

College of Agriculture and Life Sciences

“I want to do something related to environmental conservation. I like working with plants and/or animals. I’m interested in agriculture and life sciences.”

IOWA STATE UNIVERSITY

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The College of Agriculture and Life Sciences is one of the world’s leading agricultural colleges preparing students to make a difference as leaders who address life’s challenges in food, the environment, and plant–animal–health systems. Students will gain valuable hands–on experiences inside and outside the classroom through research and internships. Graduates from the College of Agriculture and Life Sciences have careers as research scientists, horticulturists, agronomists, farm operations director, and more!



Qualifying Degree Programs*:
Tap the major you are interested in to learn more!

Click on a major from the list below to learn more!

Agricultural Biochemistry
Agricultural Business
Agricultural and Life Sciences Education
Agricultural Systems Technology
Agronomy
Animal Ecology
Animal Science
Biology
Dairy Science
Diet & Exercise
Dietetics
Environmental Science
Food Science
Forestry
Genetics
Global Resource Systems
Horticulture
Industrial Technology
Microbiology
Nutritional Science

*Degree may be listed in more than one college *Qualifying majors may change based on the programs of study. Science Bound makes the final decision regarding which majors qualify for the scholarship. ** Student must work with SB staff to ensure acceptance. ***Students entering as Open Option must discuss courses with SB staff.*

AGRICULTURAL AND LIFE SCIENCES EDUCATION



TEACHER CERTIFICATION

OPTION:

- MANY OPPORTUNITIES AVAILABLE
- GAIN A SOLID BACKGROUND IN:
 - FOOD
 - AGRICULTURE
 - NATURAL RESOURCES
- PREPARES FOR OPPORTUNITIES IN:
 - AGRICULTURAL BUSINESSES
 - COMMODITY ORGANIZATIONS
 - GOVERNMENTAL AGENCIES

AGRICULTURAL COMMUNICATIONS OPTION:

- SELECT FROM A VARIETY OF:
 - AGRICULTURAL SCIENCES
 - ECONOMICS
 - COMMUNICATION
 - JOURNALISM
 - MANAGEMENT
- FIND CAREERS RELATED TO:
 - MARKETING
 - ADVERTISING
 - JOURNALISM
 - EXTENSION



AGRICULTURAL SYSTEMS TECHNOLOGY



WHAT IS IT?

DISCOVER THE INDIVIDUAL PIECES OF SUSTAINABILITY, CONSERVATION, AND PROFITABILITY.



CAREERS?

THERE'S A VARIETY OF AGRICULTURAL AND ENVIRONMENTAL BUSINESSES THAT FOCUS ON MANAGING, USING, AND TROUBLESHOOTING TECHNOLOGY.



LEARNING?

LEARN HANDS-ON HOW TO MANAGE MACHINES AND EQUIPMENT, BIOLOGICAL PROCESSES, COMPUTERS AND OTHER TECHNOLOGIES TO CREATE NEW AND IMPROVED AGRICULTURAL SYSTEMS.

AGRICULTURAL & BIOSYSTEMS MANAGEMENT:

LEARN THE TECH OF:

- MACHINE SYSTEMS
- SOIL AND WATER CONSERVATION
- PRECISION AGRICULTURE
- BIORENEWABLES
- ANIMAL PRODUCTION SYSTEMS

MACHINE SYSTEMS:

- SOLVE PROBLEMS FOR OFF-ROAD VEHICLES AND AGRICULTURAL EQUIPMENT
- LEARN THE MACHINERY SYSTEMS, SAFETY, & MANUFACTURING.

AGRICULTURE BIOCHEMISTRY



QUICK FACTS

- UNDERSTAND LIFE PROCESSES IN TERMS OF CHEMICAL AND PHYSICAL PRINCIPLES
- ANALYZE DATA & RESEARCH
- PREPARE SCIENTIFIC REPORTS



WHAT DO THEY DO?

