

MEMORANDUM

000004

DATE: 4 November 2011
TO: CAFLS and University Undergraduate Curriculum Committees
FROM: Dr. Tamara McNealy
RE: Changes to Microbiology (865) and Microbiology-Biomedicine (866) Curricula

Department of
Biological Sciences
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Currently the microbiology degree programs offer laboratories in combination with nine upper level microbiology courses. While this provides an excellent training opportunity for our majors, it also has some problems. There is a degree of redundancy within the labs and no flow from one course through the next, reducing the teaching potential in these labs. Also, guidelines from the American Society of Microbiology (the national microbiology society) recommend that all microbiology majors receive education in bioethics, bioinformatics, and careers in microbiology.

Therefore, we propose to condense the currently-offered nine microbiology labs into a three semester series (MICRO 450, 451, and 452) that will be offered to microbiology majors only. The series will also add hands on laboratory techniques in virology and mycology which are not currently being offered. A sequenced series of courses allows for the reduction of redundancy, an increase in efficiency and the ability to build on skills learned in the previous semester. The revision also brings the program in line with the American Society for Microbiology curriculum recommendations for microbiology majors.

The change of four credit microbiology courses into lecture-only will also encourage participation in lecture courses by non-majors who find it difficult to work the combined lecture/lab course offered in microbiology into their schedule.

Proposed Changes for Microbiology (865):

1. ENGL 315: moved to first semester sophomore year from current second semester junior year. This will allow our students to develop writing skills earlier in their studies so that they can apply them to their microbiology classes.
2. General Microbiology Requirement: moved from first to second semester sophomore year to make room for ENGL 315.
3. MICRO majors will take only the lecture portion of the following courses:
 - a) MICRO 401, Microbial Diversity and Ecology
 - b) MICRO 412, Bacterial Physiology
 - c) MICRO 415, Microbial Genetics
4. Addition to the curriculum of MICRO 450, 451, and 452 (the new lab series of required courses)

Additional Changes for Microbiology-Biomedicine (866)

5. MICRO majors will take only the lecture portion of :
 - a) MICRO 417, Molecular Mechanisms of Carcinogenesis and Aging
 - b) MICRO 414, Basic Immunology

Transition Plan and Courses Serving Other Degree Programs

The proposed curricula changes will become effective, if approved, for students beginning in the 2012-13 academic year. For students in curriculum years 2011 and before the following plan has been implemented. All courses that have been changed to a 3 credit lecture only will offer the lab currently associated with that course under a new course number (i.e. MICRO 415 lecture, MICRO 425 lab). Course forms and syllabi for these new courses have been submitted. For example, students whose curriculum requires them to have 4 credits for Microbial Genetics will register for both lecture and lab courses. The labs for MICRO 401, 411, 412, 414 and 415 will be phased out as our currently enrolled students complete their degrees (in approximately 2 -3 years).

Separate lab courses for MICRO 407 (Food and Dairy Microbiology), 413 (Industrial Microbiology) and 417 (Carcinogenesis and Aging) will continue to be offered under their new course numbers (437, 423, 427) as these labs are required in other majors (Food Sciences, Chemical Engineering, Biological Sciences).



Curriculum and Course Change System - Print Change/Delete Course Form

000005

X Change a Course - Abbrev & Number: MICRO- 401

Corresponding Lab Course: MICRO-L-401

Corresponding Honors course: MICRO-H-401

.. Add Honors course: --

Corresponding Graduate course: MICRO- -601

.. Add Graduate course: --**Course Title: MICRO DIVERSITY/ECOL****Brief Statement of Change:**

MICRO 401 is presently a lecture/lab course. We wish to separate the lecture and lab portions of the course. The lab will be proposed as a new courses.

Last Term taught: 1108

.. Change Abbrev to:

Effective Term: 01/2012

.. Change Number to:**.. Change Catalog Title:****.. Change Transcript Title:**

from:

from: MICRO DIVERSITY/ECOL

to:

to:

X From: Fixed Credit: 4 (2,6) To: Fixed Credit: 3 (3,0)

Change of Credit: Variable Credit: - (-), (-) Variable Credit: - (-),(-)**.. Add cross-listing with the following child course(s):****.. Delete cross-listing with the following child course(s):****.. Reverse Parent/Child relationship with:****X Change Method of Instruction****.. Change Course Modifier****.. Change General Education Designation**

from:

to:

.. A-Lecture Only

X

.. Pass/Fail Only

..

from: .. English Composition

to:

.. B-Lab (w/fee)

..

.. X Graded

..

.. Oral Communication

..

.. D-Seminar

..

.. Variable Title

..

.. Mathematics

..

.. E-Independent Study

..

.. Creative Inquiry

..

.. Natural Science w/Lab

..

.. F-Tutorial (w/fee)

..

.. Repeatable

..

.. Math or Science

..

.. G-Studio

..

.. maximum credits

.. A&H (Literature)

..

.. H-Field course

..

.. from:

.. A&H (Non-Literature)

..

.. I-Study Abroad

..

.. to:

.. Social Science

..

.. L-Lab (no/fee)

..

.. CCA

..

X N/B-Lecture/Lab(w/fee)

..

.. STS

..

.. N/L-Lecture/Lab(no fee)

..

.. Change Catalog Description:

from:

to:

.. Change Prerequisite(s):

from:

to:

Learning Objectives: 1.Students will be able to describe the vast diversity found in the microbial world, including the physiological, metabolic, and nutritional adaptations that allow microbes to grow in such a wide variety of environmental conditions. 2.Students will learn how to apply common ecological theories, models, techniques, and mathematics to microbial populations. 3.Students will be able to explain the many types of microbial interactions with other microbes, plants, animals, and humans. Students also will be able to determine how these interactions contribute in beneficial, detrimental, or neutral ways to the success of the microbes and/or their hosts.

Topical Outline: The number of hours devoted to each topic appears in parentheses following the topic.

Introduction/History and Review, Microbial Taxonomy and Phylogeny, Microbial Evolutionary Processes (3)

Microbial Diversity: The Deinococci and Nonproteobacteria Gram Negatives, the Proteobacteria, the Low G + C Gram Positives, the High G + C Gram Positives, Archaea, Protists, Fungi, and Viruses (12)

Microbial Habitats: Aquatic, Terrestrial (6)

Ecological Methods: sampling and culturing, non-culture/molecular methods (6)

Ecological terms and measurements and diversity indices (3)

Biogeochemical cycles (3)

Microbe-host interactions (6)

Microbe-Human interactions: Nasal and Oral, Gastrointestinal, Skin and Urogenital (3)

Exams (2)

Total - 44

Evaluation: For non-honors undergraduates, the grade will be determined as follows:

Exam 1 - 20%

608007

Exam 2 - 20%



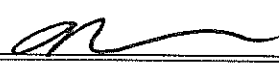
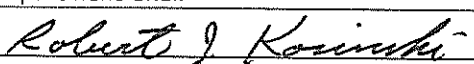
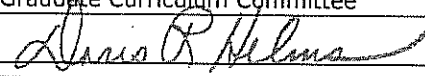
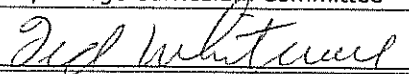

Six quizzes - 20% (total)

Final exam - 40%

Duplication (if applicable): The course and lab are already being taught.**Add course requirements for honors and/or 600-level courses (if applicable):** Honors - A detailed 3 to 4 page summary and discussion of a peer-reviewed journal article relevant to microbial diversity and/or ecology. Students may find their own articles or they may request one from the instructor. Students providing their own articles must have them approved by the instructor. Honors project must score an 80% to be given honors credit. Papers will be graded on a 100 point scale and included as part of the final grade as follows: Exam 1 - 15%, Exam 2 - 15%, Six quizzes - 15% (total), Paper 15% and Final exam - 40%.

Graduate - Graduate students must summarize, compare, and contrast TWO peer-reviewed journal articles relevant to microbial diversity and/or ecology. Students must find their own articles and have them approved by the instructor. The comparison paper must include a 1 to 2 page summary of EACH article with discussion (such as, could the authors have used different techniques to include flaws in the experimental design, do their conclusions match the presented results, what are the logical next steps, and what experiments would you propose for a follow-up paper?; a 2 to 3 page comparison and discussion of the two papers (do their findings agree? Do their findings disagree? If the findings disagree, what are some possible explanations?); and, discuss how these two papers contribute to the field of microbial ecology and diversity. Papers will be graded on a 100 point scale and included as part of the final grade as follows: Exam 1 - 15%, Exam 2 - 15%, Six quizzes - 15% (total), Paper 15% and Final exam - 40%.

