

# COLLEGE OF ARTS AND SCIENCES NEW PROGRAM REVIEW FORM

	Chair's Signature	Recommendation	Review Date
Department	<u>John Mullican</u>	<u>Approve</u>	<u>2013-09-29</u>
Division	<u>Susan Bjerke</u>	<u>Approve</u>	<u>2013-09-30</u>
Dept. of Educ. <small>(If relates to teacher certification program.)</small>	<u>Donna Lalonde</u>	<u>Approve</u>	<u>2013-10-22</u>
Dean	<u>Laura Stephenson</u>	<u>Approve</u>	<u>2013-10-22</u>
Curriculum Committee	<u>Karen Camarda</u>	<u>Approve</u>	<u>2013-11-14</u>
Accepted by CFC	<u>Shaun Schmidt</u>	<u>Approve</u>	<u>2014-01-28</u>
CAS Faculty	<u>Bruce Mactavish</u>	<u>Approve</u>	<u>2014-02-21</u>

Approved By:      Faculty Senate \_\_\_\_\_      University Faculty \_\_\_\_\_      WU Board of Regents \_\_\_\_\_

1. Title of Program.

Bachelor of Science in Molecular Biology and Biotechnology

2. Rationale for offering this program.

The B.S. degree in Molecular Biology and Biotechnology will appeal to students interested in the molecular biology discipline, especially those considering biotechnology as a viable career option. Regionally, Topeka is positioned within the heart of a "Bio-Corridor" that spans east from Manhattan, KS to Kansas City, MO then north to St. Joseph, MO. Numerous bioscience companies within this area are in need of molecular biology and biotechnology graduates who are able to enter the workforce and immediately contribute. Additionally, the bio-defense facility in Manhattan, KS will need to be staffed by well-trained laboratory scientists. This geographic area also has three major research universities (KSU, KU and UMKC) each of which support doctoral-level biology training, where B.S. in MBB students may continue their education. The Stowers Research Institute in KC, MO, a preeminent biomedical research facility, hires graduates as research technicians in their laboratories. Washburn University is poised to take advantage of our excellent reputation to offer a new degree program that will likely have a direct impact on workforce development in the growing biosciences discipline.

3. Exact proposed catalog description.

The B.S. degree in Molecular Biology and Biotechnology (MBB) is designed to provide students an opportunity to focus their undergraduate studies in the molecular biosciences in an effort to prepare themselves for either entering the workforce directly as baccalaureate-level research scientists or for entering competitive graduate programs to further their studies. The curriculum is designed to be rich in laboratory experiences through coursework, research and an internship. In addition to 83 credit hours of science courses, MBB majors will be required to take an ethics

course to appreciate the interplay between biology and society.

## REQUIREMENTS FOR MOLECULAR BIOLOGY AND BIOTECHNOLOGY (MBB) MAJORS

MBB majors must take a 34-hour core consisting of:

- BI 102 General Cellular Biology (5)
- BI 103 General Organismal Biology (5)
- BI 280 Introduction to Biotechnology (3)
- BI 301 General Microbiology (4)
- BI 333 General Genetics (4)
- BI 353 Molecular Genetics (3)
- BI 354 Molecular Biology Laboratory (3)
- BI 380 Biotechnology Internship (3)
- BI 390 Biology Seminar (1)
- BI 395 Biology Research (3)

### Elective Supportive Courses for MBB Majors:

(Students must complete a minimum of 8 additional hours from the following list):

- BI 325 Microbiology of Human Diseases (5)
- BI 328 Plant Anatomy and Physiology (3)
- BI 330 Animal Physiology (4)
- BI 355 Developmental Biology (5)
- BI 357 Histology (4)
- BI 362 Immunology (3)
- BI 363 Immunology Lab (2)
- BI 370 Virology (3)
- CH 343 Organic Chemistry Laboratory II (2)
- CH 352 Biochemistry II (3)
- CH 353 Biochemistry Laboratory II (2)

The following non-biology courses are required of MBB majors:

- CH 151/152 Fundamentals of Chemistry (1 year with lab) (10)
- CH 340/342 Organic Chemistry I (with lab) (5)
- CH 341 Organic Chemistry II (3)
- CH 350/351 Biochemistry I (1 semester with lab) (5)
- MA 140 Statistics (3)
- MA 151 Calculus and Analytic Geometry I (5)
- PS 261/262 College Physics (1 year with lab) OR  
PS 281/282 General Physics (1 year with lab) (10)
- PH 214 Medical Ethics (3)

The Bachelor of Science (B.S.) degree in Molecular Biology and Biotechnology requires a 34-hour BI core, 8 additional BI or CH hours elective hours as listed above, and the above-listed non-biology courses. The B.S. degree also requires a 30-hour minor to be chosen from the Natural Sciences (Biology, Chemistry, Mathematics & Statistics, or Computer Information Science). This minor must be in departments other than the major, and must have at least 20 hours in one department. Minors for the B.S. degree are limited to these courses: Chemistry 151 or above, Physics 261 or above, Mathematics 116 or above, Computer Science 110 or above. The above-listed coursework for the B.S. in MBB satisfied the natural sciences minor. The B.S. degree in Molecular Biology and Biotechnology requires 124 credit hours to graduate.

4. List and financial implications.

With a conservative prediction of eight B.S. students over the next 5 years (beginning 2014), we might predict a potential increase of \$176,328 in tuition revenue with little to no negative financial impact. The proposed degree program will utilize existing faculty members, courses, and teaching laboratories. Please see the attached pro forma document.

Department: BIOLOGY  
New Program Name: B.S. Degree in Molecular Biology and Biotechnology (124 total credit hours)

Program Name	2014-2015					Year 4 # Students	Year 4 # Cr Hrs	Year 4 FTE	Year 5 # Students	Year 5 # Cr Hrs
	Year 0 - Preparation	Year 1 # Students	Year 1 # Cr Hrs	Year 2 # Students	Year 2 # Cr Hrs					
Revenue:										
Est. Students/Cr Hrs	0	1	31	3	31	7	31	8	31	
Total Credit Hours	0	31	93	93	217	248	237	237	237	
Tuition Rate		237	237	237	237	237	237	237	237	
Other Revenue Sources										
<b>Total Revenue</b>	<b>0</b>	<b>\$7,347</b>	<b>\$22,041</b>	<b>\$22,041</b>	<b>\$36,735</b>	<b>\$51,429</b>	<b>\$58,776</b>			
Ongoing Expenses:										
1st Faculty Member										
Benefits (25%)										
2nd Faculty Member										
Benefits (25%)										
3rd Faculty Member										
Benefits (25%)										
(Continue to add as needed)										
Secretary										
Benefits (25%)										
Adjunct Faculty										
Student stipends										
Supplies										
Marketing										
Travel										
Online Course Development										
Professional Development										
Accreditation/Membership										
Support Materials										
<b>Total Expenses</b>										
<b>Total Net Revenue</b>	<b>\$ -</b>	<b>\$ 7,347</b>	<b>\$ 22,041</b>	<b>\$ 22,041</b>	<b>\$ 36,735</b>	<b>\$ 51,429</b>	<b>\$ 58,776</b>			
One-time Startup Costs										
Furniture										
Office Equipment										
Computer/Software										
Other Electronic Hardware										
Renovation										
Program Equipment										
Initial Accreditation Costs										
Program Development										
Membership										
Release Time to Develop										
Consultant										
Site Visit										
Inservice/Preservice Prep										

Footnotes: