

OVERVIEW

Having a solid understanding of science is becoming increasingly important in today's society. Science is referred to in the media daily as it relates to a growing number of societal concerns, including global climate change, environmental issues, crop and livestock production, and stem cell research. In addition, important state and federal legislation surrounding these and other issues require an understanding of the associated science.

University graduates with science backgrounds are highly valued by an increasing number of employers in a variety of industries. Opportunities exist for entry level professionals and those with more advanced training.

Washington State University offers academic preparation in molecular biosciences for undergraduate and graduate level students. WSU offers both a graduate and undergraduate certificate in molecular biosciences and is the first university in Washington state to offer a professional science master's (PSM).

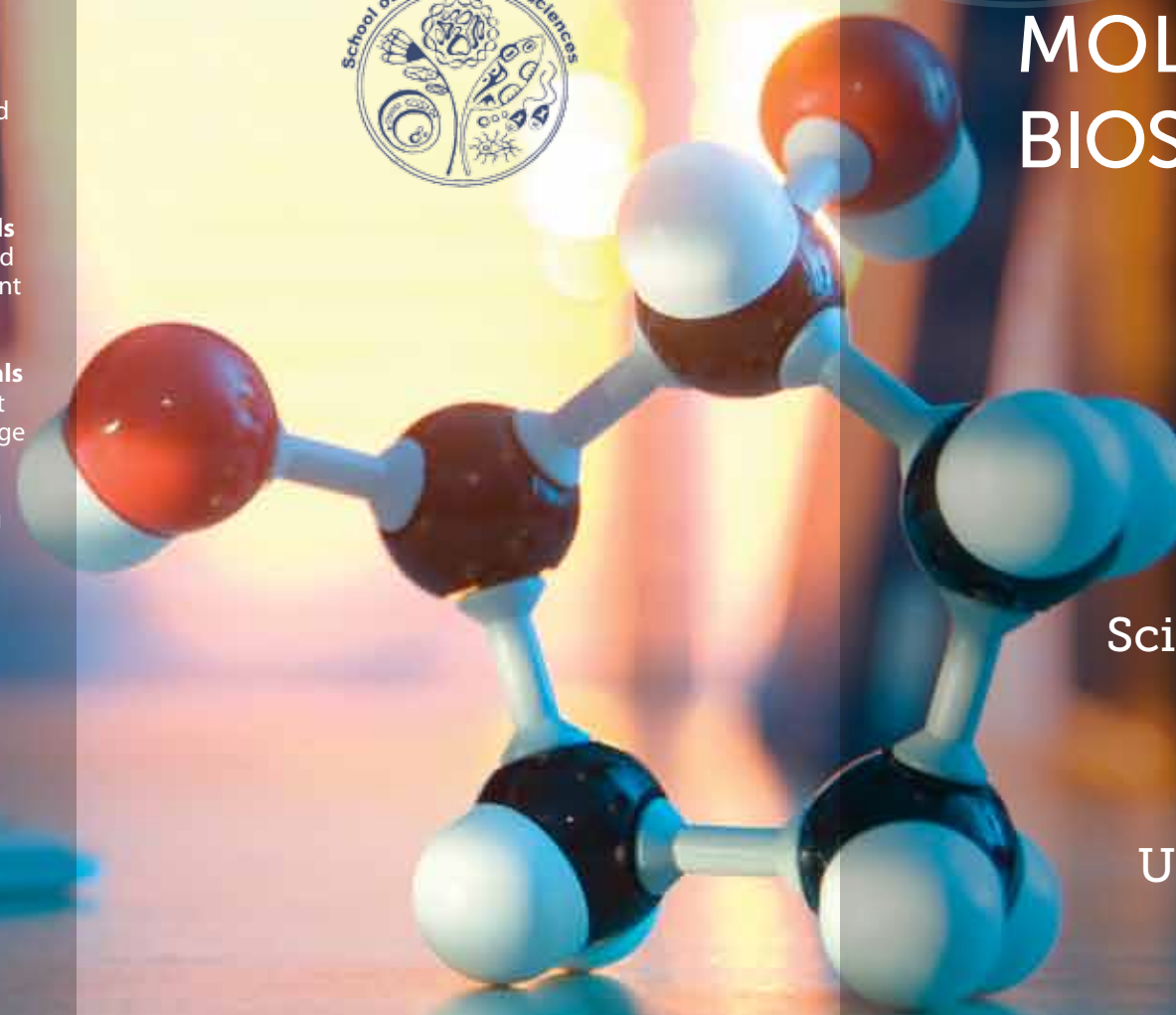
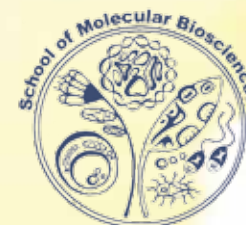
Courses for the certificates and the PSM can be taken completely online anywhere worldwide through the WSU Global Campus or in person on the Pullman campus. All online courses are taught and were developed by world renowned WSU faculty.

Industry, government, and nonprofit agencies involved in science and technology require science-trained professionals with applied skills to help fuel innovation and ensure global competitiveness. WSU prepares graduates of the PSM for leadership roles in emerging and established fields. The curriculum is interdisciplinary and includes science course work, professional course work, and an internship in a research, business, agricultural, or academic setting. A thesis is not required.

The Professional Science Master's is ideal for a variety of audiences:

- **Recent graduates** with a bachelor's degree in science who want to expand their science knowledge and develop the business skills needed to enter their chosen career.
- **Mid-career professionals** seeking advancement and enrichment in their current careers.
- **Established professionals** who want to better adapt to required areas of change in their careers.
- **Professionals** reentering the workplace needing science and non-science skills to compete in the global economy.