Form Originator: HHENSON, John Henson **Date Form Created:** 11/3/2011**Form Last Updated by:** , **Date Form Last Updated:** 11/4/2011**Form Number:** 4644**Approval**

	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
	11/11/11		12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print New Course Form

000008

Course Abbreviation & Number:

X New Undergraduate Course: MICRO- 431

.. New Honors Course: --

.. New Graduate Course: -

Effective Term: 01/2012**Catalog Title:** Microbial Diversity and Ecology Lab**Transcript Title:** Micro Div Ecol Lab**Fixed Credit Course:** 1 (0,3)**Variable Credit Course:** - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
.. A-Lecture Only	.. Pass/Fail Only	.. English Composition
X B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
.. N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):

Catalog Description: Provides a laboratory experience to complement topics covered in the Microbial Diversity and Ecology lecture. These topics are important at practical levels to better understand the diversity of microbes in various ecosystems. The laboratory will be used to learn sampling techniques, preparation of microbial media, basic identification techniques, and modern molecular protocols for microbe identification, such as PCR and 16S rDNA gene sequencing.

Prerequisite(s): MICRO 305 w/ lab concurrent enrollment in MICRO 401, Organic Chemistry

Projected Enrollment:

Year 1 - 55 Year 2 - 55 Year 3 - 55 Year 4 - 55

Required course for students in: BS Microbiology (865) and BS Microbiology - Biomedicine Concentration (866) for students entering Clemson in 2011 or earlier. Curriculum change will make the course unnecessary for MICRO students entering in 2012 or later.

Statement of need and justification based on assessment results of student learning outcomes: MICRO 401 is now a lecture/lab course. Separation of lab (MICRO 431) and lecture (MICRO 401) will allow increased enrollment of students who need the lecture but do not need the lab.

Textbook(s): Instructor-prepared laboratory exercises

Learning Objectives: Students will learn techniques to isolate and identify microbes from the environment. They will develop skill with both classical and molecular microbiological techniques, will become familiar with certain bioinformatics tools.

Topical Outline: - Lab Orientation and Lab safety

- Preparation of Laboratory Media and Microscopy
- Winogradsky Column / Rossi-Cholodny Contact Slide Techniques
- Enrichment Cultures
- Isolation of Pure Cultures
- Characterization of Pure Cultures
- Midterm Lab Exam
- PCR Amplification of 16S rRNA
- Sequencing of 16S rRNA
- Isolation of Sulfate-Reducing Bacteria
- Isolation of Hydrocarbon-degrading Bacteria
- Nitrogen Fixation Lab
- RFLP Analysis/Diversity Assessment of Enrichments
- Laboratory Final Exam
- Lab Cleanup MANDATORY

Evaluation: Lab quizzes 15%

Lab midterm exam 20%

Lab final exam 20%

Lab notebook 20%

Lab report 15%

Lab citizenship 10%

Duplication (if applicable): None - MICRO 401 and its lab are being taught now.

Add course requirements for honors and/or 600-level courses (if applicable): While there will be Honors and graduate versions of MICRO 401, there will only be one version of the lab.

Form Originator: AMENSON, JOHN HENSON Date Form Created: 11/3/2011

Form Last Updated by: , Date Form Last Updated: 11/4/2011

Form Number: 4650

000009

Approval

<i>Robert J. Kosinski</i>	11/4/11	<i>Christa W. Anderson</i>	12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>[Signature]</i>	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kosinski</i>	11/11/11	<i>Chris R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Ad Whitman</i>	11/11/11	<i>[Signature]</i>	12/20/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print Change/Delete Course Form 000010

X Change a Course - Abbrev & Number: MICRO- 412

Corresponding Lab Course: MICRO-L-412
 Corresponding Honors course: MICRO-H-412
 .. **Add Honors course:** --
 Corresponding Graduate course: MICRO- -612
 .. **Add Graduate course:** --
Course Title: BACTERIAL PHYSIOLOGY

Brief Statement of Change:

The course is changing from a lecture/lab course to a lecture-only course. The lab will be offered as a separate course.

Last Term taught: 1101	.. Change Abbrev to:	
Effective Term: 01/2012	.. Change Number to:	
.. Change Catalog Title:	.. Change Transcript Title:	
from:	from: BACTERIAL PHYSIOLOGY	
to:	to:	
X	From: Fixed Credit: 4 (3,3)	To: Fixed Credit: 3 (3,0)
Change of Credit:	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**

.. **Delete cross-listing with the following child course(s):**

.. **Reverse Parent/Child relationship with:**

X Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
.. A-Lecture Only	X	.. Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	.. X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	.. maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	.. from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	.. to:	..	.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
X N/B-Lecture/Lab(w/fee)	..			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. Change Catalog Description:

from:

to:

.. Change Prerequisite(s):

from:

to:

Learning Objectives: This course will enable the students to understand basic bacterial physiology. They will learn bacterial structure and how it relates to function. They will also learn factors that influence and hinder bacterial growth and survival, study bacterial motility, nutrient transport and assimilation into bacterial components, and global metabolic regulation.

Topical Outline: Each topic below will be covered in either one or two lectures:

Composition and Structure of Bacterial Cells, Membrane Transport, Nutrient Uptake, Protein Excretion, Glycolysis, TCA Cycle, Electron Transport and Oxidative Phosphorylation, Biosynthesis and Microbial Growth, Metabolic Regulation, Photosynthesis, Aerobic Respiration, Microbial Survival, Chemolithotrophy, Heterotrophic Metabolism, Energy Acquisition, Fermentation, Anaerobic Respiration, Catabolite Repression, Chemotaxis, Oxidative Stress, Quorum Sensing, Sigma Factors, Heat Shock and Cold Shock, RNA Structure and Stability, Calvin Cycle, Nitrogen Metabolism, and ATP Synthesis.

Evaluation: For non-honors undergraduates, there will be three hour exams and a final. Each exam will be 25% of the grade.

Grading scale: 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, below 60% = F

Duplication (if applicable): This course and its lab are already being taught.

Add course requirements for honors and/or 600-level courses (if applicable): Honors students will be required to give a PowerPoint presentation in addition to the four lecture exams. The four lecture exams will each account for 20% of the grade and the presentation will account for the remaining 20%.

Grading Scale: 90-100=A, 80-89=B, 70-79=C, 60-69=D, below 60%=F

Graduate Students will be required to give an oral presentation on a selected topic in the subject area along with a term paper. The four exams will each count for 20%. The term paper will account for 10%, and the oral presentation will account for 10%.

Grading Scale: 90-100=A, 80-89=B, 70-79=C, 60-69=D, below 60%=F

Form Originator: T020509, Thomas Hughes **Date Form Created:** 11/3/2011

Form Last Updated by: , **Date Form Last Updated:** 11/3/2011

Form Number: 4648

Approval

<i>Robert J. Kosinski</i>	11/4/11	<i>Christa W. Anderson</i>	12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>[Signature]</i>	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kosinski</i>	11/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Jed Whittey</i>	11/11/11	<i>John J. [Signature]</i>	12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print New Course Form

009017

Course Abbreviation & Number:
 X New Undergraduate Course: MICRO- 422
 .. New Honors Course: --
 .. New Graduate Course: -

Effective Term: 01/2012

Catalog Title: Bacterial Physiology Laboratory
Transcript Title: Bacterial Phys Lab

Fixed Credit Course: 1 (0,3)

Variable Credit Course: - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
.. A-Lecture Only	.. Pass/Fail Only	.. English Composition
X B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
.. N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):

Catalog Description: Laboratory topics corresponding to MICRO 412 lecture. The course will train students in the proper handling of bacteria and will teach techniques for growing and maintaining bacterial cultures while avoiding contamination.

Prerequisite(s): Concurrent enrollment in MICRO 412

Projected Enrollment:

Year 1 - 48 Year 2 - 48 Year 3 - 48 Year 4 - 48

Required course for students in: Microbiology BS and Microbiology-Biomedicine BS for students entering Clemson in 2011 or earlier. Curriculum change will make the course unnecessary for MICRO students entering in 2012 or later.

Statement of need and justification based on assessment results of student learning outcomes: Students receiving a degree in microbiology must be proficient in the proper handling of bacteria. Whatever the chosen career goals of the students, the lab is essential to give them the experience needed to do research in the field. Also, we believe that by creating separate lecture and lab courses, we will make it possible for more students who do not need the lab to take the lecture course.

