BIOLOGICAL SCIENCES

What can I do with this major?

AREAS	EMPLOYERS	STRATEGIES
RESEARCH AND DEVELOPMENT Basic Applied Quality Control Administration Grant Writing	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	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.
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.

Prepared by the Career Planning staff of Career Services at The University of Tennessee, Knoxville. (1992, Revised 2007)
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