College of Liberal Arts and Sciences

"I am passionate about making a difference. I am curious about clean energy, human health, or analyzing data for the public good. I want to be surrounded by a spirit of doing and a supportive community."

IOWA STATE UNIVERSITY

Director of Multicultural Student Success:
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The College of Liberal Arts and Sciences is a foundation for discovery, preparing students to be innovative leaders and creative problem-solvers in a diverse global society. Do you want to help the world adapt to climate change? Or conduct medically relevant research? In the College of Liberal Arts and Sciences, learning happens inside and outside of the classroom. You can intern at NASA, conduct chemistry research, pursue your passions in technology or nature - the opportunities are endless!

SCIENCE BOUND

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

Biochemistry
Bioinformatics and Computational Biology
Biological and Pre-Medical Illustration
Biology
Biophysics
Chemistry
Computer Science
Data Science
Earth Science
Environmental Science
Genetics
Geology
Mathematics
Meteorology
Physics
Statistics

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*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.*

BIO CHEMISTRY

Overview

Explore the chemistry of living organisms and the molecular basis for the changes occurring in living cells

Learning

Seek to understand life processes in terms of chemical and physical principles

Program Outcome

Understand how:

- Energy is required and transformed
- Macromolecular structure
- Information storage and flow

Careers

- Academic researcher
- Analytical chemist
- Biomedical scientist
- Biotechnologist

More Careers

- Clinical research associate.
- Clinical scientist, biochemistry.
- Forensic scientist.
- Medicinal chemist.

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:

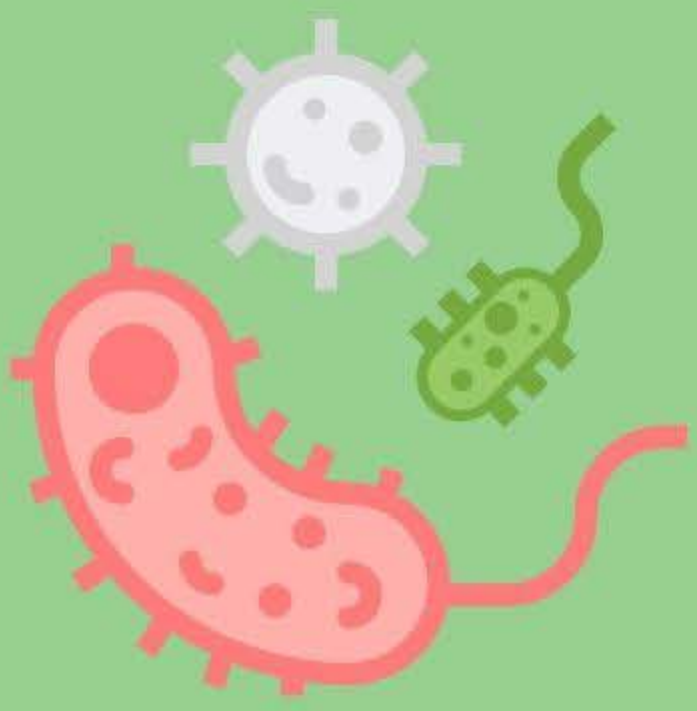
APPLY THE PROCESS OF SCIENCE

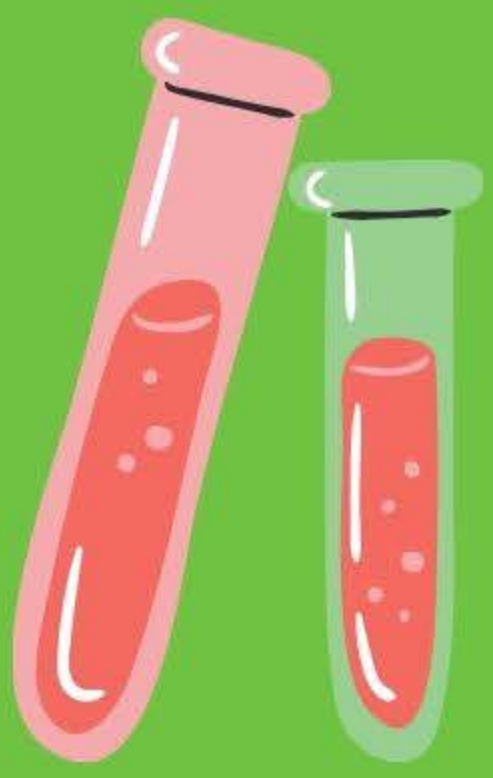
USE QUANTITATIVE REASONING

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

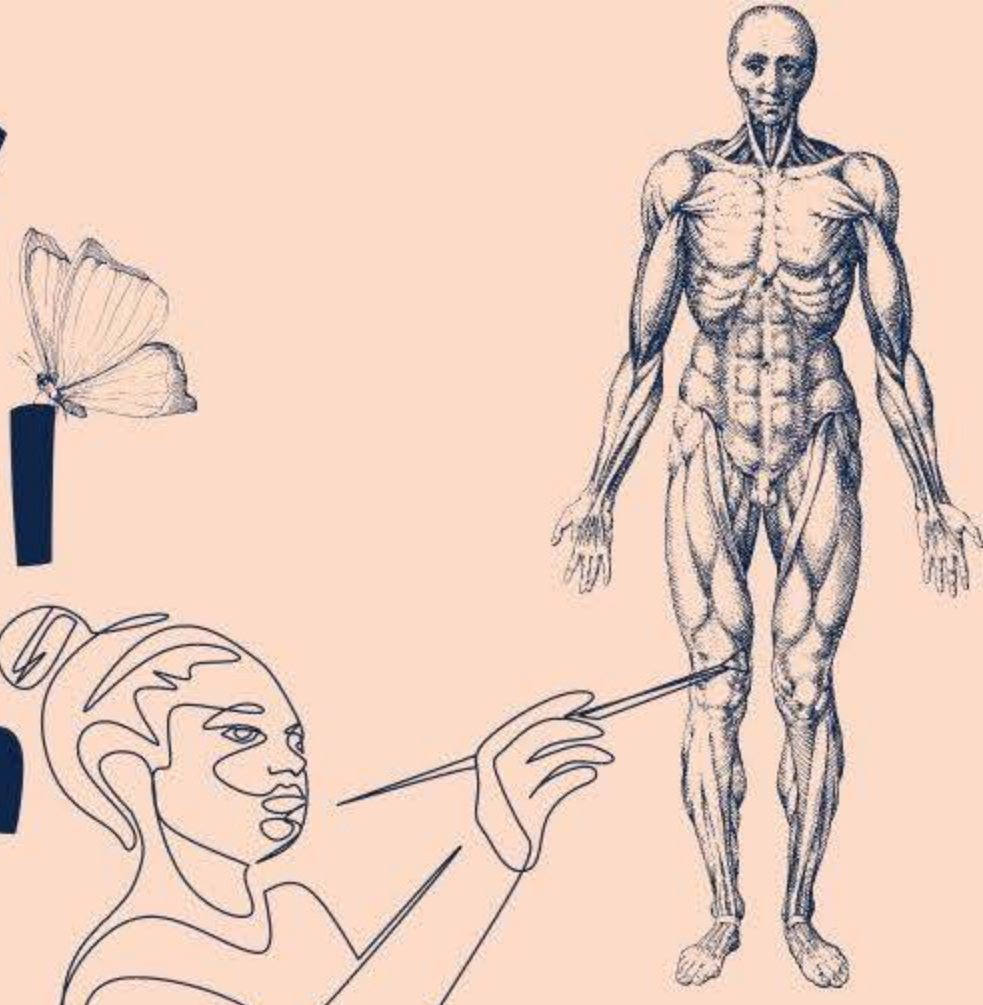
BIODIVERSITY & EVOLUTION

CELLULAR & MOLECULAR

ECOLOGY & CONSERVATION

TEACHING & EDUCATION

Biological/ Pre-Medical Illustration



Preps for careers or grad school in biological visualization & illustration

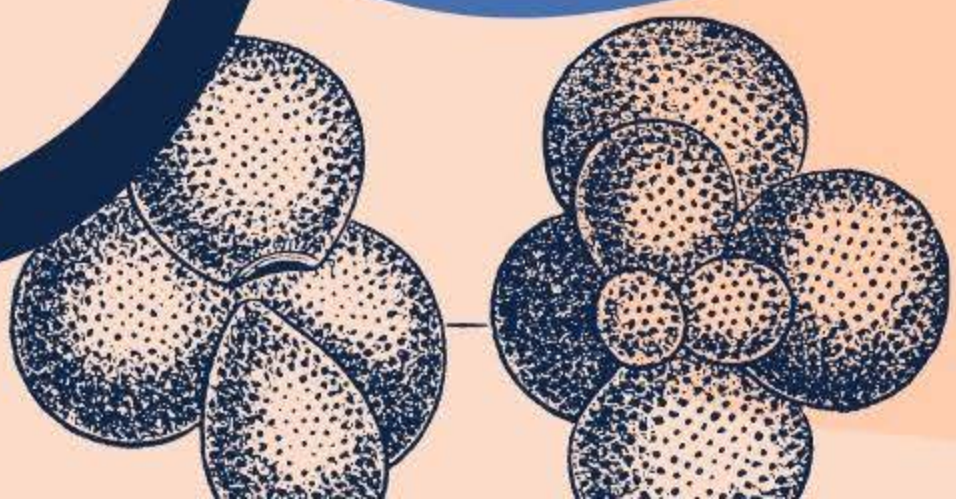
Careers:

- biocommunications
- environmental design
- freelance illustration
- UX/UI + museum display design
- creative technologies
- instructional design
- & more

Enroll as pre-BPMI & apply to the BPMI program, typically in your 2nd year of study

Applications includes portfolio + essay

The BPMI program enrolls approximately 45 students annually.



Biophysics

Gain intensive and broad training in natural sciences that pertain to understanding how living systems operate

Do research projects in one of the nationally recognized biophysics research labs in the department

The biophysical techniques that are emphasized in the curriculum are widely applied in the biomedical industry

Students usually continue in graduate programs or in professional programs such as medicine or dentistry

Excellent preparation for careers in academic research, biotechnology and pharmaceuticals, and more

CHEMISTRY

- The link that connects problems in the fundamental nature of matter to the most complex problems in the processes of life