Textbook(s): no textbook

Learning Objectives: Students will learn the following techniques:
 maintaining bacterial cultures without contamination;
 determining bacterial population densities;
 determining bacterial protein concentrations and specific activities;
 performing molecular techniques on bacteria.

Topical Outline: The number of laboratory periods each of the following topics takes is listed in parentheses after the topic.

Growth, Maintenance, and Preservation of Bacterial Strains (2)

Bacterial Growth Curves (2)

Standard Dry Weight Growth Curves (1)

Protein Determination (1)

SDS-Page Analysis (1)

Biological Nitrogen Fixation (1)

Ultraviolet Radiation Effects on Bacteria (1)

Auxotrophic Mutant Isolation (2)

Bacterial Electroporation and Transformation (2)

Evaluation: Lab midterm exam: 20%

Lab final exam: 20%

Lab reports (3): 40%

Lab notebook: 10%

Culture maintenance: 10%

The grading scale will be A = 90-100, B = 80-89, C = 70-79, D = 60-69, F = below 60

Duplication (if applicable): MICRO 412 and its laboratory are already being taught.

Add course requirements for honors and/or 600-level courses (if applicable): While there are Honors and graduate versions of MICRO 412, there will only be one version of the lab.

Form Originator: T020509, Thomas Hughes **Date Form Created:** 11/3/2011
Form Last Updated by: , **Date Form Last Updated:** 11/4/2011
Form Number: 4649
Approval

000013

<i>Robert J. Kowinski</i>	11/4/11	<i>Carice W. Anderson</i>	12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>[Signature]</i>	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kowinski</i>	11/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Red Weitzman</i>	11/4/11	<i>[Signature]</i>	12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print Change/Delete Course Form

000011

X Change a Course - Abbrev & Number: MICRO- 414Corresponding Lab Course: MICRO-L-414
Corresponding Honors course: MICRO-H-414.. **Add Honors course:** --

Corresponding Graduate course: MICRO- -614

.. **Add Graduate course:** --**Course Title: BASIC IMMUNOLOGY****Brief Statement of Change:**

The course is currently a lab and lecture combined effort, and the MICRO degree program wishes to separate out the lab as a separate course offering. This will open the lecture to more students who do not need the lab, and will allow the course to fit in with the Microbiology curriculum revisions now underway.

Last Term taught: 1108

.. **Change Abbrev to:**

Effective Term: 08/2012

.. **Change Number to:**.. **Change Catalog Title:**.. **Change Transcript Title:**

from:

from: BASIC IMMUNOLOGY

to:

to:

X From: Fixed Credit: 4 (3,3) To: Fixed Credit: 3 (3,0)

Change of Credit Variable Credit: - (-), (-) Variable Credit: - (-),(-)**X Add cross-listing with the following child course(s):** AVS 414, AVS 414H, AVS 614, BIOSC 414, BIOSC 414H, BIOSC 614.. **Delete cross-listing with the following child course(s):**.. **Reverse Parent/Child relationship with:**

X Change Method of Instruction	.. Change Course Modifier	.. Change General Education Designation
---------------------------------------	----------------------------------	--

from:	to:	from:	to:	from:	to:
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.. A-Lecture Only	X	.. Pass/Fail Only English Composition	..
.. B-Lab (w/fee)	..	X Graded Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	.. maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	.. from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	.. to:	..	.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
X N/B-Lecture/Lab(w/fee)	..			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				

X Change Catalog Description:**from:** Consideration of the nature, production, and function of the basic immune response in animals. Procedures and mechanisms of antigen-antibody and other immune reactions.**to:** Introduction to the immune system of vertebrate animals, with an emphasis on structure, function, regulation, and cellular and molecular mechanisms of immune responses.**X Change Prerequisite(s):****from:** MICRO 305, organic chemistry**to:** MICRO 305, BIOSC 461**Learning Objectives:** The students will achieve an understanding of immune organ structure and function. They will be able to describe how the immune system is regulated, and they will understand the cellular and molecular mechanisms of various immune responses.**Topical Outline:** Each topic below will take 2-3 hours:

General overview and history of immunology

Cells and tissues of the immune system

Innate immunity

Antigens

Antibodies and immunoglobulin gene expression

Major histocompatibility complex

Antigen processing and presentation

T-cell receptors

T-cell development and differentiation

B-cell development and differentiation, and humoral immunity

Cytokines

Cell-mediated immunity

The complement system
 Leukocyte migration and Inflammation
 Hypersensitivity reactions
 Special immune conditions

000015

Evaluation: Undergraduate, non-honors students will be evaluated on the basis of performance on four scheduled tests and one final exam. Each of these exams will be worth 20% of the grade.

Grading scale will be A = 100-90%, B = 80-89%, C = 70-79%, D = 60-69%, F = less than 60%

Duplication (if applicable): None. MICRO 414 and lab are already being taught.

Add course requirements for honors and/or 600-level courses (if applicable): Honors students will be assigned a topic and will develop a 7 – 8-page paper that encompasses current approaches to the assigned topic in human or veterinary medicine, or treats the topic within the context of phylogeny and evolution of the immune system. For Honors students, each exam and the paper will count as 1/6 of the grade. The grading scale will be as above.

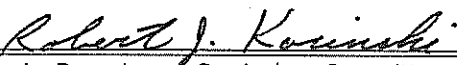

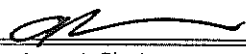
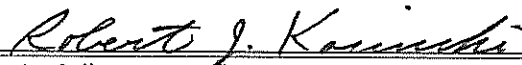

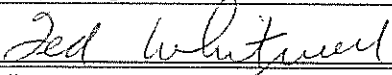

Graduate students will be expected to perform at a more advanced level and will be graded accordingly. Additionally, these students will be required to complete outside reading of the primary literature and submit a 10 – 12 page paper on a topic in Immunology research. For graduate students, each exam and the paper will each be 1/6 of the grade. The grading scale will be the same as for undergraduates, with the exception that graduate students achieving a grade of less than 70% will be assigned a grade of F.

Form Originator: CDRICE, Charles Rice **Date Form Created:** 11/3/2011

Form Last Updated by: , **Date Form Last Updated:** 11/4/2011

Form Number: 4645

Approval

	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
	11/11/11		12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		
Approvals related to cross-listing require the following signatures:			
[Child Course] Chair, Department Curriculum Committee	Date	[Child Course] Chair, College Curriculum Committee	Date
[Child Course] Department Chair	Date	[Child Course] College Dean	Date



Curriculum and Course Change System - Print New Course Form

000016

Course Abbreviation & Number:

X New Undergraduate Course: MICRO- 424
 .. New Honors Course: --
 .. New Graduate Course: -

Effective Term: 08/2012

Catalog Title: Immunology Laboratory

Transcript Title: Immun Lab

Fixed Credit Course: 1 (0,3)

Variable Credit Course: - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
.. A-Lecture Only	.. Pass/Fail Only	.. English Composition
X B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
.. N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):

Catalog Description: This course is designed to apply the knowledge gained in MICRO 414, Immunology lecture, in an applied setting. The experiments in this beginning immunology laboratory are designed to study both the innate and acquired immune systems. Experimentation into the formation, function and detection of antibodies provides students with skills in basic immunologic techniques.

Prerequisite(s): MICRO 305, Organic Chemistry I; concurrent enrollment in MICRO 414

Projected Enrollment:

Year 1 - 45 Year 2 - 45 Year 3 - 45 Year 4 - 45

Required course for students in: Microbiology (865) and Microbiology Biomedicine (866) for curriculum years 2011 and before.

Statement of need and justification based on assessment results of student learning outcomes: MICRO 414 is now a lecture/lab course. Separation of lab (MICRO 434) and lecture (MICRO 414) will allow increased enrollment of students who need the lecture but do not need the lab.

Textbook(s): None.

Learning Objectives: 1) Utilize immunological laboratory techniques to understand principles of antigen recognition, immune effector function and immune development.
 2) Discern the molecular, metabolic and structural differences between immunological cells and how these differences allow scientist to utilize lymphocytes as tools for science, medicine, and industry.
 3) Gain the laboratory experience to perform laboratory research and maintain a laboratory notebook following Good Laboratory Practice techniques
 4) The student will develop a basic knowledge of antigen-antibody reactions; serology and serological testing; agglutination and precipitation reactions and complement system and complement activity assays.
 5) Students will learn to perform labeled immunoassays including western blots, immunofluorescence assay (IFA), and enzyme-linked immunosorbent assays (ELISA)

Topical Outline: Topical Outline

Contact hours are listed in parenthesis after the module title.

Lab 1: Blood cells and immune tissues (3)
 Lab 2: Introduction to ELISA (3)
 Lab 3: Immunohistochemistry overview (3)
 Lab 4: Ouchterlony procedure (3)
 Lab 5: Hemagglutination (3)
 Lab 6: Western blot: Part 1 (3)
 Lab 7: Western blot: Part 2 (3)
 Lab 8: Immunology of pregnancy tests (3)
 Lab 9: Isotyping hybridomas (3)
 Lab 10: Affinity chromatography: Part 1 (3)
 Lab 11: Affinity Chromatography: Part 2 (3)
 Lab 12: Blood-based cancer diagnostics (3)
 Final Week of Labs: Exam (3)

000017

Evaluation: Assessment will be based on the following:

1. Exam. There will be a combined written and practical final exam to verify that students have learned the basic techniques and concepts of immunology.
2. Quizzes. There will be a quiz at the beginning of each lab period.

Final Grades will be calculated as follows:

Final Exam: 20%
 Quizzes: 80%

Letter grades are determined on the scale:

A 90 - 100
 B 80 - 89
 C 70 - 79
 D 60 - 69

Duplication (if applicable): MICRO 414 and its associated lab course are currently being taught.

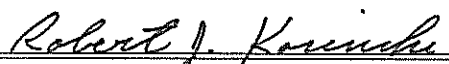
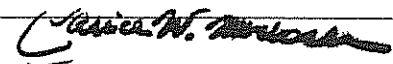

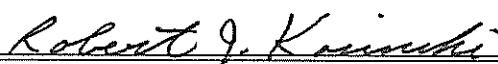
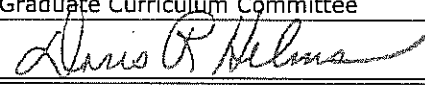
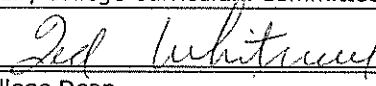
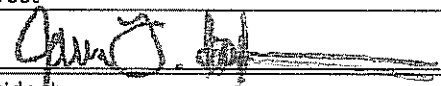
Add course requirements for honors and/or 600-level courses (if applicable): While there will be Honors and graduate versions of the lecture course (MICRO 414), there will be only one version of the lab course.

Form Originator: TMCNEAL, Tamara Mcnealy **Date Form Created:** 11/4/2011

Form Last Updated by: , **Date Form Last Updated:** 11/4/2011

Form Number: 4661

Approval

	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
	11/11/11		12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print Change/Delete Course Form

000018

X Change a Course - Abbrev & Number: MICRO- 415

Corresponding Lab Course: MICRO-L-415

Corresponding Honors course: MICRO-H-415

.. **Add Honors course:** --

Corresponding Graduate course: MICRO- -615

.. **Add Graduate course:** --**Course Title: MICROBIAL GENETICS****Brief Statement of Change:**

MICRO 415 is a presently a lecture/lab course. We wish to separate the lecture and lab. The lab will be proposed as a new course. Also, we are changing the prerequisites for both lecture and lab.

Last Term taught: 1108	.. Change Abbrev to:
Effective Term: 08/2012	.. Change Number to:
.. Change Catalog Title:	.. Change Transcript Title:
from:	from: MICROBIAL GENETICS
to:	to:

X	From: Fixed Credit: 4 (3,3)	To: Fixed Credit: 3 (3,0)
Change of Credit:	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**.. **Delete cross-listing with the following child course(s):**.. **Reverse Parent/Child relationship with:**

X Change Method of Instruction	.. Change Course Modifier	.. Change General Education Designation
from:	to:	from: to:
.. A-Lecture Only	X .. Pass/Fail Only	.. English Composition ..
.. B-Lab (w/fee)	.. X Graded	.. Oral Communication ..
.. D-Seminar	.. .. Variable Title	.. Mathematics ..
.. E-Independent Study	.. .. Creative Inquiry	.. Natural Science w/Lab ..
.. F-Tutorial (w/fee)	.. .. Repeatable	.. Math or Science ..
.. G-Studio	.. maximum credits	.. A&H (Literature) ..
.. H-Field course	.. from:	.. A&H (Non-Literature) ..
.. I-Study Abroad	.. to:	.. Social Science ..
.. L-Lab (no/fee)	..	.. CCA ..
X N/B-Lecture/Lab(w/fee)	..	.. STS ..
.. N/L-Lecture/Lab(no fee)	..	..

.. Change Catalog Description:

from:

to:

X Change Prerequisite(s):

from: BIOCH 301, MICRO 305 and 412

to: BIOCH 301 or 305, GEN 300 or 302, and MICRO 412

Learning Objectives: The course has two main learning objectives. The student will learn the techniques of genetic problem-solving and formal genetic analysis, especially using the bacterium E.coli. Second, the students will develop a practical working knowledge of Escherichia coli as a tool in molecular biology.

Topical Outline: Introduction - Genetics and Microbial Genetics (1hr)

Genome Organization and History of Microbial Genetics (1hr)

Chromosome Replication (3hr)

Transcription (1hr)

Translation (2hr)

Regulation of Gene Expression (3hr)

Mutations and Genetic Analysis (6hr)

Plasmids, Conjugation and Transformation (3hr)

Bacteriophage and Transduction (2hr)

Transposon and Site-Specific Recombination (1hr)

DNA repair and Homologous Recombination (3hr)

Small Group Discussions (4hr)

Student Presentations (12hr)

Hour Examinations (2hr)

Total 44 hours

600019

Evaluation: Grading Policy:

415 H415 615

Oral Presentation* 0% 10% 10%

Written Report** 0% 10% 0%

Grant Proposal*** 0% 0% 10%

Pop-Quizzes 10% 5% 5%

Exam I**** 25% 20% 20%

Exam II**** 25% 20% 20%

Exam III**** 40% 35% 35%

Total 100% 100% 100%

*Each Micro H415 and 615 student is required to give an oral presentation. The oral presentations will be on assigned papers from the primary literature.

**Honor students will have to prepare a written report on the research paper presented.

***Graduate students will have to prepare a grant proposal on a microbial genetics topic in the area of their research.

****Graduate students will be assigned more difficult exam questions.

Grading scale: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, below 60 = F

Duplication (if applicable): This course and its lab are already being taught.

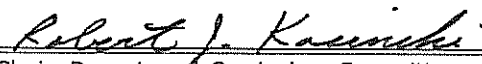

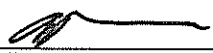

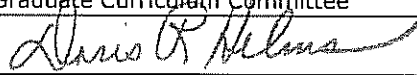
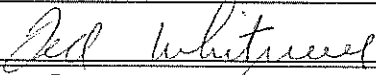
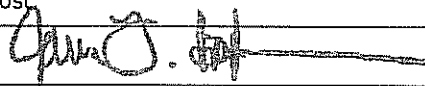
Add course requirements for honors and/or 600-level courses (if applicable): See Evaluation, above.

Form Originator: MCAO, Min Cao **Date Form Created:** 10/31/2011

Form Last Updated by: , **Date Form Last Updated:** 11/2/2011

Form Number: 4631

Approval

	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
	11/11/11		12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print New Course Form

000020

Course Abbreviation & Number:
 X New Undergraduate Course: MICRO- 425
 .. New Honors Course: --
 .. New Graduate Course: -

Effective Term: 08/2012

Catalog Title: Microbial Genetics Lab

Transcript Title: Micro Gen Lab

Fixed Credit Course: 1 (0,3)

Variable Credit Course: - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
.. A-Lecture Only	.. Pass/Fail Only	.. English Composition
X B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
.. N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):

Catalog Description: Complements the genetics topics which are covered in the Microbial Genetics lecture. These topics are important at practical levels for molecular and genetics studies. The laboratory will be used to teach basic cloning techniques, the basis of blue/white screening, isolation of mutants, calculation of mutation rate, as well as gene regulation.

Prerequisite(s): BIOCH 301 or 305, GEN 300 or 302, and MICRO 412; plus concurrent enrollment in MICRO 415

Projected Enrollment:

Year 1 - 45 Year 2 - 45 Year 3 - 45 Year 4 - 45

Required course for students in: both Microbiology BS and Microbiology-Biomedicine BS for students entering Clemson in 2011 or earlier. Curriculum change will make the course unnecessary for MICRO students entering in 2012 or later.

Statement of need and justification based on assessment results of student learning outcomes: MICRO 415 is now a lecture/lab course. Separation of lab (MICRO 425) and lecture (MICRO 415) will allow increased enrollment of students who need the lecture but do not need the lab. Also, we are establishing a new consolidated lab series that will make this course unnecessary for MICRO students entering Clemson in 2012 or later.

Textbook(s): Microbial Genetics Lab Handouts, Min Cao

Learning Objectives: The student will learn:

Safe handling of microorganisms

Basic microbiology techniques

Basic molecular cloning knowledge (features of plasmids, PCR, transformation, blue/white screen)

Techniques for the isolation of mutations

Methods for performing phenotype and genotype comparisons

How microbial genes are regulated

Data analysis and interpretation in microbial genetics

Formatting and professional standards for scientific reports

Topical Outline: Each topic represents one lab meeting.

- Biosafety, microbiology lab basics, calculations for preparing media, preparation of antibiotic media.

- Genomic DNA extraction

- Primer design and PCR

- DNA agarose gel & gel purification

- Ligation & transformation (blue/white screening)

- Plasmid miniprep & enzyme digestion

- MIC & ZOI Assays

- Midterm

- lac operon: phenotype-blue/white colonies

- lac operon: genotype-selection for spontaneous mutations

- lac operon: phenotype vs. genotype (result analysis and discussion)

- lac operon: glucose effect and β -galactosidase assay

- Final Exam

Evaluation: Attendance / Class participation 10

Lab reports (15 points x 2) 30
 Midterm 30
 Final Exam 30

000021

Publication (if applicable): MICRO 415 and its lab are already being taught.

Add course requirements for honors and/or 600-level courses (if applicable): While there will be a MICRO H415 and 615, there will be no graduate or Honors sections of the laboratory course.

Form Originator: MCAO, Min Cao **Date Form Created:** 11/1/2011

Form Last Updated by: , **Date Form Last Updated:** 11/4/2011

Form Number: 4633

Approval

<i>Robert J. Kasinski</i>	11/4/11	<i>Cecilia W. Anderson</i>	12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>[Signature]</i>	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kasinski</i>	11/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Paul Whittemore</i>	11/4/11	<i>[Signature]</i>	12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000023



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: MICRO- 417

Corresponding Lab Course: MICRO-L-417

Corresponding Honors course: MICRO-H-417

.. **Add Honors course:** --

Corresponding Graduate course: MICRO- -617

.. **Add Graduate course:** --

Course Title: CANCER AND AGING

Brief Statement of Change:

MICRO 417 is a presently a lecture/lab course. In order to allow more students to take the lecture course, we wish to separate the lecture and lab. The lab will be proposed as a new course.

Last Term taught: 1101

.. **Change Abbrev to:**

Effective Term: 01/2012

.. **Change Number to:**

.. **Change Catalog Title:**

.. **Change Transcript Title:**

from:

from: CANCER AND AGING

to:

to:

X From: Fixed Credit: 4 (3,3) To: Fixed Credit: 3 (3,0)

Change of Credit Variable Credit: - (-), (-) Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**

.. **Delete cross-listing with the following child course(s):**

.. **Reverse Parent/Child relationship with:**

X Change Method of Instruction

.. **Change Course Modifier**

.. **Change General Education Designation**

from:	to:	from:	to:	from:	to:
.. A-Lecture Only	X	.. Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar Variable Title	..	.. Mathematics	..
.. E-Independent Study Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee) Repeatable	..	.. Math or Science	..
.. G-Studio maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee) CCA	..
X N/B-Lecture/Lab(w/fee) STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**

from:

to:

.. **Change Prerequisite(s):**

from:

to:

Learning Objectives: Students will be able to describe how cancer and aging occur in eukaryotes, especially in mammalian cells. Students will learn the molecular basis of cancer biology and organism aging. After taking this course, the students will be able to attend a seminar or read a journal article in a related field and understand the update for the particular subject.

Topical Outline: Each topic listed below represents 3 lectures. The midterm exam takes one lecture.

- The nature of cancer
- Tumor viruses
- Cellular oncogenes
- Growth factors
- Receptors
- Signaling transduction
- Tumor suppressor genes
- Midterm
- pRb and cell cycle control
- p53
- Apoptosis
- Cell immortalization and tumorigenesis
- Cancer treatment
- The molecular basis of aging in multicellular organisms
- Presentations

000023

Total 44 hours

Evaluation: Evaluation of MICRO 417 students

Quizzes 35%
 Oral Presentation 15%
 Midterm Exam 25%
 Final Exam 25%
 Total 100%

See 600-level box below for graduate and Honors grading.




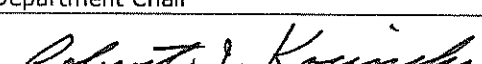
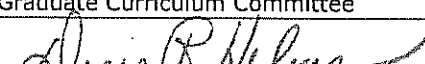
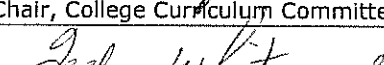

Duplication (if applicable): This course and its lab are already being taught.**Add course requirements for honors and/or 600-level courses (if applicable):** Evaluation of MICRO H417 students: Student will be assigned a current topic in biology of cancer and aging directly related to one of the lecture topics. Student will do literature research and submit a paper (scientific paper format) on the topic. Additionally, student will prepare a PowerPoint presentation to be given on the day that this topic is introduced in class by the instructor.

Quizzes 35%
 Oral Presentation 10%
 Written Report 5%
 Midterm Exam 25%
 Final Exam 25%
 Total 100%

Evaluation of MICRO 617 students: Student will select a current topic in microbiology directly related to one of the lecture topics. Student will do literature research and submit a paper (scientific paper format) on the topic. Additionally, student will prepare a PowerPoint presentation to be given on the day that this topic is introduced in class by the instructor. Finally, student will write a research proposal based on the data presented in the paper.

Quizzes 25%
 Oral Presentation 8%
 Written Report 7%
 Mid-term Exam 25%
 Grant Proposal 10%
 Final Exam 25%
 Total 100%

Form Originator: YDONG, Yuqing Dong **Date Form Created:** 11/1/2011**Form Last Updated by:** , **Date Form Last Updated:** 11/4/2011**Form Number:** 4637**Approval**

	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
	11/4/11		12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000024



Curriculum and Course Change System - Print New Course Form

Course Abbreviation & Number:
 X New Undergraduate Course: MICRO- 427
 .. New Honors Course: --
 .. New Graduate Course: -

Effective Term: 01/2012

Catalog Title: Cancer and Aging Lab
Transcript Title: Cancer and Aging Lab

Fixed Credit Course: 1 (0,3)
Variable Credit Course: - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
.. A-Lecture Only	.. Pass/Fail Only	.. English Composition
X B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
.. N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):

Catalog Description: The laboratory will be used to teach the basic molecular protocols for cancer and aging research, and will help students to understand the mechanisms of cancer and aging discussed in lecture.

Prerequisite(s): Concurrent enrollment in MICRO 417

Projected Enrollment:

Year 1 - 40 Year 2 - 40 Year 3 - 40 Year 4 - 40

Required course for students in: BS in Microbiology-Biomedicine Concentration-866 for students entering Clemson in 2011 or earlier. Curriculum change will make the course unnecessary for MICRO students entering in 2012 or later.

Statement of need and justification based on assessment results of student learning outcomes: MICRO 417 is now a lecture/lab course. Separation of lab (MICRO 427) and lecture (MICRO 417) will allow increased enrollment of students who need the lecture but do not need the lab.

Textbook(s): Cancer and Aging Lab Manual, Dong

Learning Objectives: The student will learn techniques to:

- Recognize the basic morphology of tumor cells
- Study cancer and aging related genes (oncogene, tumor suppressor gene, etc.)
- Study signal transduction
- Quantify cell aging
- Write scientific papers based on experimental data

Topical Outline: Total 36 hours

1. Visualization of normal & tumor cells (3 hours)
2. Tissue culture technology (3 hours)
3. Mammalian cell transfection I – transfection (3 hours)
4. Mammalian cell transfection II – western blot assay (3 hours)
5. Signal transduction (3 hours)
6. Cell fusion I – cells fluorescent labeling (3 hours)
7. Cell fusion II – fusion and observation (3 hours)
8. Protein-protein interaction I – Coimmunoprecipitation (3 hours)
9. Protein-protein interaction II – detection (3 hours)
10. Apoptosis I – induction (3 hours)
11. Apoptosis II – detection (3 hours)
12. Midterm and final exams (3 hours)

Evaluation: Midterm Exam: 10%

Final Exam: 15%

Attendance 10%

Quizzes: 15%

Lab Presentation: 15%

Lab Reports: 35%

Duplication (if applicable): MICRO 417 and its lab are already being taught.

