

# BIOLOGICAL SCIENCES

## What can I do with this degree?

AREAS	EMPLOYERS	STRATEGIES
<p><b><u>RESEARCH AND DEVELOPMENT</u></b>            Basic            Applied            Quality Control            Administration            Grant Writing</p>	<p>Industry and laboratories:            Pharmaceutical            Healthcare            Agriculture production            Food processing and safety            Environmental            Private research institutions            Public health departments            State and federal government:            National Science Foundation            National Institutes of Health            Food and Drug Administration            Environmental Protection Agency            Department of Agriculture            Armed Services            Department of Homeland Security            State and local government laboratories/agencies            Colleges and universities</p>	<p>Learn to set up, operate, maintain laboratory instruments and equipment, and monitor experiments.            Select courses with laboratory components.            Seek research experience with professors.            Gain related experience through part-time jobs, internships, or volunteering.            Complete a certificate training program, usually one year, to learn specialized laboratory techniques.            Take a course in grant writing.            A Bachelor's degree in biology qualifies one for laboratory technician or research assistant positions.            Earn master's degree for better positions, advancement opportunities, more responsibility and higher pay.            Obtain Ph.D. to direct research projects and lead research teams.            Maintain a high grade point average and secure strong faculty recommendations to gain admittance into graduate school.</p>

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### **ORGANISMAL BIOLOGY**

#### **Some Areas of Specialization**

Botany and Plant sciences  
 Ecology and Wildlife  
 Marine and Aquatic  
 Systematic (Taxonomy)  
 Zoology  
 Entomology  
 Genetics  
 Microbiology  
   Bacteria, algae, fungi, molds, yeasts, viruses, protozoa

Colleges and universities, especially colleges of agriculture and veterinary medicine  
 Veterinary hospitals  
 State and federal government:  
   Departments of Agriculture, Interior, and Health  
 Independent laboratories:  
   Food production  
   Textiles  
   Chemical  
   Pharmaceutical  
   Forestry products

Seek related experience through coursework, part-time jobs, internships or volunteering.  
 Conduct research or assist in research including the collection of information and samples of water, soil, plants, animals, etc.  
 Join student chapters of professional organizations related to your area of interest.  
 Obtain a Ph.D. for teaching and advanced research and management positions.

**AREAS**

**EMPLOYERS**

**STRATEGIES**

**ORGANISMAL BIOLOGY CONTINUED**

Zoos and aquariums  
Fish hatcheries  
Wildlife preserves and parks  
Conservation agencies  
Botanical gardens and arboretums  
Museums  
Agricultural experiment stations  
Inspection agencies and control boards  
National and international environmental organizations  
Private recreation organizations

**BIOMEDICAL SCIENCES**

**Some Areas of Specialization:**

Biophysics  
Biochemistry  
Cellular and Molecular Biology  
Cytology  
Genetics  
Immunology  
Pathology  
Pharmacology  
Physiology  
Virology

Colleges and universities  
Professional schools including colleges of pharmacy, dentistry, medicine, veterinary medicine, and agriculture  
Federal laboratories and regulatory agencies:  
National Institutes of Health  
Food and Drug Administration  
State and local public health departments  
Clinics and hospitals  
Private research foundations  
Independent laboratories  
Pharmaceutical companies

Gain laboratory experience through coursework and/or research projects with professors.  
Learn to set up, operate, maintain laboratory instruments and equipment, and monitor experiments.  
Seek internships, part-time employment and volunteer opportunities in the biomedical field.  
Join student chapters of professional organizations related to your area of interest.  
Take courses in area(s) of specialization and/or consider an advanced degree.  
Obtain a Ph.D. for teaching and advanced research and management positions.

**HEALTHCARE**

Medicine  
Dentistry  
Optometry  
Podiatry  
Pharmacy  
Veterinary Medicine  
Allied Health  
Occupational Therapy  
Physical Therapy  
Medical Technology  
Nuclear Medicine

Hospitals  
Medical centers and clinics  
Nursing homes  
Private practice  
Armed services  
Government agencies

Plan on attending medical school or other related graduate program.  
Maintain an outstanding grade point average, particularly in the sciences.  
Secure strong faculty recommendations.  
Meet with a pre-health advisor periodically.  
Join related student organizations, and demonstrate leadership abilities.  
Seek experiences in hospital or healthcare settings through volunteering, shadowing, part-time positions, or internships.

**AREAS**

**EMPLOYERS**

**STRATEGIES**

**HEALTHCARE CONTINUED**

Develop a back up plan in case medical/graduate school admission is denied.  
Consider alternative but related careers such as physician assistants.  
Research all of the various fields within medicine to determine career goals.