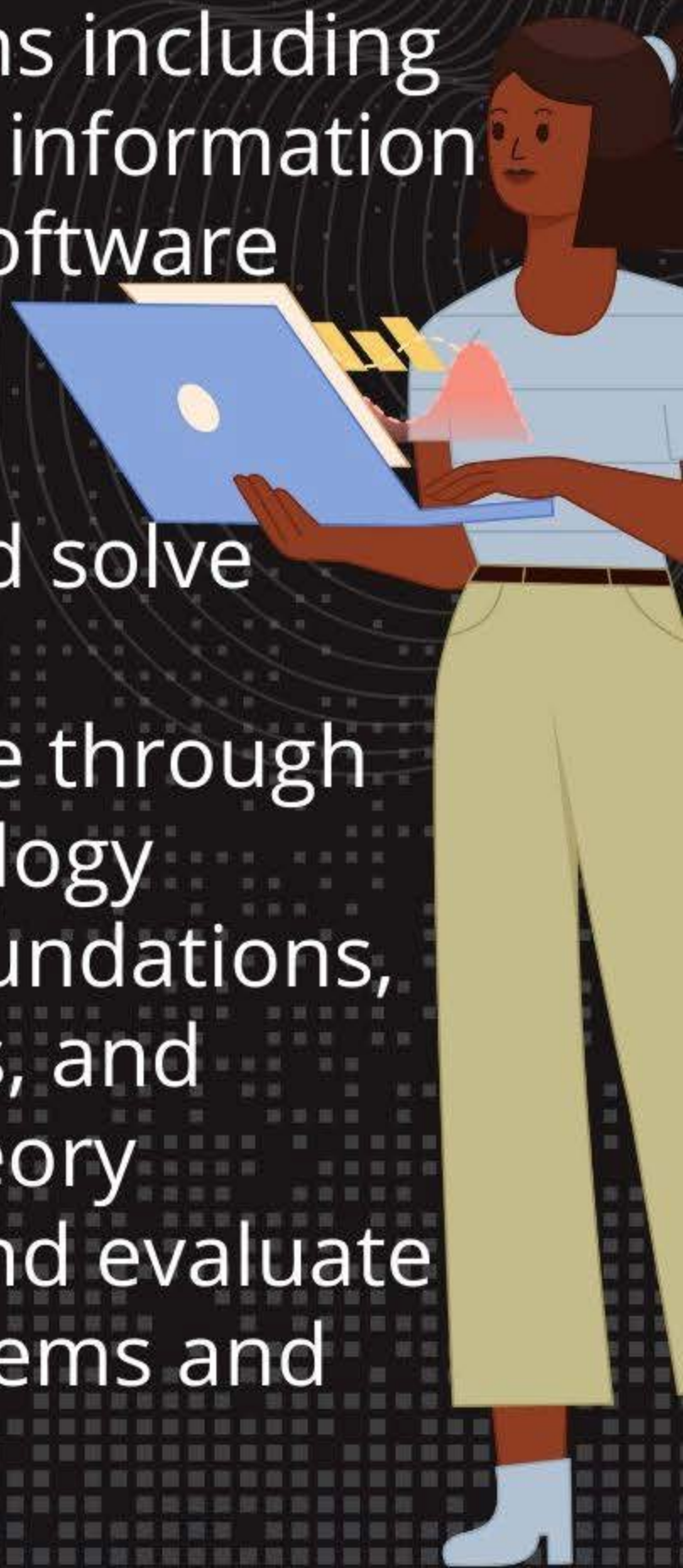
- Careers include: teaching, supervisors, technical sales personnel, and research in federal, state, municipal, academic, or industrial labs

- Chemistry is also great for those who want to pursue studies in grad school for teaching, medical, dental, law, pharmacy, and more

- Learn: Chemical theories, conduct experiments, lab care, research, and learn the composition, structure, properties and change of matter

COMPUTER SCIENCE

- Overview:
  - Gain problem-solving and system design skills necessary to create robust, efficient, reliable, scalable, and flexible software systems
- Career path:
  - Prepares you for grad study in Computer Science & for various business, industry, and government positions including computer scientists, information technologists, and software developers.
- Learn:
  - How to formulate and solve problems of interest
  - Create or derive value through application of technology
  - Use mathematical foundations, algorithmic principles, and computer science theory
  - Design, implement and evaluate computer-based systems and processes



Data Science

As a data scientist, you can make an impact in any field

Large amounts of data are generated every day, from apps on your phone to medical devices

And, every part of society connects with data: agriculture, engineering, finance and more

Make a difference: Use data to solve global hunger, or drive better business decisions, shape a hurricane response plan, improve self-driving cars or define a military defense strategy

Challenge yourself: Engage your quantitative and creative side and apply the technical fundamentals of data science to data analysis pipelines and develop the knowledge and skills to transform data into insights

Create your future: Data scientists have the skills for a rewarding career in any industry

Glassdoor voted Data Science 3rd in 'Best Jobs in America for 2022

Earth Science

THE BACHELOR OF SCIENCE DEGREE IN EARTH SCIENCE HAS AN ENVIRONMENTAL GEOLOGY FOCUS

CAREER OPPORTUNITIES INVOLVE: WORK THAT HELPS SUSTAIN SOCIETY & PROTECT THE PLANET; INNOVATIVE NEW TECHNOLOGIES; AND ADVENTURES + TRAVEL