Add course requirements for honors and/or 600-level courses (if applicable): While there will be a MICRO H417 and 617, there

will be no graduate or Honors sections of the laboratory course.

Form Originator: YDONG, Yuqing Dong **Date Form Created:** 11/2/2011

Form Last Updated by: , **Date Form Last Updated:** 11/4/2011

Form Number: 4638

Approval

<i>Robert J. Kasinski</i>	11/4/11	<i>Carice W. Murdoch</i>	12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>[Signature]</i>	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kasinski</i>	11/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Deed Lubitman</i>	11/11/11	<i>John J. [Signature]</i>	12/28/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

CLEMSON
UNIVERSITY

000026

Curriculum and Course Change System - Print New Course Form

Course Abbreviation & Number:

X New Undergraduate Course: MICRO- 450

.. New Honors Course: --

.. New Graduate Course: -

Effective Term: 01/2012**Catalog Title:** Advanced Microbiology Lab I**Transcript Title:** Adv Micro Lab I**Fixed Credit Course:** 2 (1,2)**Variable Credit Course:** - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
.. A-Lecture Only	.. Pass/Fail Only	.. English Composition
.. B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
X N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):**Catalog Description:** Application of knowledge and techniques learned in the Introductory Microbiology Lab with new topics on microbial ecology, diversity and physiology. Experiments in soil, marine and environmental microbiology will be conducted.**Prerequisite(s):** MICRO 305, 401**Projected Enrollment:**

Year 1 - 40 Year 2 - 45 Year 3 - 50 Year 4 - 50

Required course for students in: Microbiology BS (865), Microbiology-Biomedicine BS (866)

Statement of need and justification based on assessment results of student learning outcomes: Currently, the nine advanced microbiology courses each offers a laboratory. The goal of the advanced lab series is to condense these nine laboratories into three. MICRO 450 is the first course in this three lab series. This series provides all microbiology students with the essential laboratory skills and experiences for successful completion of the degree. MICRO 450 provides the student with hands-on training with organisms from soil and aquatic environments focusing on ecology, diversity and physiology of the organisms. The national organization in microbiology recommends that microbiology majors receive laboratory experiences in the three core courses (Ecology/Diversity, Physiology, Genetics) and one advanced lab course (in any microbiology advanced course). This lab course series will eliminate redundancy, improve efficiency and provide students with an intensive, focused laboratory experience. Employers routinely comment that students with this type of experience are chosen over those without when hires are being considered.

Textbook(s):**Learning Objectives:** 1. Students will acquire an understanding of the interactions of microorganisms with the environment and their impacts on it.

2. Students will use the correct method of collection, storage and transport of environmental specimens for microbiological investigations.

3. Students will plan and interpret laboratory investigations for the sampling, collection, and identification of environmental microorganisms.

4. Students will be familiar with the normal microbial populations in various environments, including soil, aquatic, and marine habitats.

5. Students will be introduced to bioinformatics programs and become proficient in the use of Excel to store and analyze data, PowerPoint for the communication of data, and graphics programs to properly display results

Topical Outline: This course is divided into four topic areas: Microbial ecology and diversity, metabolism and physiology, interactions and impact of microbes in the environment, and soil, marine, and environmental microbiology. Some modules will cover multiple topic areas, some modules will occur concurrently. Contact hours are listed in parenthesis after the module title.

Module 1: Microbial Ecology and Diversity (12)

Week 1: Lecture: In situ assessment of microbial environmental samples, in situ nucleic acid collection

Lab: Sample collection; Rossi-Cholodry slides / Winogradski columns

Week 2: Lecture: Isolation of nucleic acid from enriched cultures

Lab: Nucleic acid isolation from environmental samples

Week 3: Lecture: Enrichment of environmental samples

Lab: Media preparation and inoculation of ecological samples

Week 4: Lecture: Use of Excel for data storage and analysis, PowerPoint and graphics software for data presentation

Lab: Samples prepared for sequencing

Module 2: Applied / Environmental Microbiology (12)

Week 1: Lecture: Environmental sampling techniques/recording observations (pH, temperature at the surface and at depth, available water, Redox, soil type)

Lab: Collection of environmental samples

Week 2: Lecture: Enrichments – metabolic groups – biogeochemical cycles of carbon and nitrogen

Lab: Sample enrichments to isolate methane oxidizers

Week 3: Lecture: isolation techniques – dilutions, pour plates, isolation streaks

Lab: Isolation of organisms from enrichment through various methods

Week 4: Lecture: Primary literature analysis and interpretation

Lab: Samples prepared for sequencing

Module 3: Nucleic acid profiling and analysis (12)

Week 1: Lecture: Restriction Fragment Length Polymorphism techniques and uses

Lab: RFLP – in situ and enrichment cultures

Week 2: Lecture: Denaturing Gradient Gel Electrophoresis techniques and uses

Lab: DGGE – in situ and enrichment cultures

Week 3: Lecture: Biogeochemical cycles--iron and manganese (inorganic)

Lab: Enrichment cultures

Week 4: Lecture: Next Gen Sequencing: genome and transcriptome analyses

Lab: Samples prepared for sequencing

Module 4: Bioinformatics (3)

Week 1: Lecture: Bioinformatics – BLAST searches; Alignments and sequence comparisons

Lab: BLAST search and alignments of sequence data from Modules 1, 2, and 3

Evaluation: Assessment will be based on the following:

1. Exam. There will be a final exam to verify that students have learned the basic techniques in handling and identification of microbes from environmental sources.
2. Quizzes. There will be a quiz at the beginning of each lab period.
3. Informative speech. Each student will develop an informative speech on the role of microbial communities in various environmental habitats. A list of bacteria covered will be provided. Speeches will be accompanied by a handout of the important points given to the class.
4. Lab report. One lab report will be assigned.
5. Excel/PowerPoint/graphics assessment. Each student will submit results from a lab module chosen by the instructor in the form of an Excel file with the appropriate data analyses. A PowerPoint presentation with embedded graphics of the results will also be used for assessment of appropriate data presentation.
6. Bioinformatics Analysis. Students will analyze the sequences obtained in modules 1, 2 and 3 and complete a bioinformatics analysis to include use of the BLAST program and alignment software.

Final Grades will be calculated as follows:

Final Exam: 20%

Quizzes: 15%

Informative speech: 20%

Lab Reports: 20%

Excel/PowerPoint Assignment: 10%

Bioinformatics Assignment: 15%

Letter grades are determined on the scale:

A 90 – 100

B 80 – 89

C 70 – 79

D 60 – 69

F < 59




Learning Activities associated with General Education competencies (if applicable): The course will generate artifacts that can be included in the students ePortfolio for oral communication.

Form Originator: TMCNEAL, Tamara Mcnealy **Date Form Created:** 10/29/2011

Form Last Updated by: , **Date Form Last Updated:** 10/31/2011

Form Number: 4611

Approval

	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kinsch</i>	<i>11/10/10</i>	<i>David R. Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Dee Whitman</i>	<i>11/11/11</i>	<i>Chun T. Ho</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print New Course Form

Course Abbreviation & Number:

X New Undergraduate Course: MICRO- 451

.. New Honors Course: --

.. New Graduate Course: -

Effective Term: 01/2012**Catalog Title:** Advanced Microbiology Lab II**Transcript Title:** Adv Micro Lab II**Fixed Credit Course:** 2 (1,2)**Variable Credit Course:** - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
.. A-Lecture Only	.. Pass/Fail Only	.. English Composition
.. B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
X N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):**Catalog Description:** Application of knowledge and techniques learned in the Advanced Microbiology Lab I with new topics in microbial cell biology and microbial genetics.**Prerequisite(s):** MICRO 305, 401, 412 and 450**Projected Enrollment:**

Year 1 - 45 Year 2 - 45 Year 3 - 50 Year 4 - 50

Required course for students in: Microbiology BS (865) and Microbiology-Biomedicine BS (866)

Statement of need and justification based on assessment results of student learning outcomes: Currently, the nine advanced microbiology courses each offer a laboratory. The goal of the advanced lab series is to condense these nine laboratories into three. MICRO 451 is the second course in this three lab series. These courses provides all microbiology students with the essential laboratory skills and experiences for successful completion of the degree. This course provides the student with hands-on training based in microbial cell biology, microbial genetics, industrial microbiology and food microbiology. The national organization in microbiology recommends that microbiology majors receive laboratory experiences in the three core courses (Ecology/Diversity, Physiology, Genetics) and one advanced lab course (in any microbiology advanced course). This lab course series will eliminate redundancy, improve efficiency and provide students with an intensive, focused laboratory experience. Employers routinely comment that students with this type of experience are chosen over those without when hires are being considered.