- FIND WAYS TO GENETICALLY ENGINEER CROPS SO THEY ARE RESISTANT TO DROUGHT, DISEASE, INSECTS, AND OTHER AFFLICTIONS



CAREERS

- TEACHING
- SCIENTIST
- MICROBIOLOGIST
- CHEMIST
- VETERINARY PATHOLOGIST



AGRICULTURE



BUSINESS

- **Overview**

- Receive training in business, economics, and agriculture

- **Fun Fact**

- ISU is in the top 4% of programs in agriculture & forestry worldwide

- **Careers**

- agricultural finance
- business research
- farm management
- agricultural sales



AGRONOMY



What is Agronomy?

- Agronomy focuses on new and ways of:
 - agriculture
 - conservation
 - Improved soil health
 - bioenergy
 - water quality
 - genetic traits
- Produce food, fuel and fiber in a efficient and economical way for the benefit of people and the environment.

GRADS

100% OF ISU
STUDENTS GET A
JOB WITHIN 6
MONTHS OF
GRADUATION



FUN FACT:

SOPHOMORES TAKE
A FIELD-INTENSIVE
CLASS WHERE THEY
SPEND TIME IN THE
FIELD APPLYING THE
CORE AGRONOMIC
CONCEPTS





ANIMAL ECOLOGY

CAREERS

- AQUACULTURISTS
- AQUATIC ECOLOGISTS
- WILDLIFE BIOLOGISTS
- FISHERIES BIOLOGISTS
- RESOURCE MANAGERS
- ECOLOGISTS

CHOOSE FROM FOUR OPTIONS:

- FISHERIES & AQUATIC SCIENCES
- INTERPRETATION OF NATURAL RESOURCES
- PRE-VETERINARY & WILDLIFE CARE
- WILDLIFE

LEARNING:

- WORK IN THE MULTIDISCIPLINARY AREA OF ECOLOGY AND NATURAL RESOURCE MANAGEMENT

ANIMAL SCIENCE

LEARN ABOUT:

SUSTAINABLE ANIMAL PRODUCTION PRACTICES THAT ENSURE ANIMAL HEALTH AND WELL-BEING AND STEWARDSHIP OF NATURAL RESOURCES



FOCUS AREAS INCLUDE:

- BEEF CATTLE
- DAIRY CATTLE
- HORSES
- POULTRY
- SWINE
- SHEEP
- COMPANION
- LABORATORY
- ZOO



AWARD

Recognized globally as being one of the best programs



RESEARCH

State-of-the-art research facilities in swine & ruminant nutrition

BIOLOGY

“
STUDY LIVING ORGANISMS’
FUNCTIONS AND
CHARACTERISTICS
INCLUDING THE ORIGIN AND
HISTORY OF ANIMAL AND
PLANT LIFE AND THEIR
CHARACTERISTICS, FUNCTIONS,
PROCESSES, AND HABITS.
”



LEARNING OUTCOMES:

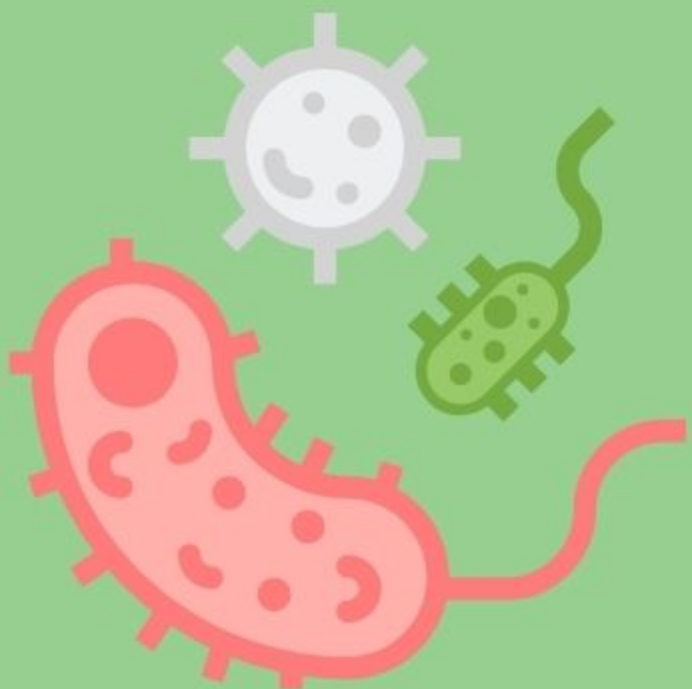
APPLY THE PROCESS OF
SCIENCE

USE QUANTITATIVE
REASONING

USE MODELING AND
SIMULATION

UTILIZE, COMMUNICATE ,
AND COLLABORATE WITH
OTHER DISCIPLINES

UNDERSTAND THE
RELATIONSHIP BETWEEN
SCIENCE AND SOCIETY



DISCIPLINES:

HUMAN MEDICINE &
PRE-MED

VETERINARY MEDICINE &
PRE-VET

BIODIVERSITY &
EVOLUTION

CELLULAR & MOLECULAR

ECOLOGY &
CONSERVATION

TEACHING & EDUCATION

Dairy



Science

CAREERS

OWN/MANAGE FARMS

AG BUSINESS

BIOTECHNOLOGY

MANUFACTURING

EDUCATION

FINANCE

MARKETING & SALES

RESEARCH

VET MEDICINE

LEARNING

PROVIDES
TRAINING FOR A
VARIETY OF
CAREERS IN
AGRICULTURE,
PARTICULARLY
THOSE INVOLVED
WITH DAIRY
CATTLE



Diet &

Exercise



Program:

You will apply to graduate admission at the beginning of junior year

Only accredited Didactic Program in Dietetics within Iowa

Learning:

Earn both a bachelor's and master's degree in 5-6 years.

Advanced study in the theory and application of nutrition and exercise science

Careers:

Wellness educator/instructor

Dietitian & health fitness instructor

Cardiac rehabilitation coordinator/dietitian

Corporate/school wellness educator

Preventive medicine coordinator

Sport enhancement specialist



DIETETICS

Dietitians:

are nutrition experts who strive for optimal health & nutrition of individuals



Study:

basic sciences, nutrition, & food science
apply medical dietetics, nutrition counseling, and education

Career

Groups:

Clinical Nutrition, Education, Community, Food & Nutrition Management, Consultation, and Business



ENVIRONMENTAL — SCIENCE —

NEED

THE MAGNITUDE AND COMPLEXITY OF ENVIRONMENTAL PROBLEMS ARE CREATING A GROWING NEED FOR SCIENTISTS WITH TRAINING IN ENVIRONMENTAL SCIENCE.



STUDY

BIOLOGICAL & PHYSICAL NATURAL SCIENCES AND SPECIALIZED TRAINING FOR INTEGRATED ANALYSIS OF ENVIRONMENTAL SYSTEMS.

CAREER

40% PUBLIC SECTOR
40% PRIVATE SECTOR
10-20% GO TO GRAD SCHOOL
COUNTY, STATE, & FEDERAL AGENCY
PRIVATE SECTOR JOBS OFTEN CONSULT COMPANIES, BUT CAN INCLUDE PUBLIC INTEREST GROUPS



FOOD SCIENCE

ABOUT:

THE PROCESS OF FOOD FROM THE TIME IT LEAVES THE FARM UNTIL CONSUMERS BUY THE FOOD PRODUCTS



STUDY:

APPLY CHEMISTRY, BIOLOGY, AND PHYSICS TO IMPROVE FOOD QUALITY, SAFETY, AND NUTRITION & DEVELOP NEW FOOD PRODUCTS.

CAREERS:

FOOD QUALITY
FOOD ENGINEERING
PRODUCT DEVELOPMENT
FOOD CHEMISTRY
SENSORY SCIENCE
MARKETING & SALES



FORESTRY

GOAL:
**EDUCATE STUDENTS
TO SCIENTIFICALLY
MANAGE THE
NATION'S PRIVATE
& PUBLIC FOREST
LANDS AND
RELATED
ECOSYSTEMS**



OUTCOME:
**ASSESS, UTILIZE,
PROTECT,
PRESERVE,
RESTORE, AND
RE-ESTABLISH
FORESTS**



GENETICS

AREAS OF STUDY:

- HEALTHCARE
- GENETIC COUNSELING
- BIOMEDICAL RESEARCH
- PLANT SCIENCES RESEARCH

FOCUS:

- LEARN TO IDENTIFY, ALTER, OR MANAGE THE FUNDAMENTAL MOLECULAR AND CELLULAR PROPERTIES OF LIFE

CAREERS:

- BIOMEDICAL SCIENTIST.
- CLINICAL RESEARCH ASSOCIATE
- CLINICAL SCIENTIST
- GENETIC COUNSELLOR.
- PLANT BREEDER/GENETICIST
- RESEARCH SCIENTIST





Global Resource Systems

TAKE COURSES
THAT *CHANGE THE*
COURSE OF *WORLD ISSUES*

GLOBAL RESOURCE SYSTEMS
STUDIES THE WAY THE WORLD
USES ITS LIMITED RESOURCES
TO CREATE SUSTAINABLE
SYSTEMS

CAREERS IN GLOBAL
RESOURCE ISSUES:

- PUBLIC HEALTH
- GLOBAL BUSINESS/FOUNDATIONS
- GOVERNMENT AGENCIES
- NON-GOVERNMENTAL ORGANIZATIONS
- EDUCATIONAL INSTITUTIONS





Horticulture

Feed the world or make it more beautiful

Careers

producer, landscape professional, field manager, lawn care, horticulturist, environmental specialist & more



Become a grower, gardener, designer, and technical advisor in horticulture

Horticulture. A career you'll grow to love

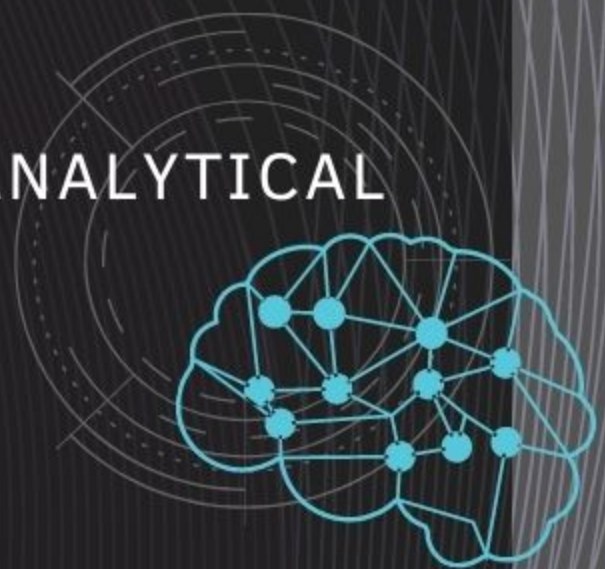


INDUSTRIAL TECHNOLOGY

CHOOSE BETWEEN THREE OPTIONS:

BIOLOGICAL & BIOMANUFACTURING SYSTEMS TECH:

- IMPLEMENT, MANAGE, & DOCUMENT ANALYTICAL PROTOCOLS
- TECHNICAL PROJECT MANAGEMENT
- IMPLEMENT, MANAGE, & MAINTAIN INSTRUMENTATION AND EQUIPMENT
- MANAGE BIOPROCESSING AND BIOTECH SYSTEMS



INDUSTRIAL TECHNOLOGY MANUFACTURING:

- QUALITY MANAGEMENT
- PRODUCTION SUPERVISION
- PRODUCT PROCESS DESIGN
- FACILITY PLANNING AND MANAGEMENT



ITEC OCCUPATIONAL SAFETY:

- DEVELOP, MANAGE, AND EVALUATE SAFETY PROGRAMS AND SYSTEMS
- HAZARD IDENTIFICATION & MITIGATION
- LOSS PREVENTION



Microbiology

+ Students prepare for :

- Dentistry
- Medical Laboratory Science
- Optometry
- Pharmacy
- Physician Assistant Programs
- Physician or Veterinary education



+ Study life :

- Research and evaluate topics in microbiology
- Utilize quantitative and qualitative microbiological lab techniques and equipment
- Explain how evolution unifies and explains the diversity of microbes
- Describe how organisms survive in an ecological niche
- Interpret data





Nutritional Science

Students learn:

- ✓ How diet can play a crucial role in the cause, treatment, and prevention of many diseases.
-

Pre-health and research:

- ✓ Prepares you for research labs, grad study or health professional programs
-

Nutrition & wellness:

- ✓ Prepare for program planning and evaluation for public interest in nutrition, wellness, and preventative health
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- ✓ Department offers: a nutrition minor