WASHINGTON STATE UNIVERSITY
 GLOBAL CAMPUS



Online Programs in the
SCHOOL of
**MOLECULAR
BIOSCIENCES**

Professional
Science Master's

Graduate
Certificate

Undergraduate
Certificate

Program Requirements

Total credits: 33

- 26 credits (minimum) of graded coursework including 19 credits (minimum) of graded 500-level course work
- 4-credit internship (minimum)

SCIENCE REQUIRED COURSES

- MBioS 501 Cell Biology [3 cr.]
- MBioS 503 Molecular Biology I [3 cr.]
- MBioS 513 General Biochemistry [3 cr.]
- MBioS 578 Bioinformatics [3 cr.]

PROFESSIONAL REQUIRED COURSES

One course from each of the following five professional areas:

1. Ethics

- Phil 530 Bioethics [2 cr.]
- Phil 532 Seminar in Business Ethics [3 cr.]
- Phil 535 Advanced Biomedical Ethics [3 cr.]

2. Communication

- MBioS 580 Science Information Literacy [2 cr.]
- Engl 595 Communicating in STEM [3 cr.]

3. Business Focus

- Entrp 486 Topics in New Venture Business Planning [3 cr.]
- EM 508 Legal Concepts for Engineering and Technical Management [3 cr.]
- Mktg 506 Marketing Management and Administrative Policy [3 cr.]
- EM 505 Finance for Technical Systems [3 cr.]

4. Management

- EM 501 Management of Organizations [3 cr.]
- EM 564 Project Management [3 cr.]
- EM 575 Performance Management in Technical Organizations [3 cr.]

5. Skills Seminar

- MBios 568 Professional Skills Seminar [1 cr.]

ELECTIVES

Students are required to take two courses with at least one from the science and one from the professional elective group:

Science Course Electives

- MBioS 504 Molecular Biology II [Prereq MBioS 503] [3 cr.]
- MBioS 514 General Biochemistry II [Prereq MBioS 513] [3 cr.]
- MBioS 550 Microbial Physiology [3 cr.]
- MBioS 574 Protein Biotechnology [Prereq MBioS 513] [3 cr.]
- MBioS 568 (2) Medical Genetics [3 cr.]

Professional Course Electives

- Stats 512 Analysis of Variance of Designed Experiments [3 cr.]
- MgtOp 588 Management of Innovation [3 cr.]
- I Bus 380 International Business [3 cr.]
- EM 522 Supervision and Leadership for Engineering and Technology Managers [3 cr.]
- EM 526 Constraints Management [3 cr.]
- EM 560 Intergrated Supply Chain Management [3 cr.]
- EM 570 Six Sigma Quality Management [3 cr.]

INTERNSHIP

- MBios 702 Master's Special Problems [Min 4 cr.]

TO APPLY AND FOR ADDITIONAL INFORMATION

- Professional Science Master's: online.wsu.edu/psm
- Graduate Certificate: online.wsu.edu/mbios_graduate
- Undergraduate Certificate: online.wsu.edu/mbios_undergrad
- Graduate MBios Courses: www.smb.wsu.edu/graduates/courses.htm
- Norah McCabe nrmccabe@vetmed.wsu.edu



Completion of the graduate certificate courses will be invaluable in career development in many different interdisciplinary fields. In addition, the certificate courses can be applied to the Professional Science Master's.

Program Requirements

The Graduate Certificate Program in Molecular Biosciences includes 11-12 credits of graded coursework.

REQUIRED COURSES [9 cr.]

- MBioS 501 Cell Biology [3 cr.]
- MBioS 503 Molecular Biology I [3 cr.]
- MBioS 513 General Biochemistry I [3 cr.]

ELECTIVE COURSE [2-3 cr.]

One elective course is required, and serves to make the Certificate in Molecular Biosciences more comprehensive:

- Phil 530 Bioethics [2 cr.]
- MBioS 578 Bioinformatics [3 cr.]
- Stat 412 Biometry [3 cr.]

Students must maintain a minimum GPA of 3.0 in required coursework for the completion of this certificate.

Those who earn the undergraduate certificate will be well prepared to work in both science and non-science careers, will be qualified for employment opportunities with nonprofit organizations and government agencies involved in science making decisions, and will be attractive to private sector businesses who require employees with interdisciplinary scientific training.

Program Requirements

The Certificate in Molecular Biosciences requires a minimum of 18 hours. Students are expected to have already completed courses equivalent to one year of freshman chemistry for science majors, one year of freshman biology for science majors, and one semester of organic chemistry, all through an accredited institution of higher education, before working toward this certificate.

REQUIRED COURSES [15-17 cr.]

- MBioS 301 General Genetics [4 cr.]
- MBioS 303 Introductory Biochemistry [4 cr.]
- MBioS 320 DNA and Society [3 cr.]
- MBioS 101 Introductory Microbiology [4 cr.]

OR

- MBioS 305 General Microbiology Lecture and 304 Microbiology and Molecular Biology Lab [6 cr.]

ELECTIVE COURSE [3 cr.]

- Anth 468 Sex, Evolution, and Human Nature [3 cr.]
- Biol 140 Introduction to Nutritional Science [3 cr.]
- Biol 330 Principles of Conservation [3 cr.]
- Crim J 320 Criminal Law [3 cr.]
- MBioS 342 Microbial Ecology [3 cr.]
- Phil 103 Introduction to Ethics [3 cr.]
- Phil 365 Biomedical Ethics [3 cr.]

Other courses can apply per approval by the certificate coordinator.