Lewis & Clark College

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Accreditation

Lewis & Clark College is accredited by the Northwest Commission on Colleges and Universities. Lewis & Clark is a member of the American Council on Education, the Association of American Colleges, the College Entrance Examination Board, and the Northwest Association of Private Colleges and Universities. Lewis & Clark is on the approved lists of the American Chemical Society and the American Association of University Women.

Disclaimer

Lewis & Clark College reserves the right to withdraw courses at any time, change the fees, change the rules and calendar regulating admission and graduation requirements, and change any other regulations affecting the student body. Changes shall become effective when approved and shall apply not only to prospective students but also to those who are matriculated in Lewis & Clark College at the time. The contents of this catalog are based on information available to the administration at the time of publication.

Nondiscrimination Statement

Lewis & Clark adheres to a nondiscriminatory policy with respect to employment, enrollment, and program. Lewis & Clark does not discriminate on the basis of actual or perceived race, color, sex, religion, age, marital status, national origin, the presence of any physical or sensory disability, veteran status, sexual orientation, gender identity, or gender expression and has a firm commitment to promote the letter and spirit of all equal opportunity and civil rights laws, including Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, Title VII of the Civil Rights Act of 1964, the Age Discrimination Act, the Americans with Disabilities Act of 1990, and their implementing regulations.

ADA Statement

Lewis & Clark is committed to serving the needs of its students with disabilities and learning differences. Professional staff in Student Support Services ensure that students with disabilities receive the benefits of a comprehensive selection of services as outlined under the Americans With Disabilities Act (1990) and Section 504 of the National Rehabilitation Act of 1973. A formal student disability grievance procedure provides prompt and equitable resolution of any complaints related to ADA or Section 504.

To view the full text of Lewis & Clark’s disability policy, visit go.lclark.edu/student/disability/policy.

Please route undergraduate and graduate student requests for accommodations through Student Support Services at www.lclark.edu/offices/student_support_services.

Security

The security of all members of the campus community is of vital concern to Lewis & Clark. Information about safety (http://www.lclark.edu/about/campus_safety/overview/), the enforcement authority of the Office of Campus Safety (http://www.lclark.edu/about/campus_safety/), policies (http://www.lclark.edu/about/campus_safety/policies/) concerning the reporting of any crimes that may occur on campus, and crime statistics (Clery) (http://www.lclark.edu/about/campus_safety/crime_statistics/) for the most recent three-year period are available at www.lclark.edu/about/campus_safety. You may also request this information from the Office of Campus Safety (http://www.lclark.edu/about/campus_safety/) at 503-768-7855.

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The molecular logic of living organisms is the focus of this major. Biochemists and molecular biologists study how the collection of molecules within the cell interact to maintain and perpetuate life. The biochemistry/molecular biology major at Lewis & Clark provides students with an opportunity to pursue an interdisciplinary course of study that follows the guidelines of the American Society for Biochemistry and Molecular Biology. Students majoring in biochemistry/molecular biology devote their first years of study to mastering the basic tenets of calculus, physics, genetics, and chemistry. Upper-division coursework exposes students to current research in biochemistry and cellular and molecular biology.

The distinctive character of our program derives from the curricular goals that shape it. Faculty associated with the biochemistry/molecular biology program are proponents of a lab-rich, investigative education for undergraduates in the sciences. Opportunities for scientific inquiry are woven into the laboratory curriculum and prepare the student ultimately to undertake collaborative research projects with the faculty. To foster the ability of our students to engage independently in the scientific process, we devote class time to critically reading the primary literature. In our laboratory courses, students participate in selecting and designing their experiments. The curriculum is constructed to engage students in the scientific process and thereby facilitate the development of reflective judgment and problem-solving skills.

Students majoring in biochemistry/molecular biology are guided by sponsoring faculty from both the biology and chemistry departments. The major prepares students for careers in biomedical research, biotechnology, and genetic engineering. It is especially suitable for students seeking admission to medical or dental schools, or to graduate programs in biochemistry, cell or molecular biology, or genetics. Students majoring in biochemistry/molecular biology may not minor in biology or chemistry.

