# BIOCHEMISTRY

## What can I do with this major?

<table>
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<tr>
<th>AREAS</th>
<th>EMPLOYERS</th>
<th>STRATEGIES</th>
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</thead>
<tbody>
<tr>
<td><strong>RESEARCH</strong></td>
<td>University laboratories</td>
<td>Plan to take coursework in biology, chemistry, mathematics, and physics and demonstrate proficiency.</td>
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<tr>
<td>Basic Research</td>
<td>Federal government: National Science Foundation</td>
<td>Choose courses with laboratory components to build experimental and instrumentation skills.</td>
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<tr>
<td>Applied Research</td>
<td>National Institutes of Health</td>
<td>Gain experience in area of interest through internships, research with professors and/or complete a senior research project.</td>
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<tr>
<td>Grant Writing</td>
<td>Food and Drug Administration</td>
<td>Complete a certificate training program, usually one year, to learn specialized laboratory techniques.</td>
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<tr>
<td>Administration</td>
<td>Environmental Protection Agency</td>
<td>Certification requirements vary by state.</td>
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<tr>
<td>Some areas of specialization:</td>
<td>Department of Agriculture</td>
<td>Develop strong communication and interpersonal skills for sharing data as well as collaborating with multi-disciplinary teams of scientists.</td>
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<td>Healthcare: clinical research (i.e., virology, immunology, enzymology), medical devices, and equipment</td>
<td>Department of Energy</td>
<td>Take a course in grant writing, as many scientists and professors seek funding to support their research and teaching.</td>
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<tr>
<td>Pharmacology: drug properties, interactions, application, and development</td>
<td>Department of Defense</td>
<td>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.</td>
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<tr>
<td>Environmental: testing, air, water, and waste management, regulation, bio-remediation, biofuels</td>
<td>State and local government</td>
<td>Consider pursuing a postdoctoral fellowship, generally two-three years, after earning a Ph.D. to gain additional research experience.</td>
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<tr>
<td>Agricultural: crop production/storage, herbicide/pesticide development and application</td>
<td>Public health departments</td>
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<td>Food science: preservation, nutrition</td>
<td>Hospital laboratories</td>
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<td>Cosmeceutical: development and application</td>
<td>Commercial medical laboratories</td>
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<td>Forensic: toxicology, DNA analysis, scientific instrumentation</td>
<td>Private testing laboratories including forensics</td>
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<td>Independent research foundations</td>
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<td>Industries: Biotechnology: pharmaceutical and medical device/equipment</td>
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<tr>
<td>HEALTHCARE</td>
<td>Hospitals</td>
<td>Plan to attend medical school or other related graduate program.</td>
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<tr>
<td>See also What can I do with this major in medical fields?</td>
<td>Colleges or universities</td>
<td>Research accredited institutions. Check graduation rates, success rates on licensing exams, cost, location, etc. Speak with current students.</td>
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<tr>
<td>Medicine</td>
<td>Medical centers and clinics</td>
<td>Maintain an outstanding grade point average, particularly in the sciences. Meet with a pre-health advisor periodically to discuss curricular decisions and admissions test preparation.</td>
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<tr>
<td>Dentistry</td>
<td>Private and group practice</td>
<td>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.</td>
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<tr>
<td>Optometry</td>
<td>Health networks</td>
<td>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.</td>
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<tr>
<td>Podiatry</td>
<td>Nursing homes</td>
<td>Consider pursuing certification as a medical laboratory technologist or technician. Licensure varies by state.</td>
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<tr>
<td>Pharmacy</td>
<td>Rehabilitation centers</td>
<td>Secure strong faculty recommendations who will attest to your interest in the healthcare field as well as your academic ability and work ethic.</td>
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<tr>
<td>Chiropracty</td>
<td>Correctional facilities</td>
<td>Research the various fields within healthcare to determine a particular career goal.</td>
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<tr>
<td>Veterinary Medicine</td>
<td>Large corporations</td>
<td>Develop a parallel plan in case medical/graduate school admission is denied.</td>
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<tr>
<td>Occupational Therapy</td>
<td>Armed services</td>
<td>State and local public health departments</td>
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### Teaching

**Elementary**
Public and private schools, K-12

**Secondary**
Two-year community colleges/technical institutes

**Post-secondary**
Four-year institutions

**Non-classroom settings**
Professional schools:
- Pharmacy, dentistry, medicine, veterinary medicine, and agriculture
- Museums
- Zoos
- Nature centers and parks

### Employers

**Biotechnology industry**
- Pharmaceutical and chemical companies
- Publishers:
  - Textbook, magazine, newspaper, book
- Software firms
- Regulatory agencies
- Search firms
- Law firms
- Legal departments of corporations

### Other Professional Opportunities

- **Sales/marketing**
- **Technical writing**
- **Scientific journalism**
- **Scientific illustration**
- **Regulatory affairs**
- **Administration/management**
- **Scientific/technical recruiting**
- **Intellectual property/patent law**
- **Bioinformatics**

### Strategies

- 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.
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.

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

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