THE BACH. OF ART DEGREE IN ES PROVIDES AN OVERVIEW OF GEOLOGY + SCIENCE

(DESIGNED FOR SECONDARY EDUCATION)

GEOSCIENTISTS WHO STUDY EARTH PROCESSES + RESOURCES TO ADDRESS THESE AND RELATED ISSUES, ARE IN HIGH DEMAND DUE TO CHANGES IN THE ENVRIONMENT

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

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

Geology

The B.S. in Geology focuses on traditional geology, while laying a solid foundation for grad study in geoscience

- **Geology as a secondary major: The Geology program can complement a major in**
  - **Materials engineering, civil engineering, environmental science, meteorology, or biology**
- **Graduation goals:**
  - **Understand natural processes on Earth + other planets**
  - **Apply forces and factors that shape the Earth to reconstruct past environments & anticipate future problems**

Mathematics

- A MATH MAJOR IS FOR THOSE PLANNING TO WORK IN MATH AND COMPUTATION FOR INDUSTRY, STUDY IN GRAD SCHOOL, OR FOR TEACHING

- STUDENTS MAY SATISFY THE MAJOR IN SEVERAL WAYS, WHICH ARE DESIGNED TO MEET VARIOUS CAREER OBJECTIVES - *VERY FLEXIBLE*

- WHY MAJOR IN MATH?
  - DEVELOP ANALYTICAL SKILLS & ATTIDUE
  - LEARN TO PAY CLOSE ATTENTION TO THE ASSUMPTIONS INVOLVED IN A GIVEN PROBLEM OR SITUATION
  - BREAK DOWN COMPLICATED PROBLEMS INTO A SERIES OF TRACTABLE STEPS

METEOROLOGY

- The study of meteorology involves the description of the earth's atmosphere and the processes responsible for its behavior & weather forecasting

- Skills include:
  - Weather observing, understanding the physics and dynamics of the global atmosphere, using weather technologies, utilize advanced math tools, computer programming and modeling, and effective oral and written communication

PHYSICS

PHYSICS IS A NATURAL SCIENCE THAT ATTEMPTS TO DESCRIBE AND PROVIDE AN UNDERSTANDING OF BOTH OUR WORLD AND OUR UNIVERSE. UNDERSTAND THE LAWS THAT GOVERN THE UNIVERSE FROM GIGANTIC STARS TRILLIONS OF MILES AWAY TO THE PARTICLES WITHIN OUR OWN BODIES

PURSUE A WIDE RANGE OF CAREERS AS A PROFESSIONAL PHYSICIST, ASTRONOMER, OR SCIENCE EDUCATOR.
YOU MAY ALSO CHOOSE TO PURSUE ADVANCED STUDIES AND CAREERS IN AREAS AS DIVERSE AS ENGINEERING, MEDICINE, LAW, AND BUSINESS ADMINISTRATION.

PHYSICS TAKES ON MATTER AND ENERGY IN ALL ITS FORMS, IT IS THE SCIENTIFIC STUDY OF MATTER AND ENERGY

STATISTICS

DESIGNED TO PREPARE STUDENTS FOR STATISTICS POSITIONS IN BUSINESS, INDUSTRY OR COMMERCE, NONPROFIT INSTITUTIONS, AND IN STATE OR FEDERAL GOVERNMENT

WHAT YOU WILL DO: STATISTICAL DESIGN, DATA VISUALIZATION, ANALYSIS AND INTERPRETATION OF EXPERIMENTS AND SURVEYS; DATA PROCESSING AND ANALYSIS USING MODERN COMPUTATION FACILITIES AND STATISTICAL COMPUTING SYSTEMS

APPLY TO FIELDS SUCH AS: FINANCE, INSURANCE, RESEARCH, TECHNOLOGY, MARKETING, MANUFACTURING, SPORTS ANALYTICS, QUALITY CONTROL, NONPROFIT ORGANIZATIONS, AND OTHERS.