SPECIAL REPORT

OF THE

ACADEMIC MATTERS, ACADEMIC PRIORITIES AND
PROGRAM AND BUDGET COUNCILS

concerning a

REVISION OF THE BIOTECHNOLOGY CONCENTRATION
IN THE ANIMAL SCIENCE MAJOR
IN THE DEPARTMENT OF VETERINARY AND ANIMAL SCIENCES

Presented at the
758th Regular Meeting of the Faculty Senate
April 28, 2016

COUNCIL MEMBERSHIP

ACADEMIC MATTERS COUNCIL


ACADEMIC PRIORITIES COUNCIL

Faune Albert, Richard Bogartz (Chair), Nicholas Bromell, Elizabeth Chilton, Suzanne Daly, Kathleen Debevec, Jean DeMartinis, Piper Gaubatz, Bryan Harvey, Masoud Hashemi, Deborah Henson, A Yemi Jimoh, Sangeeta Kamat, Stephen Magner, Ernest May, Katherine Newman, MJ Peterson, Monroe Rabin, James Rinderle, Peter Stern, Jack Wileden, Donna Zucker

PROGRAM AND BUDGET COUNCIL

The Department of Veterinary and Animal Sciences is proposing to change the requirements for the concentration in Biotechnology in the Animal Science major. The concentration currently requires 12 laboratory research credits. The department is proposing to reduce that to 6 credits. One reason for the proposed change is concern about the department's capacity for sponsoring so many credits of student research experience. Also, many students choose the concentration in their third year, and it is difficult for them to schedule 12 lab research credits and still graduate on time. Under the proposed revision, the concentration would require a total of 18 credits (6 credits of biotechnology research experience and lab, 4 credits of veterinary and biotechnology lab techniques, 2 credits of veterinary microbiology lab, and 6 credits of research animal management training). These are in addition to 69-70 credits of common courses required for all students majoring in Animal Science.

At its meeting on March 2, 2016, the Academic Matters Council voted unanimously to recommend Faculty Senate approval of the proposed Revision of the Biotechnology Concentration in the Animal Science Major. It was submitted as Proposal #2718 in the Course and Curriculum Management System.

The Department of Veterinary and Animal Sciences proposed to Revise a Biotechnology Concentration in the Animal Science Major in the Department of Veterinary and Animal Sciences by decreasing the number of laboratory research credits required from 12 credits to 6 credits.

The Academic Priorities Council voted to recommend approval of the proposal at its meeting on March 24, 2016.

The Program Subcommittee of the Program and Budget Council met on March 9, 2016, reviewed the proposal for a Revision of the Biotechnology Concentration in the Animal Science Major in the Department of Veterinary and Animal Sciences and recommended it for approval.

At its meeting on March 23, 2016, the Program and Budget Council unanimously approved the Revision of the Biotechnology Concentration in the Animal Science Major in the Department of Veterinary and Animal Sciences, Proposal #2718 in the Course and Curriculum Management System.

MOTION: That the Faculty Senate approve the Revision of the Biotechnology Concentration in the Animal Science Major in the Department of Veterinary and Animal Sciences, as presented in Sen. Doc. No. 16-048.
Proposal Development

A. Briefly describe the Proposal.

The Department proposes to decrease the number of laboratory research credits required from 12 credits to 6 credits.

The classes that students would take to fulfill the 6-credit biotechnology research requirement include:

- ANIMLSCI 291C Biotechnology Research - Cell & Molecular I 1 credit
- ANIMLSCI 291M Biotechnology Research - Animal Models I 1 credit
- ANIMLSCI 391C Biotechnology Research - Cell & Molecular II 2 credits
- ANIMLSCI 391M Biotechnology Research - Animal Models II 2 credits
- ANIMLSCI 491C Biotechnology Research - Cell & Molecular III 3 credits
- ANIMLSCI 491M Biotechnology Research - Animal Models III 3 credits

(The above classes are authentic discovery-based research tutorials. Sponsoring faculty are from VASCi and other UMass departments. Each class can be taken multiple times for credit. The class level corresponds to the number of credits and, hence, the level of difficulty of the project. The class title containing the words "Biotechnology Research" will appear on the students' transcript, thereby fulfilling the requirement of the Academic Matters Council in approving the original Biotechnology subplan.)

- ANIMLSCI 385 Introduction to Biotechnology Laboratory 4 credits
  (This course is a laboratory course emphasizing molecular techniques. It is currently cross-listed with MICROBIO 385)

Students could fulfill the proposed 6-credit biotechnology research requirement with two research experience classes of 3 credits each for a total of 6 credits (ANIMLSCI 491C Biotechnology Research - Cell & Molecular III and/or ANIMLSCI 491M Biotechnology Research - Animal Models III) or one research experience class of 2 (ANIMLSCI 391C or 391M) or 3 credits (ANIMLSCI 491C or 491M) and the 4-credit class ANIMLSCI 385 Introduction to Biotechnology Laboratory. Students could also combine two 1-credit research experience classes (ANIMLSCI 291C and/or 291M) with ANIMLSCI 385 to earn a total of 6 credits.

