

FACULTY AGENDA ITEM 14.17

Date: February 24, 2014

Submitted by: Laura Stephenson, Interim Dean

SUBJECT: Biology New Program, Bachelor of Science in Molecular Biology and Biotechnology

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.*

Rationale: *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.*

Current Catalog Language: None

Proposed Catalog Language:

B.S. in Molecular Biology and Biotechnology

The Bachelor of Science (B.S.) degree in Molecular Biology and Biotechnology (MBB) requires a 34-hour BI core, 44 hours of required non-biology courses, and 8 additional BI or CH hours elective hours as listed below.

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)

The following non-biology courses are required of MBB majors (44 hours):

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)

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 B.S. degree also requires a 30-hour minor to be chosen from the Natural Sciences (Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy, 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.

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.

Proposed Effective Date: *Fall 2014.*

Request for Action: *Approval by AAC/.FAC/FS/ Gen Fac, etc*

Approved by: AAC on **3-10-14**

FAC on date

Faculty Senate on date

Attachments Yes No