**BIOINFORMATICS**

Algorithm and Statistics Development  
Data Analysis and Interpretation  
Information Management  
    Organization and Retrieval

Colleges and universities  
Private research foundations  
Independent laboratories:  
    Organic and agricultural chemicals  
    Drug and pharmaceutical  
    Medical device and equipment  
    Research, testing, medical  
Federal laboratories and regulatory agencies:  
    National Institutes of Health  
    Food and Drug Administration  
    Environmental Protection Agency  
    Department of Agriculture  
National Biological Information Infrastructure

Develop multiple areas of specialization through coursework, minors, double-majors in molecular biology, mathematics, statistics, computer science, or machine learning.  
Develop strong programming and database management skills; fluency in several programming languages is helpful.  
Learn biological software systems.  
Complete an internship in area of interest.  
Seek master's degree for increased advancement opportunities.

**EDUCATION**

Teaching  
    Elementary  
    Secondary  
    Post-Secondary  
Non-classroom Education

Universities and colleges  
Medical and other professional schools  
Public and private schools, K-12  
Museums  
Zoos  
Nature centers and parks

Gain experience working with students through tutoring, part-time employment, or volunteering.  
Learn to work well with all types of people.  
Develop excellent interpersonal and public speaking skills.  
Certification is required for K-12 school teachers and varies by state.  
Master's degrees may be sufficient for teaching at community or two-year institutions.  
Ph.D. is needed for teaching opportunities at colleges and universities.

## AREAS

## EMPLOYERS

## STRATEGIES

### COMMUNICATION

Technical Writing  
Editing  
Illustrating  
Photography

Publishing companies including scientific magazines, professional journals, periodicals, textbooks, and online publishers  
Newspapers  
Educational and scientific software companies  
Zoological and environmental societies  
Medical, dental and veterinary colleges  
Research centers  
Federal government agencies  
Related nonprofit organizations  
Museums

Acquire thorough knowledge of photographic procedures and technology.  
Take specific courses in biological, medical, and ophthalmic photography; courses in illustration and printing are also helpful.  
Develop strong writing skills and command of the English language.  
Take advanced courses in technical writing or journalism classes or consider a minor in either.  
Join professional associations like the National Association of Science Writers.  
Seek related volunteer or paid experiences with student/local publications to increase marketability.  
Obtain an advanced degree in scientific journalism.

### LEGISLATION/LAW

Lobbying  
Regulatory Affairs  
Science Policy  
Patent Law  
Environmental Law

Federal and state government  
Law firms  
Large corporations

Develop excellent communication and interpersonal skills.  
Maintain current knowledge of industry-specific laws and policies.  
Acquire internships in federal or state government.  
Take courses in history, political science and/or legal studies.  
Acquire a Ph.D. for advanced positions.  
Earn a J.D. degree to practice law.

### BUSINESS/INDUSTRY

Technical and Pharmaceutical Sales  
Management  
Consulting  
Marketing

Manufacturing companies including:  
Pharmaceuticals  
Animal pharmaceuticals  
Laboratory equipment  
Medical supplies and prostheses  
Marketing firms  
Consulting firms

Develop excellent communication and interpersonal skills.  
Demonstrate a high energy level.  
Take courses in anatomy, pharmacology, and chemistry.  
Obtain sales experience and/or a business minor.  
Join related student associations and hold leadership positions.  
Consider an MBA or Professional Science Master's for advanced management and consulting opportunities.

### **GENERAL INFORMATION**

- A Bachelor's degree will qualify one for work as a laboratory assistant, technician, technologist, or research assistant in education, industry, government, museums, parks, and gardens.
- An undergraduate degree can also be used for nontechnical work in writing, illustration, sales, photography, and legislation.
- Master's degrees allow for more opportunities in research and administration. Some community colleges will hire Master's level teachers.
- Doctoral degrees are necessary for advanced research and administrative positions, university teaching, and independent research.
- An advanced degree provides the opportunity to specialize in fields of interest.
- The biological sciences are good preparation for a career in healthcare such as medicine, dentistry, and veterinary science, but professional degrees and licenses are also necessary to practice in these fields.
- Learn laboratory procedures and become familiar with equipment.
- Obtain summer, part-time, volunteer, co-op, or internship experience to test the fields of interest and gain valuable experience. Take independent research classes if possible.
- Participate in summer research institutes. Submit research to local poster competitions or research symposiums.
- Develop strong analytical, computer, mathematics, and communications skills.
- Join professional associations and community organizations to stay abreast of current issues in the field and to develop networking contacts.
- Read scientific journals related to your area of interest.
- Maintain a high grade point average to improve chances of graduate and professional school admission.
- Become familiar with the specific entrance exam for graduate or professional schools in your area of interest.
- Secure strong relationships and personal recommendations from professors and/or employers.
- Consider completing a post doctoral experience after graduate school.
- Learn federal, state, and local government job application process. The federal government is the largest employer of biologists.
- Gain experience with grant writing and fundraising techniques. Often research must be funded in this manner.