Textbook(s):

Learning Objectives: 1. Students will acquire a complete understanding of microbial cell structure and function through advanced microscopy techniques and analysis of various cultures. Students will properly analyze and present laboratory data to the class in poster format.

2. Students will develop an understanding of how microbial species can be manipulated to produce a desired product for industrial purposes and the necessary steps for product purification, presenting the generated data in a press news release format.

3. Students will plan and interpret laboratory investigations for the production of biofuel from various sources of carbon, using the interpreted data to write a persuasive speech for the use of biofuels

4. Students will understand the importance of microbes in food production and spoilage with emphasis on proper handling and basic knowledge of common food-borne pathogens

Topical Outline: Topical Outline

This course is divided into four topic areas: Microbial cell biology, microbial genetics, food and agricultural microbiology, and industrial microbiology. Some modules will cover multiple topic areas, some modules will occur concurrently. The number of contact hours per module is shown in parentheses.

Module 1: Microbial Cell Biology and Advanced Microscopic Techniques (9)

Week 1: Lecture: Microbial cell structure and function

Lab: Sample preparation and Brightfield Microscopy

Week 2: Lecture: Advanced Microscopy Techniques

Lab: Confocal and Fluorescent Microscopy

Week 3: Lecture: Adv Microscopy (con't) and Microsoft Powerpoint poster basics

Lab: SEM/TEM

000030

Module 2: Cloning, Purification and Analysis of Desired Product (12)

Week 1: Lecture: DNA extraction and purification techniques

Lab: Genomic DNA Extraction and PCR

Week 2: Lecture: DNA gel electrophoresis and gel documentation basics

Lab: DNA Agarose Gel & Gel purification

Week 3: Lecture: DNA ligation and transformation procedures

Lab: Ligation and Transformation

Week 4: Lecture: Use of DNA kits / Communicating with the general public

Lab: Plasmid miniprep and enzyme digestion

Module 3: Production of Biofuels (6)

Week 1: Lecture: Biofuel production – current research

Lab: Design of experiment to produce biofuel using a waste carbon source and an organism of choice. Media preparation and inoculation of starter culture

Week 2: Lecture: Feasibility of the widespread use of biofuels / Persuasive speech

Lab: Biofuel experiment / verification of biofuel production and analysis of quality and quantity

Module 4: Food Microbiology (12)

Week 1: Lecture: Food handling, sampling, and preservation

Lab: sampling and sample handling / aerobic plate count of ground beef

Week 2: Lecture: Food-borne pathogens

Lab: Coliform count / ground beef and isolation of Salmonella / chicken skin

Week 3: Lecture: Food preservation through fermentation

Lab: beer / wine production

Week 4: Lecture: Food fermentations on an industrial scale

Lab: beer / wine production – analysis of product for quality and quantity of ethanol produced

Evaluation: Assignments and Evaluation:

Assessment will be based on the following:

1. Exam. A practical final exam will be given to verify that students have learned the practices and techniques.
2. Quizzes. There will be a quiz at the beginning of each lab period.
3. Poster. Each student will develop a poster with results from the various microscopic techniques used in the microbial cell biology module.
4. Lab report. Each student will write one lab. Lab reports are due the following lab period to the lab instructor. 25% of the class will be assigned a lab report for each module.
5. News Release. A news release on genetically altered microorganisms will be written. This assignment is worth 25 points.
6. Persuasive Speech. Each student will write a persuasive speech on topics related to the use of Biofuels using data generated in lab and found in current research articles.

Final Grades will be calculated as follows:

Final Exam: 20%

Quizzes: 15%

Poster: 20%

Lab Report: 20%

News Release: 15%

Persuasive Speech: 10%

Letter grades are determined on the scale:

A 90 – 100

B 80 – 89


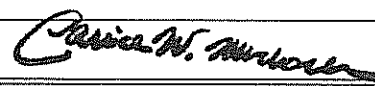

C 70 – 79

D 60 – 69

F < 59

Learning Activities associated with General Education competencies (if applicable): The course will generate artifacts that can be included in the students ePortfolio for oral communication.

Form Originator: TMCNEAL, Tamara Mcnealy **Date Form Created:** 10/28/2011**Form Last Updated by:** RJKSN, Robert Kosinski **Date Form Last Updated:** 10/31/2011**Form Number:** 4580**Approval**

	11/14/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/14/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kusinski</i>	<i>11/11/11</i>	<i>Alexis R Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Ed Whitman</i>	<i>11/11/11</i>	<i>James J. [Signature]</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000032



Curriculum and Course Change System - Print New Course Form

Course Abbreviation & Number:
 X New Undergraduate Course: MICRO- 452
 .. New Honors Course: --
 .. New Graduate Course: -

Effective Term: 08/2012

Catalog Title: Advanced Microbiology Lab III

Transcript Title: Adv Micro Lab III

Fixed Credit Course: 2 (1,2)

Variable Credit Course: - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
.. A-Lecture Only	.. Pass/Fail Only	.. English Composition
.. B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
X N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):

Catalog Description: Application of knowledge and techniques learned in the Advanced Microbiology Labs I and II with new topics on pathogenic bacteriology, parasitology, virology and immunology.

Prerequisite(s): MICRO 305, 401, 412, 415, 450, 451

Projected Enrollment:

Year 1 - 45 Year 2 - 45 Year 3 - 50 Year 4 - 50

Required course for students in: Microbiology (865) and Microbiology-Biomedicine (866)

Statement of need and justification based on assessment results of student learning outcomes: Currently, the nine advanced microbiology courses each offer an independent laboratory. The goal of the advanced lab series is to condense this into three. MICRO 452 is the final course in this three lab series. These courses provides all microbiology students with the essential laboratory skills and experiences for successful completion of the degree. This course provides the student with hands-on training with organisms in medical microbiology to include bacteria, viruses, parasites and fungi. The national organization in microbiology recommends that microbiology majors receive laboratory experiences in the three core courses (Ecology/Diversity, Physiology, Genetics) and one advanced lab course (in any microbiology advanced course). This lab course series will eliminate redundancy, improve efficiency and provide students with an intensive, focused laboratory experience. Employers routinely comment that students with this type of experience are chosen over those without when hires are being considered.

Textbook(s):

- Learning Objectives:**
1. The student will acquire a foundation in the biology of bacteria, viruses, fungi, and parasites that will serve as a basis for his/her continuing understanding of infectious diseases
 2. Students will be able to list and describe the normal flora and infective microorganisms of the human body and describe the host-pathogen relationship in multiple contexts.
 3. Students will use the correct method of collection, storage and transport of clinical specimens for microbiological investigations
 4. Students will plan and interpret laboratory investigations for the diagnosis of infectious diseases and to correlate the clinical manifestations with the etiologic agents.
 5. Students will apply the methods of sterilization and disinfection to prevent and control infection.
 6. Students will use modern multimedia tools to present and communicate a topic in medical microbiology to the class.

Topical Outline: Topical Outline

This course is divided into five topic areas: Pathogenic Bacteriology, Parasitology, Virology, Immunology and Mycology. Some modules will cover multiple topic areas; some modules will occur concurrently. Each week will consist of a lecture period to introduce the topic, followed by the practical experience. The number of contact hours for each module appears after the module title

Module 1: Pathogen-Environment-Human Interactions (10.5)

"Legionella: An environmental pathogen in your shower."

