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MINNESOTA STATE
UNIVERSITY
MANKATO

BIOCHEMISTRY *College of Science, Engineering and Technology*

WHAT DEGREES AND PROGRAMS DO WE OFFER?

Minnesota State Mankato offers both BA and BS degrees in biochemistry. The BS degree is accredited by the American Society for Biochemistry and Molecular Biology (ASBMB). This program is administered through the Chemistry and Geology Department. Biochemistry is an inter-disciplinary science which encompasses large segments of biology and chemistry as well as significant areas of mathematics and physics. This rapidly expanding science explores the molecular aspects of living organisms. Biochemists attempt to explain life processes in terms of the structures and properties of the molecules that compose living organisms.

CAREER OPPORTUNITIES: WHAT CAN BE DONE WITH THIS DEGREE?

The tools and concepts learned in studying biochemistry provide a foundation for careers in many areas of medicine and research. Many biochemistry students continue their studies in professional and graduate schools. The biochemistry major provides excellent preparation for admission and success in medical, dental, and pharmacy schools.

Graduates with a degree in biochemistry may work in laboratories conducting research for universities, private industries or government. They may work in medical labs unraveling the causes of diseases, in pharmaceutical labs developing new medicines, in food labs making more nutritious products or in environmental labs investigating ways to clean up toxic waste. They may do DNA analysis in forensic labs or they may help develop disease resistant plants in bioengineering laboratories.

EXAMINING THE QUALITY OF OUR PROGRAM

The BS program is accredited by the American Society for Biochemistry and Molecular Biology (ASBMB). The BA program follows the guidelines outlined by the ASBMB.

Faculty credentials

All faculty have terminal degrees. Undergraduate teaching Assistants are used in some laboratories. All classes are taught by faculty. The department faculty sees as its primary mission the development and training of

biochemists and chemists at the undergraduate level. Faculty members are available not only during lecture and laboratory classes, but at other times as well. Biochemistry and chemistry faculty members serve as mentors for undergraduate research which is strongly encouraged during the academic year and summer session.

STUDENT EXPERIENCE/ PROGRAM REQUIREMENTS

Specialized equipment/facilities

Major instruments available include: high speed and ultracentrifuges, PCR and qPCR instruments, western blot imager, cell culture biosafety cabinet, nuclear magnetic resonance spectrometer, spectrofluorimeter, microplate readers, gas chromatographs, mass spectrometers, high pressure liquid chromatograph, infrared spectrometer, UV visible spectrophotometers and atomic absorption instruments.

Scholarships available

The following scholarships are available to students: Ford, Gebelt, Grundmeier, McCarty, Stenzel, Triad, and Department of Chemistry as well as several college scholarships.

Clubs and organizations

Students are welcome to join the ASBMB Student Chapter and the American Chemical Society (ACS)-Student Affiliate. These clubs host a variety of social events as well as supporting service activities and workshops on undergraduate research.

HOW DO I PREPARE FOR THIS PROGRAM?

Students should enroll in as many science (particularly chemistry and physics) and mathematics courses as feasible while in high school. Students must also be able to communicate effectively so English, writing and speech courses are also recommended. Students without adequate science or mathematics have an opportunity to enroll in introductory and preparatory classes at Minnesota State Mankato.

**FOR MORE INFORMATION
PLEASE CONTACT**

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You are encouraged to visit the campus.
 To arrange for a visit, please call:
 Office of Admissions: 507-389-1822
 Toll-free: 800-722-0544

SAMPLE FOUR-YEAR CURRICULUM (B.S. DEGREE)

First Year (Fall)	First Year (Spring)
CHEM 201 General Chemistry I (5) MATH 121 Calculus I (4) ENG 101 Composition (4) General Education (3)	CHEM 202 General Chemistry II (5) BIOL 105 General Biology (4) MATH 122 Calculus II (4) OR STAT 154 Elementary Stats (3) General Education (3)
Second Year (Fall)	Second Year (Spring)
CHEM 305 Analytical Chemistry (4) CHEM 322 Organic Chemistry I (4) BIOL 106 General Biology II (4)* General Education (3)	CHEM 281 Biochemistry & Chemistry Professional Foundations (1) CHEM 324 Organic Chemistry II (3) CHEM 325 Organic Chemistry II Lab (1) BIOL 211 Genetics (4) General Education (3) General Education (3)
Third Year (Fall)	Third Year (Spring)
CHEM 460 Biochemistry I (3) CHEM 465 Biochemical Techniques I (2) CHEM 481W Inquiry and Writing in Biochemistry and Chemistry (3) PHYS 211 Principles of Physics I (4) General Education AND/OR Upper-Division BIOL or CHEM (1-4)	CHEM 461 Biochemistry II (3) CHEM 466 Biochemical Techniques II (2) PHYS 212 Principles of Physics II (4) General Education (2-4) Upper-Division BIOL OR CHEM (1-4)
Fourth Year (Fall)	Fourth Year (Spring)
CHEM 445 Physical Chemistry I (4) CHEM 450 Physical Chemistry I Lab (1) Upper-Division BIOL OR CHEM (1-4) General Education (2-4) General Education (2-4)	CHEM 489 Senior Capstone Experience (1) BIOL 479 Molecular Biology OR BIOL 320 Cellular Biology (4) Upper-Division BIOL or CHEM (1-4) General Education (2-4) General Education (2-4)

For additional information about course requirements, please visit <http://www.mnsu.edu/supersite/academics/bulletins/>



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