FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Faculty Senate

FROM: Jack Kirby JRK

DATE: April 9, 2015

SUBJECT: Curriculum Proposal #14-15-21

College of Science & Technology; Biology 2205 Technical Microbiology

FINAL FACULTY SENATE APPROVAL ON APRIL 14, 2015.

I recommend approval of the attached Curriculum Proposal #14-15-21. The Curriculum Committee has passed this proposal for both 1st and 2nd readings.

This proposal changes BIOL 2205 (Technical Biology) from a four-credit course to a three-credit lecture course, offered along with a new one-credit laboratory course, BIOL 2206, that can be taken separately as necessary.

C: Dr. Christina Lavorata
Dr. Donald Trisel
Dr. Steven Roof
Dr. Tony Morris
Ms. Leslie Lovett
Ms. Cheri Varkonda

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FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby

DATE: January 23, 2015

SUBJECT: Curriculum Proposal #14-15-21

College of Science & Technology; Biology 2205 Technical Microbiology

I recommend approval of the attached Curriculum Proposal #14-15-21. This proposal requests to change BIOL 2205 (Technical Microbiology) from a four-credit course to a three-credit lecture course and additionally offer a one-credit laboratory course, BIOL 2206.

c: Dr. Christina Lavorata
Dr. Donald Trisel
Dr. Steven Roof
Dr. Tony Morris
Ms. Leslie Lovett
Ms. Cheri Varkonda

PREPARING CURRICULUM PROPOSALS

INSTRUCTIONS

Draft your proposal in accordance with the guidelines below and the format shown on the following pages. Should any item under the several headings not pertain to your proposal, write N/A. **Number the second and subsequent pages of your proposal.**

Supply the preliminary information about the proposal as indicated below:

PROPOSAL NUMBER: Leave this space blank. A number will be assigned to the proposal by the Associate Provost.

SCHOOL: Enter the name of the College or School (e.g., *Liberal Arts*), Department (e.g., Language and Literature), and Program (e.g., English).

PREPARER/CONTACT PERSON: Enter the name of the person who prepared the proposal and his/her telephone extension number.

COPIES OF MEMOS SENT TO AFFECTED DEPARTMENTS: Attach these to the back of your proposal.

LETTERS OF SUPPORT FROM DEANS OF AFFECTED DEPARTMENTS: If the Curriculum Committee requests these letters, attach them to the back of your proposal.

DATE SUBMITTED: The Curriculum Committee meets on the fourth Tuesday of each month. **Proposals are due in the Office of the Associate Provost on or before the second Tuesday of the month.**

REVISION SUBMISSION DATE: If changes are required to the original proposal, enter the date the proposal was resubmitted.

IMPLEMENTATION DATE REQUESTED: Enter the first day of the semester (or summer term) and year in which the proposed curriculum change(s) would take effect.

CURRICULUM PROPOSAL (Submit one hard copy and an electronic copy to the Associate Provost by the second Tuesday of the month.)

Proposal Number: 14-15-21

School/Department/Program: Science and Technology/BCG/Biology

Preparer/Contact Person: Tony Morris

Telephone Extension: 4493

Date Originally Submitted: 10/7/14

Revision (Indicate date and label it Revision #1, #2, etc.):

Implementation Date Requested: Fall 2015

I. **PROPOSAL**. Write a brief abstract, not exceeding 100 words, which describes the overall content of the proposal.

The content of the proposal details the changing of BIOL 2205 (Technical Microbiology), a four-credit course requiring a concurrent lecture section and laboratory section, into an independent three-credit lecture course and one-credit laboratory course (BIOL 2206). These changes will not affect the total subject matter, nor will it significantly affect how this material is taught. This change will 1) allow the Nursing program the option of requiring students to take only the lecture component, or both components, 2) allow for separate grades to be submitted for the lecture and the laboratory components, and 3) improve transfer and articulation from other institutions.

II. **DESCRIPTION OF THE PROPOSAL**. Provide a response for each letter, A-H, and for each Roman Numeral II–V. If any section does not apply to your proposal, reply N/A.

A. Deletion of course(s) or credit(s) from program(s)

Total hours deleted. N/A

B. Addition of course(s) or credit(s) from program(s)

Total hours added. N/A

C. Provision for interchangeable use of course(s) with program(s)

N/A

D. Revision of course content. Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog.

N/A

E. Other changes to existing courses such as changes to title, course number, and elective or required status.

The course content for Technical Microbiology will essentially remain the same, but will be split into two separate and gradable sections: BIOL 2205 (theory) and BIOL 2206 (lab). See Appendix B for complete descriptions.

F. Creation of new course(s). For each new course

1. Designate the course number, title, units of credit, prerequisites (if any), ownership (FSU or shared) and specify its status as an elective or required course. If you are creating a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for the course being shared.

   BIOL 2205 and 2206 will not be new courses. There will be no change in credits, prerequisites, and ownership. This separation of lecture and lab is in response to a Nursing program change. This course modification does not cause any program changes. BIOL 2206 will be independent from BIOL 2205. Students may take the lab with or without the lecture or vice versa.

   See Appendix A.

2. Include, as an appendix, a course description, written in complete sentences, suitable for use in the college catalog.

   See Appendix B.

3. Include, as an appendix, a detailed course outline consisting of at least two levels.

   See Appendix C.

4. In order to meet the requirements as outlined in Goal One of the Strategic Plan, please include Outcome Competencies and Methods of Assessment as an appendix. Examples are available upon request from the Chair of the Curriculum Committee.

   See Appendix D.

G. Attach an itemized summary of the present program(s) affected, if any, and of the proposed change(s).

   Describe how this proposal affects the hours needed to complete this program. Specifically, what is the net gain or loss in hours? Use the format for Current and Proposed Programs in Appendix A.

   These are course level changes.

III. **RATIONALE FOR THE PROPOSAL.**

A. **Quantitative Assessment**: Indicate the types of assessment data, i.e., surveys, interviews, capstone courses, projects, licensure exams, nationally-normed tests, locally developed measurements, accreditation reports, etc., that were collected and analyzed to determine that curricular changes were warranted. Quantitative data is preferred.

N/A

B. **Qualitative Assessment**: Based upon the assessment data above, indicate why a curricular change is justified. Indicate the expected results of the change. Be sure to include an estimate of the increased cost, or reduction in cost of implementation. FOR EXAMPLE: Will new faculty, facilities, equipment, or library materials be required?

A programmatic change in the nursing program initiated this proposal. One hour of instruction in microbiology laboratory was exchanged for one hour of psychiatric nursing. This should also aid in the transferability of lecture-only courses from other institutions. There will be no additional faculty, facilities or materials required. The reduction in laboratory hours will reduce the cost of materials and equipment in the biology program.

IV. Should this proposal affect any course or program in another school, a memo must be sent to the Dean of each school impacted and a copy of the memo(s) must be included with this proposal. In addition, the Deans of the affected schools must sign below to indicate their notification of this proposal.

By signing here, you are indicating your college's/school's notification of this proposal.

College/School	Dean	Signature
Nursing	Sharon Boni	Sharon Boni
Science and Technology	Don Trisel	Don Trisel

V. Should this proposal affect any course to be added or deleted from the general studies requirements, a memo from the chair of the General Studies Committee indicating approval of the change must be included with this proposal.

The 4 hour version of BIOL 2205 has already been approved for 4 hours of Natural Science general studies credit. Students will still be able to use BIOL 2205/2206 together for the 4 hours of credit. In addition, the 3-hour lecture-only (BIOL 2205) will be submitted for approval for Natural Sciences on its own.

VI. ADDITIONAL COMMENTS.

N/A

APPENDIX A

B.X. Degree in XXXXXXXX
Current Program

NA

B.X. Degree in XXXXXXXX
Proposed Program

NA

APPENDIX B

Course Descriptions

BIOL 2205 S-FSU Technical Microbiology (lecture)..... 3 hours.
This course emphasizes the history of microbiology, microbial morphology and structure; microbial growth and physiology; environmental effects on bacteria; inhibition and killing of bacteria; virulence, pathogenicity, and invasiveness of microbes; modes of disease transmission and resistance. 3 hours of lecture per week.

BIOL 2206 S-FSU Technical Microbiology (lab)..... 1 hour.
This course teaches techniques of isolation, handling, culturing, identifying bacteria and the inhibition of bacterial growth. Safety, cleanliness, and responsibility are taught in the laboratory. One two-hour lab per week.

APPENDIX C

Course Outlines

BIOL 2205 Technical Microbiology (lecture) Outline

I. History of Microbiology
   a. Scientists
   b. Timeline of discoveries
II. Microscopy
   a. Light Microscope
      i. Magnification
      ii. Resolution
      iii. Contrast
   b. Other Microscopes
III. Microbial Growth
   a. Conditions for microbial growth
   b. Growth factors
   c. Pure culture
   d. Growth curve
IV. Controlling Microbial Growth
   a. Physical Control Methods
   b. Chemical Control Methods
   c. Mode of actions of methods
V. Viruses and Prions
   a. Characteristics of Viruses
   b. Growing Viruses
   c. Types of Viral Infections
      i. Persistant
      ii. Acute
   d. Characteristics of Prions
VI. Epidemiology
   a. Terminology
      i. Epidemics
      ii. Pandemics
      iii. Endemic
   b. Organizations involved in Epidemiology
      i. CDC
      ii. WHO
VII. Skin Infections
   a. Normal Flora
   b. Organisms and diseases
      i. Pathology
      ii. Symptoms

iii. Treatment

VIII. Wound Infections
- a. Type of Wounds
- b. Organisms and infections
  - i. Pathology
  - ii. Symptoms
  - iii. Treatment

IX. Gastrointestinal Infections
- a. Normal Flora
- b. Organisms and diseases
  - i. Pathology
  - ii. Symptoms
  - iii. Treatment

X. Respiratory Infections
- a. Normal Flora
- b. Organisms and diseases
  - i. Pathology
  - ii. Symptoms
  - iii. Treatment

XI. Sexually Transmitted Infections
- a. Normal Flora
- b. Organisms and diseases
  - i. Pathology
  - ii. Symptoms
  - iii. Treatment

XII. Nervous System Infections
- a. Organisms and diseases
  - i. Pathology
  - ii. Symptoms
  - iii. Treatment

XIII. Lymphatic System Infections
- a. Organisms and diseases
  - i. Pathology
  - ii. Symptoms
  - iii. Treatment

XIV. Simulated Unknown Project

BIOL 2206 Technical Microbiology (lab) Outline

I. Introduction to Safety and Laboratory Guidelines
II. Fundamental Skills for the Microbiology Laboratory
    a. Common Aseptic Transfers and Inoculation Methods
    b. Diversity and Ubiquity of Microorganisms
III. Microbial Growth
    a. Colony Morphology
    b. Growth Patterns in Broth
    c. Aerotolerance – Agar Deep Stab
IV. Microscopy
    a. Introduction to the Light Microscope
    b. Calibration of the Ocular Micrometer
    c. Examination of Eukaryotic Microbes
V. Bacterial Structure and Simple Stains
    a. Simple Stains
    b. Negative Stain
VI. Streak Plate Method of Isolation
VII. Gram Stain
VIII. Selective Media
    a. Mannitol Salt Agar
    b. Phenylethyl Alcohol Agar
    c. Eosin Methylene Blue Agar
    d. MacConkey Agar
IX. Control of Microorganisms
    a. Antimicrobial Susceptibility Test (Kirby-Bauer Method)
    b. Blood Agar
    c. Ultraviolet Radiation Damage and Repair
X. Medical Microbiology – Snyder Test
XI. Differential Tests
    a. Fermentation Test – Phenol Red Broth
    b. Catalase Respiration Test
    c. Oxidase Respiration Test
    d. Citrate Utilization Test
    e. Malonate Utilization Test
XII. Tests Detecting the Presence of Hydrolytic Enzymes
    a. Bile Esculin Test
    b. Starch Hydrolysis
    c. Urease Test (Broth)
    d. Casease Test
    e. Lipase Test (Spirit Blue)
XIII. 5-19 Combination Differential Media – SIM Medium
XIV. Unknown Project

APPENDIX D

Course Outcomes

BIOL 2205 Technical Microbiology (lecture) Outcomes

1. The student will use the vocabulary of science to identify basic microbiological facts, theories and principles.
2. The student will be able to recognize the correct and incorrect approaches used by scientists as they accept/reject scientific hypotheses.
3. The student will analyze the results of biochemical tests to identify unknown bacteria.
4. The student will apply and synthesize basic microbiological knowledge to solve a simulated unknown project.

BIOL 2205 outcomes will be assessed by 4 unit exams (outcomes 1 and 2), and a class project (outcome 3 and 4).

BIOL 2206 Technical Microbiology (lab) Outcomes

1. The student will interpret biochemical tests.
2. Using basic microbiological techniques the student will isolate and identify bacteria

BIOL 2206 outcomes will be assessed by laboratory practicum (outcome 1) and an unknown project (outcome 2).