules, propose the best construction sequence, and supervise construction projects.

Your coursework will include studies in engineering, math, business, law, and economics. In addition you will choose a specialization from among the following: heavy/highway, building, mechanical, and electrical construction. Iowa State’s close ties to the construction industry allow students to engage in closely simulated experiences in designing construction processes, bidding projects, and planning and scheduling. Construction engineering at Iowa State is by far the largest one of sixteen fully accredited engineering degree-granting programs.

With a construction engineering degree from Iowa State, you will be able to choose from a variety of career paths, such as building skyscrapers, medical facilities, industrial projects, housing, transportation systems, sports facilities and educational facilities—places where people live, work, learn and play.

As an industrial design major you will utilize your artistic sensibility, technical competence, and business acumen to help create objects that people use everyday such as telephones, computers, and cars.

This program is the first of its kind in Iowa, and one of 10 in the Midwest.

Your coursework will prepare you to understand user needs, assess technical feasibility, and evaluate commercial viability.

With a degree in industrial design you will have the opportunity to further your education in graduate school or find employment in design consulting and manufacturing.

As an industrial engineering major you will apply a systems-approach to technology management, which prepares you to plan, develop, coordinate, and evaluate materials, machines, methods, safety issues in a manufacturing and industrial environment.

This is a hands-on curriculum with high quality laboratory experiences and a team-based environment that will prepare you for a challenging and rewarding career. Key laboratories include fluid power hydraulics, biomaterials, biofuels, plastics, metals, manufacturing, automation/robotics, electronic controls, facilities planning, and lean manufacturing. Iowa State’s state-of-the-art facilities provide access to industry-standard hardware and software ensuring that you graduate with competitive, marketable skills.

A degree in industrial technology will open doors to rewarding careers and employment in biotechnology companies, environmental organizations, food processing companies, manufacturing industries, government agencies, and insurance sector.
Landscape Architecture

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Iowa State’s undergraduate landscape architecture program is ranked among the top 15 in the United States by DesignIntelligence. The professional, five-year bachelor of landscape architecture consists of a one-year preprofessional program followed by a four-year professional segment; entry into this nationally accredited program is competitive.

The landscape architecture curriculum focuses on environmental stewardship, wise planning, and artful design of urban, suburban, rural, and wilderness landscapes. Your coursework will include studies in technologies, plant communities, ecology, and history. In addition you will gain design studio experience, which provides an in-depth understanding of the way natural, social, and cultural systems influence design.

As a landscape architecture student you have access to video imaging equipment and design graphics computers as you work on projects in image editing, three-dimensional modeling, and animation.

Management Information Systems

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The information age is changing everything. Glasses connect to the internet. Phones video chat. And who knows what’s next? Your job will be to discover how these new technologies can be used for business. And manage their implementation.

As a management information systems major, you’ll learn how to analyze, design, and develop a wide range of information systems on a variety of different platforms. What's the difference between this degree and one in computer science or engineering? Business. You will develop a strong foundation in business – accounting, finance, and marketing – along with the skills to apply it to technology. Helping you become the go-to techie in your company.

When you know business and how to implement it through technology, it’s no wonder companies come looking for you. Companies like General Dynamics, Caterpillar, Cerner, and Boston Scientific are constantly scouting for the latest talent on campus. That’s why 93 percent of our 2013 MIS graduates were hired within six months of graduation. So you’ll earn an awesome career where you’ll put your skills to work right away.

Materials Engineering

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When you study materials engineering, you will choose a specialty in ceramic, metallic, or polymeric materials.

Materials engineering faculty on campus have participated in projects that provided ceramic bone implants, developed non-degrading fibers for surgical use, produced biomaterials for applications in medicine, and established environmentally friendly applications for magnetic refrigeration. Though Iowa State’s engineering program is one of the nation’s largest, the student to faculty ratio in materials engineering is nine to one. This means that you have the opportunity to work closely with faculty on innovative projects.

Our faculty hold more than 170 patents for inventions relating to materials engineering. They have obtained more than $14 million in annual research funds. You will also have opportunities to study with distinguished international faculty by studying at one of many international universities through the study abroad program.

Mechanical Engineering

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Mechanical engineers design, develop, construct, and manufacture machines and devices that produce, transmit, or use power.

As a mechanical engineering student you will study the principles of motion, energy, and force, in the classroom and in some of Iowa State’s first-class laboratories. In addition to computer labs you will have access to the Visualization Lab, the machine shop, mechatronics/robotic lab, transport processes lab, and the laser lab.

Your education will prepare you for a wide range of careers, working in product research and development, design, product manufacturing, testing, quality assurance, marketing, systems operation, and management.

Many faculty members consult in these fields, earning patents for energy control, milling simulations, and computer graphics systems. Students, too, have distinguished themselves in the field, earning Papajohn Scholarships and Delphi Packard Electric Systems internships in Singapore and Australia.