B. Provide a brief overview of the process for developing the Proposal.

Since the implementation of the BS-Animal Science subplan Biotechnology in fall 2014, faculty members have become concerned about departmental capacity to sponsor students in research experiences in our labs for the required number of credits. A requirement of 12 credits would also mean that students would have to find a sponsoring faculty member and a lab home no later than the first semester of their junior year, and take 3 credits in a biotechnology research experience class for 4 semesters. This would be especially difficult for transfer students and many of our majors who originally plan to become Pre-Vet majors but change their mind as juniors and seniors. Therefore, the consensus of the faculty is that we should reduce the number of research experience credits required, so that it does not become a bar to graduation in the BS-Animal Science subplan Biotechnology. We now require all students who wish to do research experience tutorial classes to register for ANIMLSCI 291, 391 and 491 classes, so that these classes will count towards fulfilling the subplan Biotechnology graduation requirements. If they choose to graduate as Pre-Veterinary Science or Animal Science subplan Animal Management majors, the classes will be counted as electives.
Purpose and Goals

Describe the proposal’s purpose and the particular knowledge and skills to be acquired.

Eighty to ninety percent of freshmen Animal Science majors plan to attend veterinary medical school. In the fall of their senior year, twenty to twenty-five percent of Animal Sciences and Pre-Veterinary Sciences majors apply to veterinary medical college. An additional five to ten percent apply to graduate school or plan to apply to veterinary medical school in the future. This indicates that approximately fifty percent of our majors have had to revise their career plans, usually as they encounter harder science classes in their sophomore year, but sometimes later if they discover another career path that they prefer or decide the financial burden of veterinary medical school is too great. The goal of this proposal is to refine our requirements for the BS-Animal Science subplan Biotechnology so that we better support transfer students and late change-of-career-plan students. The goal of the BS-Animal Science subplan Biotechnology is to prepare these students for careers in biotechnology and animal or human healthcare. In addition to the classes common to the Biotechnology and Animal Management subplans, the Biotechnology subplan includes requirements for 6 credits of biotechnology discovery-based research experience and biotechnology lab, 4 credits of veterinary and biotechnology lab techniques, 2 credits of Veterinary Microbiology lab, and 6 credits of research animal management training.

Resources

If this proposal requires no additional resources, say so and briefly explain why. If this proposal requires additional resources, explain how they will be paid for. For proposals involving instruction, indicate how many new enrollments are expected and whether the courses have room to accommodate them.

There are no additional resources required because we propose reducing the number of credits required for graduation in this subplan.

Curriculum

Provide a curriculum outline showing degree program requirements, requirements of any existing concentrations, requirements of proposed concentration, and how they relate. You may include this outline and any additional documents as attachments.

General Education credits - 15-23 credits

Common required BS-Animal Science major classes:

ANIMLSCI 101 Intro to Animal Sciences 4 credits (Fall)
ANIMLSCI 103 Intro to Animal Management 4 credits (Spr)
BIOLOGY 151 Intro to Biology I 4 credits
BIOLOGY 152 Intro to Biology II 3 credits
BIOLOGY 153 Intro to Biology lab 2 credits
CHEM 111 General Chemistry I 4 credits
CHEM 112 General Chemistry II 4 credits
CHEM 261 or 250 Organic Chemistry 3 credits
ANIMLSCI 220 Anatomy & Physiology 4 credits (Fall)
ANIMLSCI 200 Cellular & Molecular Biology 4 credits (Spr, OR BIOL 285 3 credits)
ANIMLSCI 260 Animal Care & Welfare 4 credits (Fall, satisfies SI Gen Ed)
Statistics class (STAT 111 or STAT 240 or RESEC 212) 3-4 credits
ANIMLSCI 311 Genetics 3 credits (Fall, OR BIOL 283 3 credits)
ANIMLSCI 332 Nutrition 4 credits (Fall)
ANIMLSCI 372 Animal Diseases 3 credits (Spr, OR ANIMLSCI 572 Spr 3 credits)
ANIMLSCI 392A Careers in Animal Science 1 credit (Spr)
BIOCHEM 420 Biochemistry 3 credits (OR BIOCHEM 523 3 credits)
ANIMLSCI 421 Fundamentals of Reproduction 3 credits (Fall OR ANIMLSCI 521 Spr 4 credits)
MICROBIO 310 Microbiology 3 credits
NATSCI 397A Jr. Writing 3 credits
ANIMLSCI 494GI Good Intentions- Int. Exp. 3 credits (OR ANIMLSCI 494TI+ANIMLSCI 499T OR NATSCI 494I)

69-70 credits

BS-Animal Science subplan Biotechnology- common classes plus:

ANIMLSCI 365 Fundamentals in Veterinary and Biotechnology Laboratory Techniques 4 credits (Fall)
ANIMLSCI 291C, 291M, 391C, 391M, 491C, 491M/ANIMLSCI 385 Intro. to Biotechnology 6 credits
ANIMLSCI 390A Veterinary Microbiology Lab 2 credits (Spr)
ANIMLSCI 455 Research Animal Management 3 credits (Fall)
ANIMLSCI 490R Research Animal Management II 3 credits (Spr)

18 credits

Total: 102-111 credits