

IOWA STATE UNIVERSITY

# Computer and Mathematical Sciences

Accounting

Bioinformatics and Computational

Biology

Biological Systems Engineering

Computer Science

Economics

Financial Counseling

and Planning

Finance

Management Information Systems

Mathematics

Software Engineering

Statistics

**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 number of choices

Whether you're interested in computer programming, discrete or continuous mathematics, or finance, Iowa State offers a diverse curriculum that prepares you to adapt your expertise to a broad career base.

Iowa State has established ties with nationally recognized companies that offer professional internships and mentoring programs. These programs encourage partnerships that impact your future employment possibilities.

The basic math or computer science curriculum provides a foundation for any of the programs listed in this brochure.

With a background in math or computer science, you learn the language of psychology, biology, computer science, business, and engineering.

This opens the door to a variety of professional opportunities—research, banking, accounting, management, statistics, teaching, programming, merchandising, investment management, public administration, and insurance.

## At Iowa State, you're not just another number

You'll learn from faculty whose knowledge and expertise have earned them international recognition, including awards for excellence in undergraduate teaching.

And Iowa State University is not short on experts! Faculty and staff actively solicit and maintain professional ties that promote research and teaching. They often serve as consultants for international companies such as Rockwell and IBM.

Our faculty are not only using cutting-edge technology, they are actively involved in researching and developing it. Faculty encourage you to go beyond your course work and take advantage of hands-on research opportunities. You don't just learn about spectacular advances in the field, you participate in their development.

## Programs offer a number of unique advantages

The computer and mathematical sciences programs support you by providing services such as résumé banks, career fairs, and one-on-one mentoring.

Our students are some of the best from among 500 universities, placing in the top 13 percent on the national Putnam Examination.

Corporate partners offer significant benefits by generously donating computer equipment, hosting special events, and offering on-site technical classes.

Specialized support groups, such as learning communities, help you pursue your educational and professional goals with students who have similar interests.

# Computer and Mathematical Sciences

## Select an academic program that's best for you

Because so many of these programs require similar introductory coursework, you have the freedom to explore and evaluate a variety of Iowa State's programs without limiting your academic options. Faculty and staff will introduce you to a broad spectrum of mathematics in order to prepare you for a career in almost any industry you can imagine. Some computer and mathematical sciences students pursue careers in business, research, or

academics. Your academic adviser will help you design a math-related curriculum that will best support your career goals.

Many students choose math-related majors or minors to broaden their career choices. Because of its broad applications, a math-related major or minor will complement any academic or professional goals you establish. For more information, please contact the person listed for each program, or phone the Iowa State University Office of Admissions at 800 262-3810.

## Accounting

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Do you see answers when others just see numbers? Do you want to advise a company on what they have to do to succeed? Would you like to find a financial strategy for a non-profit so they can turn their vision into reality? Well, accounting could be the major for you.

As an accounting major, your professors will help hone your skills and turn them into tools. You'll discover the best ways to gather, analyze, and report financial information to make informed decisions. This

preparation will help you when you take the Certified Public Accountant exam. So you're not just ready to work, you're ready to excel.

Your skills will be in high demand. Companies like Ernst & Young, KPMG, Wells Fargo, IBM and many, many more regularly come on campus to recruit students like you. It's because major companies know our grads have the skills and expertise to help them right away.

## Bioinformatics and Computational Biology

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As a bioinformatics and computational biology major you will explore the interfaces of biological, informational, and computational sciences.

Your coursework will focus on topics such as gene identification, expression, and evolution; RNA, protein, and genome structure; and molecular and cellular systems and networks.

A degree in bioinformatics and computational biology will prepare you for continued education or a broad range of research possibilities.

## Biological Systems Engineering

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[www.abe.iastate.edu/biological-systems-engineering](http://www.abe.iastate.edu/biological-systems-engineering)

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-science.

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.

## Computer Science

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As a student in computer science you will have opportunities to pursue one of the brightest futures possible. The computer science major offers students with a good background in math and science the opportunity to study a broad range of computing areas including programming, databases, networking, operating systems, software development, programming languages, algorithms, data mining, robotics, artificial intelligence, machine learning, and

computing theory. Many research opportunities 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.

## Economics

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Economics is a social science that studies how people and businesses make decisions, how those decisions are coordinated in the market, and how government policy can influence market outcomes with respect to the efficiency of resource utilization and the welfare of society.

A major in economics will equip you with the analytical skills to understand and contribute to policy debates on topics such as unemployment and wages, government revenues and expenditures, income inequality and poverty, pollution, natural resource management, economic growth, and many

other crucial issues that fill the news media. Beyond their understanding of the way the economy works, economics majors are prized in the job market for their quantitative skills, their precision and clarity of thought and expression, and their careful and disciplined use of data in seeking answers to questions.

A bachelor's degree in economics provides employment opportunities in business and government. Some economics majors go on to seek Masters or doctoral degrees in economics, while others pursue graduate study in business or law.

## Finance

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Want to be responsible for the financial health of an organization? Help a company acquire capital to make things that wouldn't otherwise be built? Want to manage income and expenses to keep an organization profitable? Then finance could be your path.

Our professors have written some of the most cited and read articles in the Journal of Finance and the Journal of Financial Economics. They'll give you the skills you need to correctly advise an individual or organization on how they can gain capital. They'll also challenge you in a real world setting during your "Wall

Street" course. In this course you'll create an actual portfolio of real-life investments and profit from it. This is just one of the ways you'll be able to implement what you're learning in the classroom into real life.

