Biochemistry and Molecular Biology, BS

Requirements
The Bachelor of Science with a major in biochemistry and molecular biology requires a minimum of 120 s.h., including at least 70 s.h. of work for the major. Students must maintain a grade-point average (GPA) of at least 2.00 in all courses for the major and in all UI courses for the major. They also must complete the College of Liberal Arts and Sciences GE CLAS Core.

All students majoring in biochemistry and molecular biology are initially placed in the Bachelor of Arts degree program. Students in good academic standing can switch to the Bachelor of Science degree program after completing one semester of organic chemistry (CHEM:2210 Organic Chemistry I or CHEM:2230 Organic Chemistry I for Majors). Students who wish to change their degree program to the Bachelor of Science should do so by sending an email from their UI email account to clas-undergrad@uiowa.edu.

The biochemistry and molecular biology major for the Bachelor of Science degree is intended primarily for students planning careers in research. The BS program prepares students to pursue graduate degrees, such as an MS, PhD, or a combined MD/PhD, or to work as research technicians. The BS program requires 12 s.h. or more in science and laboratory electives than the BA program.

Qualified students may graduate with honors in the biochemistry and molecular biology major; see “Honors in the Major” under undergrad@uiowa.edu.

Additional Requirements
In addition to the common requirements listed above, students must complete the following.

Course # Title Hours
One of these: CHEM:4430 Principles of Physical Chemistry 3
CHEM:4431 Chemical Thermodynamics 3
CHEM:4432 Quantum Mechanics and Chemical Kinetics 3

Advanced laboratory courses 6
And: Advanced science electives as listed in the student handbook 9

Students are encouraged to begin research by taking BMB:3993 Undergraduate Biochemistry Research, which has no prerequisites. The course involves experience in an active biochemistry and molecular biology research lab, which must be arranged ahead of time with a supervising faculty member. Students may make arrangements directly with the faculty member, or they may request assistance from an undergraduate advisor. Credit earned in BMB:3993 does not count toward the major, but it does count toward the minimum of 120 s.h. required to graduate.

Before students register for BMB:4999 Advanced Undergraduate Biochemistry Research, they must have completed BMB:3120 Biochemistry and Molecular Biology I, BMB:3130 Biochemistry and Molecular Biology II, BMB:3140 Experimental Biochemistry, and BMB:3150 Development of Senior Research Project, with a grade of B-minus or higher in each course. Students also are required to have prior research experience, such as in BMB:3993 Undergraduate Biochemistry Research, URES:3992 Undergraduate Research and Creative Projects, URES:3994 Undergraduate Research and Creative Projects, or HONR:3994 Honors Research Practicum, and permission of the instructor. Students can only count 6 s.h. in BMB:4999 toward their requirements for the degree.

Common Requirements
Students complete the following during their first three years.

Course # Title Hours
All of these: CHEM:2410 Organic Chemistry Laboratory 3
CHEM:2420 Organic Chemistry Laboratory for Majors 3
MATH:1850 Calculus I 4
MATH:1550 Engineering Mathematics I: Single Variable Calculus 4
MATH:1460 Calculus for the Biological Sciences 4
PHYS:1511 College Physics I 4
PHYS:1611 Introductory Physics I 4
PHYS:1512 College Physics II 4
PHYS:1612 Introductory Physics II 4
One of these: BIOS:4120 Introduction to Biostatistics 3
MATH:1560 Engineering Mathematics II: Multivariable Calculus 4
MATH:1860 Calculus II 4
STAT:3510 Biostatistics 3

Students in good academic standing can switch to the Bachelor of Science degree program after completing one semester of organic chemistry (CHEM:2210 Organic Chemistry I or CHEM:2230 Organic Chemistry I for Majors). Students who wish to change their degree program to the Bachelor of Science should do so by sending an email from their UI email account to clas-undergrad@uiowa.edu.

The BS with a major in biochemistry and molecular biology requires the following coursework.

Requirements
Common Requirements Hours
Professional
Additional Requirements 18

Course # Title Hours
All of these: BMB:3120 Biochemistry and Molecular Biology I-II 6
BMB:3130 Experimental Biochemistry 3
BMB:4240 Biophysics and Advanced Biochemistry 3
BIO:1411 BIO:1412 Foundations of Biology Diversity of Form and Function 8
CHEM:1110 CHEM:1120 Principles of Chemistry I-II 8
CHEM:2210 CHEM:2210 Organic Chemistry I 3
CHEM:2210 Organic Chemistry I for Majors 3
CHEM:2220 CHEM:2230 Organic Chemistry II for Majors 3
CHEM:2220 Organic Chemistry II 3

If students take PHYS:1612 Introductory Physics II, they must take the course with the lab component.

Course # Title Hours
One of these: CHEM:4430 Principles of Physical Chemistry 3
CHEM:4431 Chemical Thermodynamics 3
CHEM:4432 Quantum Mechanics and Chemical Kinetics 3

One of these options: BMB:4999 Advanced Undergraduate Biochemistry Research 6

Advanced laboratory courses 6
And: Advanced science electives as listed in the student handbook 9
Teacher Licensure

Students interested in teaching in elementary and/or secondary schools should seek admission to the Teacher Education Program (TEP) in the College of Education.

To qualify for licensure in secondary teaching, students in the TEP complete a degree in education as well as a related College of Liberal Arts and Sciences degree. See Apply on the College of Education website for details on requirements and deadlines for applying to the College of Education and about TEP choices of majors leading to licensure.