BIOCHEMISTRY

What can I do with this major?

AREAS

<u>RESEARCH</u>

Basic Research Applied Research Grant Writing Administration Some areas of specialization: Healthcare: clinical research (i.e., virology, immunology, enzymology), medical devices, and equipment Pharmacology: drug properties, interactions, application, and development Environmental: testing, air, water, and waste management, regulation, bio-remediation Agricultural: crop production, herbicide/pesticide development and application Food science: preservation, nutrition Cosmeceutical: development and application Forensic: toxicology, DNA analysis, scientific instrumentation

EMPLOYERS

University laboratories Federal government laboratories/agencies: National Science Foundation National Institutes of Health Food and Drug Administration Environmental Protection Agency Department of Agriculture Department of Energy Department of Defense State and local government laboratories/agencies Public health departments Hospital laboratories Commercial medical laboratories Private testing laboratories including forensics Independent research foundations Industries: Biotechnology: pharmaceutical and medical device/equipment Food processing Cosmetic Chemical Petroleum Agricultural

STRATEGIES

Plan to take coursework in biology, chemistry, and mathematics and demonstrate proficiency.

- Choose courses with laboratory components to build experimental and instrumentation skills.
- Gain experience in area of interest through internships, research with professors and/or complete a senior research project.
- Complete a certificate training program, usually one year, to learn specialized laboratory techniques. Certification requirements vary by state.
- Develop strong communication and interpersonal skills for sharing data as well as collaborating with multi-disciplinary teams of scientists.
- Take a course in grant writing, as many scientists and professors seek funding to support their research and teaching.
- Earn a master's degree or Ph.D. to advance into college or university teaching or for directing scientific research in government laboratories or industry.
- Consider pursuing a postdoctoral fellowship, generally two-three years, after earning a Ph.D. to gain additional research experience.

AREAS

EMPLOYERS

STRATEGIES

HEALTHCARE

See also What can I do with this major in medical fields?

Medicine Dentistry Optometry Podiatry Pharmacy Chiropracty Veterinary Medicine Occupational Therapy Physical Therapy Public Health Hospitals Colleges or universities Medical centers and clinics Private and group practice Health networks Nursing homes Rehabilitation centers Correctional facilities Large corporations Armed services Government agencies State and local public health departments Plan to attend medical school or other related graduate program.

Research accredited institutions. Check graduation rates, success rates on licensing exams, cost, location, etc. Speak with current students.

- Maintain an outstanding grade point average, particularly in the sciences. Meet with a prehealth advisor periodically to discuss curricular decisions and admissions test preparation.
- Join related student organizations (i.e., student chapters of the American Medical Association, Academy of Student Pharmacists, Health Occupations Students of America, etc.). Demonstrate leadership abilities.
- Volunteer or intern in a healthcare setting such as a hospital, rehabilitation facility, pharmacy, etc. based on your interests. Graduate and professional schools seek students with tested experience.
- Consider pursuing certification as a medical laboratory technologist or technician. Licensure varies by state.
- Secure strong faculty recommendations who will attest to your interest in the healthcare field as well as your academic ability and work ethic.
- Research the various fields within healthcare to determine a particular career goal.
- Develop a parallel plan in case medical/graduate school admission is denied.

AREAS

OTHER PROFESSIONAL OPPORTUNITIES

Sales/Marketing Technical Writing Scientific Journalism Scientific Illustration Regulatory Affairs Administration/Management Scientific/Technical Recruiting Intellectual Property/Patent Law Bioinformatics

EMPLOYERS

STRATEGIES

Biotechnology industry Pharmaceutical and chemical companies Publishers: Textbook, magazine, newspaper, book Software firms Regulatory agencies Search firms Law firms Legal departments of corporations Supplement biochemistry degree with either additional coursework or a minor in a specialty area such as journalism, technical writing, business, or mathematics.

- Become familiar with desktop publishing and other software packages particularly for communications-related positions.
- Gain experience through internships, part-time work, or summer jobs to test interest in a field and network. According to your goal, consider writing for the school newspaper, working at your campus computer lab, or pursuing sales/ marketing opportunities.
- Develop strong written and oral communication skills which are necessary across industries. Be prepared to start in entry-level business positions
- Such as management trainee programs. Obtain an MBA or Ph.D. to reach high levels of management and administration.
- To pursue a J.D., participate in mock trial and pre-law associations and research the law school admissions process.

TEACHING

Elementary Secondary Post-secondary Non-classroom settings

- Public and private schools, K-12 Two-year community colleges/technical institutes Four-year institutions Professional schools: Pharmacy, dentistry, medicine, veterinary medicine, and agriculture Museums Zoos Nature centers and parks
- Develop excellent communication skills, verbal and written, for interacting with students, colleagues, and parents.
- Gain experience working with age group of interest through volunteering and tutoring.
- Become skilled in the use of computers and laboratory equipment.
- Considering joining a professional teaching association such as the National Science Teachers Association or the National Association of Biology Teachers for current information on the field and for networking opportunities.
- Acquire appropriate certification for K-12 teaching opportunities.

AREAS

TEACHING CONTINUED

Due to science teacher shortages in some areas, consider researching alternative certification programs which may offer a faster route to secondary teaching opportunities.
Seek advanced degree required for specialists, education administration, college teaching, and other professional positions.
Prepare to attend graduate school by maintaining a high grade point average and securing strong faculty recommendations for post-secondary teaching. A master's degree is sufficient for teaching at some two year-institutions.

Complete Ph.D. for college or university teaching.

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.
- Biochemists are typically curious and creative with strong observational and analytical skills as well as the ability to persevere through lengthy research projects. They demonstrate competence in laboratory methods, computer science, and mathematics.
- As an undergraduate, seek laboratory experiences such as research projects, volunteering with professors, summer jobs, or internships.
- Develop the ability to communicate effectively to compile and share results in oral and written forms.
- Biochemists often interact with scientists from other disciplines. Learn to work independently and as part of a team.
- Read scientific journals to stay current on relevant issues in the field and join related professional organizations to network and build contacts.
- Visit government laboratories or research centers to learn more about opportunities in biochemistry. Schedule informational interviews to learn about the profession and specific career paths.
- Participate in research programs sponsored by organizations like the National Science Foundation and the National Institutes of Health.
- Become familiar with the specific entrance exam for graduate or professional schools in your area of interest.
- Maintain a high grade point average and secure strong faculty recommendations.
- Earn a master's degree to specialize in a particular research area and to teach at some two- and four-year institutions.
- Earn a Ph.D. to direct to direct research projects, to enter high levels of administration, and to teach at four-year post-secondary institutions. Postdoctoral fellowships may also be required.
- Combine an undergraduate degree in biochemistry with a degree in law, computer programming, business, education, information science, or other discipline to expand career opportunities.
- Research the job application process for government positions. Seek guidance from career center staff for assistance.