Major Requirements

A minimum of 54 semester credits in biology and chemistry (11 semester credits of which are granted for associated laboratory work), plus courses in mathematics and physics, distributed as follows:

- BIO 151 Investigations in Genetics and Evolutionary Biology
- BIO 311 Molecular Biology
- BIO 312 Molecular Biology Lab
- BIO 361 Cell Biology
- One elective selected from the following:
  - BIO 200 Investigations in Cell and Molecular Biology
  - BIO 320 Human Genes and Disease
  - BIO 412 Developmental Biology
  - BIO 422 Neurobiology
  - BIO 462 Immunology
- CHEM 110 General Chemistry I
- CHEM 120 General Chemistry II
- CHEM 210 Organic Chemistry I
- CHEM 220 Organic Chemistry II
- CHEM 310 Physical Chemistry: Thermodynamics and Kinetics
- CHEM 330 Structural Biochemistry
- CHEM 335 Metabolic Biochemistry
- CHEM 336 Biochemistry Laboratory
- MATH 131 Calculus I
- MATH 132 Calculus II
- PHYS 141 Introductory General Physics I
- PHYS 142 Introductory General Physics II
- Honors students must complete BCMB 410 Biochemistry/Molecular Biology Seminar.

Honors

Biochemistry/molecular biology majors who have distinguished themselves academically by earning a GPA of 3.500 or higher in the major and overall, have completed either BIO 312 or CHEM 336, and have some prior research experience are invited in the spring of their junior year to participate in the senior thesis program. Students who accept the invitation work with a faculty advisor to develop a research project, which must be approved by faculty overseeing the biochemistry/molecular biology major. Following the experimental work,
students prepare a written thesis and orally
defend it during the spring semester of the senior
year. Honors are awarded to those students whose
thesis is judged to be meritorious.

Faculty

Greta J. Binford. Associate professor of biology.
Invertebrate zoology, biodiversity, evolution of
M.S. 1993 University of Utah. B.A. 1990 Miami
University.

Greg J. Hermann. Associate professor of biology,
director of the Biochemistry and Molecular
Biology Program. Developmental genetics and cell
Gonzaga University.

Janis E. Lochner. Dr. Robert B. Pamplin Jr.
Oregon Health Sciences University. B.S. 1976
Allegheny College.

Nikolaus M. Loening. Associate professor of
chemistry, fall 2011 chair of the Department
of Chemistry. Physical chemistry, biophysical
chemistry. Ph.D. 2001, M.Phil. 1998 University of
Cambridge. B.S. 1997 Harvey Mudd College.

Deborah E. Lycan. Professor of biology. Molecular
biology, cell biology, ribosome biogenesis in
eukaryotic cells, yeast genetics. Ph.D. 1983
University of Colorado. B.A. 1975 University of
California at San Diego.

C. Gary Reiness. Professor of biology. Cell biology,
neurobiology, development of the vertebrate
nervous system. Ph.D. 1975, M.Phil. 1974
Columbia University. B.A. 1967 Johns Hopkins
University.

Bethe A. Scalettar. Professor of physics.
Fluorescence microscopy, biophysics, optics,
thermodynamics, quantum mechanics. Ph.D. 1987
University of California at Berkeley. B.S. 1981
University of California at Irvine.

BCMB 410 Biochemistry/Molecular Biology
Seminar

Faculty: Biochemistry and Molecular Biology
Faculty.
Content: Select topics in biochemistry and
molecular biology. Students attend seminars of
invited outside researchers and prepare an oral
seminar on their own research or on a critical
analysis of a relevant research publication.
Prerequisites: BIO 311. CHEM 330. CHEM 335
(may be taken concurrently).
Restrictions: Sophomore standing required.
Usually offered: Annually.
Semester credits: 1.

BCMB 496 Biochemistry/Molecular Biology
Senior Research

Faculty: Biochemistry and Molecular Biology
Faculty.
Content: In-depth laboratory inquiry into a
question relevant to biochemistry/ molecular
biology. Students develop a thesis proposal
in association with a faculty mentor, conduct
extensive experimental work to address their
hypothesis, and present their analysis of their
findings in a written thesis. 4 credits each semester
of the senior year.
Prerequisites: None.
Restrictions: By invitation only. Senior standing
required.
Usually offered: Annually, fall and spring
semester.
Semester credits: 4.

BCMB 499 Independent Study

Faculty: Biochemistry and Molecular Biology
Faculty.
Content: Participation in a faculty-supervised
research project at Lewis & Clark or another
research institution. Further information available
from biochemistry program faculty members. May
be repeated for credit.
Prerequisites: None.
Restrictions: Approval of project proposal by
program and supervising faculty member and
sophomore standing required.
Usually offered: Annually, fall and spring
semester.
Semester credits: 2-4.