After you graduate you'll be putting your degree to work. That's because job placement rates for Iowa State graduates with a degree in finance are nearly 92 percent. So your skills and expertise will be in high demand. Whether your future is in banking, insurance, or on Wall Street, get ready to hear one thing over and over – "nice job."

## Financial Counseling and Planning

Darlene Fratzke  
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For students who love working closely with individuals and families, the Financial Counseling and Planning (FCP) major provides a deep understanding of the ways that money can be used to improve lives. The major provides a thorough background of family finance including life span development, economics, housing, personal income tax, financial counseling, family communications, services for families, retirement planning, investments, estate planning, and risk management. FCP majors have the educational background to seek the Certified Financial Planner®, and Accredited Financial Counselor designations.

As a student, you will apply advanced critical thinking skills to real-world situations as you learn how to help a diverse populations reach their financial goals through hands on practical experiences. Career opportunities include; insurance agent, loan officer, mortgage originator, government housing authority administrator, housing advocate, housing planner, real-estate agent, policy analyst and lobbyist, property manager, and consumer credit or financial aid counselor. Alternatively, the FCP major provides excellent preparation for graduate programs in family policy and family financial planning.

## 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.

## Mathematics

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As a mathematics major you may be studying cryptography and coding theory, cellular automata for modeling in the life sciences, graphs and networks with applications to computing, or the mathematics of finance, to name only a few of the possible applications.

Mathematics majors normally spend the first two years obtaining a grounding in calculus and differential equations. At the junior and senior levels the department offers more than 25 undergraduate courses, including an introduction to combinatorics,

abstract algebra, partial differential equations, complex variables, and mathematics of fractals. In addition there are other courses at the graduate level which are open to qualified undergraduates.

Mathematicians play a major role in biological research, weather prediction, economics, computer security, finance, design of search engines, and much more. There is also projected to be a great demand for secondary teachers of mathematics in the United States over the next decade.

## 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.

## Statistics

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Statistics is the science of collection, organization, analysis, and interpretation of data. The principles of statistics apply to a wide variety of professional and scientific fields.

There are many opportunities for students to apply methodology learned in statistics courses to biotechnology research. In courses about design of experiments and survey sampling, students

learn how to efficiently collect data. Courses in applied probability modeling include applications in bioinformatics and genomics. Courses in time series analysis and spatial data analysis examine patterns in data related to time and space. Students may wish to combine a major in a biotechnology field with a second major, or minor, in statistics.

# Computer and Mathematical Sciences

## Honors and Awards

Iowa State's programs and faculty have distinguished themselves internationally.

Thirteen statistics faculty members serve as fellows of the American Statistical Association, and several faculty members have earned national awards for their contributions to undergraduate education.

Derrick Rollins, professor of statistics and chemical engineering, is a National Science Foundation Presidential Faculty Fellow and is the recipient of the Mentor Award from the American Association for the Advancement of Science.

Undergraduate statistics majors have received awards from Eli Lilly and Procter and Gamble.

Carl Chang, professor and chair of computer science, is a fellow of the IEEE Computer Society, a global organization with more than 100,000 members. He served as the society's president in 2004.

Ten percent of economics majors are honors students. Distinguished faculty are credited with significantly improving the Consumer Price Index and founding Iowa State's Center for Agricultural and Rural Development.

## Internships

Internships encourage you to practice and apply what you learn. They also afford unique opportunities for you to establish a network of professional contacts as you're making decisions about your future.

Career planning and placement services throughout campus maintain lists of internships and other experiential learning opportunities.

The MIS Club hosts internship/career day workshops to prepare students for

on-campus interviews and visits from industry professionals. The club also coordinates teaching internships.

In the College of Business nearly 500 students take advantage of internship opportunities, providing them experiences in accounting, finance, logistics, marketing, operations, and MIS.

## Corporate and government partnerships

Ongoing research projects provide you access to state-of-the-art technologies as they're being developed.

Statistics is now engaged in a project funded by the USDA Natural Resources Conservation Service. The program also staffs a statewide Agriculture and Home Economics Experiment Station, which coordinates collaborative research and statistical consulting services for faculty and students.

Many academic clubs gain corporate sponsors who support club and classroom activities by donating equipment, hosting conferences and receptions, and conducting workshops.

## Unique opportunities

- Math competitions—state, national, and international competitions, including COMAP Mathematical Contest in modeling
- Department sponsored scholarships—financial awards for outstanding students
- Research experience—such as the Summer Scientific Computing Program sponsored by the National Science Foundation
- Specialized computer labs—including math and computer labs outfitted with state-of-the-art hardware and software specific to areas of study and interest

- MIS Club Career Day—a conference where students can access 50 of the region's top MIS firms
- Computer Science Freshman Mentoring Program—freshmen are assigned upperclass mentors to help them get the most out of their academic experience
- MIS Club speaker series—featuring corporate speakers from nationally recognized industry experts such as Ernst & Young, Andersen Consulting, General Mills, and Procter & Gamble
- Study abroad programs—exposing students to global issues impacting their field of study

## Student organizations

Students are encouraged to join clubs and professional organizations to support their academic pursuits. Organizations include:

- Accounting Club
- Beta Alpha Psi
- Business Council
- Computer Science Club
- Digital Women
- Entrepreneur Club
- Economics Club
- Finance Club
- Financial Strategy Research Club
- Management Information Systems Club
- Pi Mu Epsilon
- Software Engineering Club
- Statistics Club

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## 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.

Material in this brochure was accurate at the time of printing. For the most up-to-date information, visit our Web site at [www.iastate.edu](http://www.iastate.edu).

Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. veteran. Inquiries can be directed to the Office of Equal Opportunity and Compliance, 3280 Beardshear Hall, 515 294-7612.