Software Engineering

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As a software engineering major you will apply engineering processes, techniques, and principles to the development of computer software. Software engineers use teamwork, communication skills, and leadership to plan, design, develop, and improve complex software.

Iowa State software engineering majors learn a variety of programming languages, how to manage intricate projects, and how to assess risk management in this emerging area of engineering. This major is jointly administered by the College of Engineering and the College of Liberal Arts and Sciences.

With a degree in software engineering from Iowa State you will have a number of career paths available to you including employment for large corporations, small contractors, government agencies, and software development companies.
Honors and awards
The programs listed in this brochure are accredited with national accreditation boards, which means you are ready to begin professional internships.

Faculty research directly benefits our students. Iowa State engineering programs allocated nearly $50 million dollars to research. This investment in faculty and students resulted in products and projects which define today’s industries. Faculty commitment to teaching, research, and technology development has earned Iowa State hundreds of patents, numerous international awards, and the rank of 2nd among universities recognized by R&D Magazine for top technologies.

Faculty have received national awards for teaching and for their innovations in the fields of catalysis and reaction engineering, materials and crystalization, process design and control, transportation phenomena, biomedical and biochemical engineering, thermodynamics, manufacturing, and architectural design.

Internships and cooperative learning opportunities
Iowa State maintains research partnerships with companies such as Rockwell Collins, Texas Instruments, Black & Veatch, Ford, Porsche, Shell, NASA, U.S. Department of Transportation, Hughes, Boeing, and John Deere.

These partnerships allow you to participate in research in a hands-on environment. After working with faculty on individual research projects, many students continue in internship, part-time, or full-time positions with these corporations. Several partnering organizations, such as Boeing and NASA, provide on- and off-site cooperative learning courses, taught by professionals in the industry.

Iowa State’s science and engineering centers also offer many summer research and internship opportunities. Educational opportunities like these make Iowa State your best choice for training and development.

Unique opportunities
As an Iowa State undergraduate, you will have the option of participating in a wide variety of social, academic, and professional activities outside of the classroom. Often it’s these activities which create lasting professional and personal support systems. Some of these activities may include:

- Regional and national conferences—such as the National Conference on Synthetic Environments, which featured over 100 international experts
- Learning Communities—allow you to share a common course schedule and/or living environment with like-minded freshmen
- Industrial technology—state-of-the-art computer labs and materials provide an in-depth understanding of highly technical engineering aspects and manufacturing principles
- Program for Women in Science and Engineering—providing opportunities for college students to serve as role models for young girls
- National and regional engineering and design tournaments—where you have the opportunity to display and demonstrate your work
- Honors programs—about 10 percent of engineering students take advantage of short courses specifically designed for honors students
- Field trips—to NASA, Boeing, and Iowa State research partners or those companies sponsoring cooperative learning opportunities
- Service opportunities—which utilize your skills and talents as you work with nonprofit organizations such as Habitat for Humanity or state park and recreation agencies

Student organizations
Students are encouraged to join student clubs and professional organizations to support their academic pursuits.

Organizations include:
- AgArts
- American Institute of Aeronautics and Astronautics
- American Institute of Architecture Students
- American Institute of Chemical Engineers
- American Society of Agricultural Engineers
- American Society of Civil Engineers
- American Society of Mechanical Engineers
- American Society of Safety Engineers
- ASM International
- Associated General Contractors
- Student Chapter
- Biological Systems Engineering Club
- Chemical, Industrial, and Engineering Science Clubs
- Chi Epsilon
- Civil, Construction, and Environmental Engineering Software Exploration Club
- Computer Science Club
- Cyclone Power Pullers
- Datum (Student Journal of Architecture)
- Design Build Institute of America
- Student Chapter
- Engineering Student Council
- Engineers for a Sustainable World
- Entrepreneur Club
- Institute of Electrical and Electronics Engineers
- Eta Kappa Nu
- Gamma Sigma Delta
- Institute of Industrial Engineers
- Iowa State Space Society
- Management Information Systems Club
- Materials Advantage
- Mechanical Contractors Association of America
- National Electrical Contractors Association
- National Organization for the Professional Advancement of Black Chemists and Chemical Engineers
- National Society of Black Engineers
- Sigma Gamma Tau
- Society of Hispanic Professional Engineers
- Society of Manufacturing Engineers
- Society of Women Engineers
- Student Society of Landscape Architecture
- Team PrISum (Solar Car Team)

Questions about admission
In addition to writing us at the address at left, we encourage you to visit our website, which features a course catalog, online application, and campus information.

Also, you can follow us on:

Preparing to do your best while in school
The best preparation continues to be a strong college preparatory program of study, which includes courses in English, mathematics, laboratory science, social studies, and foreign languages. If you intend to transfer credits from another institution, you may contact our Office of Admissions for assistance in selecting the best courses for your program of study.