Week 1: Lecture: Legionella and related water borne pathogens - Isolation and Identification

Lab: Isolating pathogens from water sources; basic identification of Legionella species;

Week 2: Lecture: Diagnostic protocols - Key characteristics; How to choose

Lab: Quick Tests for Legionella; PCR analysis: Urine Antigen Tests

Week 3: Lecture: Immunologic response to intracellular pathogens

Lab: Serology for immune response; agglutination assays

Week 4: Lecture: Clinical molecular microbiology - direct fluorescent antibody assays
Lab: Direct Fluorescent Antibody Analysis

000033

Module 2: Influenza: Eggs, cell culture, vaccines (10.5)

Week 1: Lecture: Vaccine production in eggs - why and how (concurrent with Wk 4, Module 1)

Lab: Culture of influenza in eggs

Week 2: Lecture: Cell Culture - How to / Advantages and Disadvantages

Lab: Isolation from eggs, cell culture basics

Week 3: Lecture: Viral Analyses

Lab: Plaque assays

Week 4: Lecture: Immunology of Viruses

Lab: ELISA / Western Blots

Module 3: Malaria - from mice to men (12)

Week 1: Lecture: Animal Welfare/Models/Handling

Lab: Mice handling, tail vein sampling, inoculation

Week 2: Lecture: Field Diagnostics for parasites

Lab: Blood smears / microscopy for parasites

Week 3: Lecture: Immunology of malaria

Lab: Serology, Antibody titers

Week 4: Lecture: Clinical Diagnostics - Real time PCR

Lab: qPCR

Module 4: Infectious Fungi (6)

Week 1: Lecture: Identification and culture of yeasts and fungi

Lab: Identification and culture of yeasts and fungi

Week 2: Lecture: Fungal disease and immune response

Lab: Fungal Immunoserology

Total = 13 hours of lecture, 26 hours of Lab

Evaluation: Assignments and Evaluation:

Assessment will be based on the following:

1. Exam. The final exam will be a practical to verify that students have learned the basic techniques in handling and identification of pathogenic organisms.
2. Quizzes. There will be a quiz at the beginning of each lab period. Each quiz is worth 10 points.
3. Podcast. Each student will develop a multimedia based presentation on a pathogenic bacterium species not discussed in the course. Topics must be approved by the instructor. The presentation is worth 25 points.
4. Lab reports. Two lab reports - one on the Legionella module and one on the Malaria will be assigned. Each report is worth 20 points.
5. Grant Proposal. A grant proposal for a proposed laboratory research project is worth 30 points.

Final Grades will be calculated as follows:

Final Exam: 20%

Quizzes: 15%

Podcast: 20%

Lab Reports: 20%

Grant proposal: 25%

Letter grades are determined on the scale:

A 90 - 100

B 80 - 89

C 70 - 79

D 60 - 69

F < 59

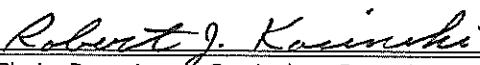


Learning Activities associated with General Education competencies (if applicable): The course will generate artifacts that can be included in the students ePortfolio for oral communication.

Form Originator: TMCNEAL, Tamara Mcnealy **Date Form Created:** 10/24/2011

Form Last Updated by: , **Date Form Last Updated:** 10/29/2011

Form Number: 4562

Approval

	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kasinski</i>	11/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Dee Whitman</i>	11/11/11	<i>James J. Helms</i>	12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000035



Curriculum and Course Change System - Print Major Form

Change Major Name: Microbiology
Degree: BS
Effective Catalog Year: 2012
 .. **Change Major Name to:**
 .. **Change Degree to:** (CHE approval required)
 X **Change Curriculum Requirements**
 (Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
 .. **Change General Education Requirements**
 (Must also submit a General Education Checklist)
 .. **Add, Change or Delete Concentration(s)**
 (Submit or upload Curriculum map in catalog format. CHE approval required)
 .. **Add, Change or Delete Emphasis Area(s)**

Explanation: The primary purpose of this revision is to condense the currently offered nine microbiology labs into a three semester series of required courses. The series will also offer experiences in laboratory techniques in virology and mycology which are not currently being offered. A sequenced series of courses allows for the reduction of redundancy and an increase in efficiency. The revision brings the program in line with the American Society for Microbiology curriculum recommendations for microbiology majors. The separation of the courses into lecture only and the lab series also will encourage participation in lecture courses by non-majors. Currently, many non-microbiology students find it difficult to work the combined lecture/lab course offered in microbiology into their schedule. These labs will ensure that our microbiology majors get practical experience in the areas and techniques which are needed for immediate employment after graduation.

Summary of changes:

New Courses

MICRO 450,451,452 Advanced Microbiology Laboratory Series I - III

Required courses for the Microbiology BS changed to lecture only:

MICRO 401: Microbial Ecology and Diversity

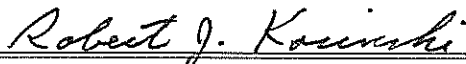




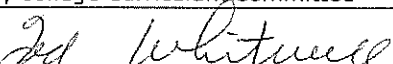

MICRO 412: Bacterial Physiology

MICRO 415: Microbial Genetics

Form Originator: TMCNEAL, Tamara Mcnealy **Date Form Created:** 10/28/2011

Form Last Updated by: , **Date Form Last Updated:** 11/4/2011

Form Number: 4582

Approval			
	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
	11/4/11		12/21/11
College Dean	Date	President	Date

BS Microbiology

Freshman Year			
First Semester		Second Semester	
BIOL 110 Prin of Biol I ¹	5 (4,3)	BIOL 111 Prin of Biol II ¹	5 (4,3)
CH 101 General Chemistry I	4 (3,3)	CH 102 General Chemistry	4 (4,3)
MICRO 101 Microbes and Human Affairs	1 (1,0)	ENGL 103 Accelerated Composition	3 (3,1)
MTHSC 106 Calc of One Var I	4 (4,0)	Mathematical Sciences Requirement ²	3-4
COMM 150 Intro. to Human Comm or COMM 250 Public Speaking	3 (3,0)		
	17		15-16
Sophomore Year			
CH 223 Organic Chemistry	3 (3,0)	General Microbiology Requirement ⁵	4 (3,3)
CH 227 Organic Chemistry Lab	1 (0,3)	CH 224 Organic Chemistry II	3 (3,0)
ENGL 315 Sci Writing & Comm	3(3,0)	CH 228 Organic Chemistry II Lab	1 (0, 3)
Arts and Humanities (Lit) Requirement ³	3 (3,0)	Biochemistry Requirement ⁶	3 (3,0)
Social Science Requirement ³	3 (3,0)	BIOSC 434 Biochemistry Lab	2 (1,2)
Elective ⁴	3 (3,0)	Arts and Humanities (Non-lit Requirement) ³	3 (3,0)
	16		16
Junior Year			
<i>MICRO 401 Microbial Ecology/diversity</i>	3 (3,0)	<i>MICRO 412 Bacterial Physiology</i>	3 (3,0)
PHYS 207 General Physics I	3 (3,0)	<i>MICRO 450 Advanced Micro Lab I</i>	2 (1,2)
PHYS 209 General Physics I Lab	1 (0, 3)	Microbiology Requirement ⁷	3 (3,0)
or PHYS 122 Physics with Calc I	3 (3,0)	Social Science Requirement ³	3 (3,0)
PHYS 124 Physics Lab I	1 (0,3)	Elective ^{4,8}	3 (3,0)
<i>Microbiology Requirement ⁷</i>	6		
Elective ⁴	3 (3,0)		
	16		14
Senior Year			
<i>MICRO 415 Microbial Genetics</i>	3 (3,0)	MICRO 493 Senior Seminar	2 (2,0)
BIOSC 461 Cell Biology	3 (3,0)	<i>Microbiology Requirement ⁷</i>	3 (3,0)
<i>MICRO 451 Advanced Micro Lab II</i>	2 (1,2)	<i>MICRO 452 Advanced Micro Lab III</i>	2 (1,2)
Virology Requirement ⁹	3 (3,0)	Elective ⁴	9
Elective ⁴	3 (3,0)		
	14		16

Total Credits

124-125

¹ BIOL 110 and BIOL 111 are strongly recommended; however, BIOL 103/105 may substitute for BIOL 110 and BIOL 104/106 may substitute for BIOL 111. The remaining 1-2 credits required must be satisfied by completing 1-2 extra credits from departmental course offerings at the 300 level or above. See advisor

² MTHSC 111, 301, EX ST 301 or other approved coursework. See advisor. Medical/dental schools have different mathematics requirements.

³ See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

⁴ Elective hours may be used toward satisfying the requirements of a minor.

⁵ MICRO 305 or other approved coursework.

⁶ BIOCH 301, 305 or other approved coursework.

⁷ See advisor. Minimum of 12 credits is required. At least one course must be selected from each of the following fields:

Biomedicine —BIOSCI 420, 434, 456/457, 467, 484, 489, GEN 300, HLTH 380, MICRO 400, 411, (AVS, BIOSC) 414, 417

Environmental — BIOSC (PL PA) 425, MICRO 402, 403, 410

Food Safety, Industrial, and Technology — BIOSC 487, MICRO 407, 413

⁸ Students planning on applying to medical/dental schools should take PHYS 208 and 210 during the second semester junior year

⁹ BIOSC 454 or MICRO 416

From: Alfred Wheeler <WHEELER@clemson.edu>
Subject: **FW: BioSci/Micro Curriculum Revisions**
Date: November 9, 2011 8:31:24 AM EST
To: Tamara Mcnealy <TMCNEAL@clemson.edu>, "rjksn@clemson.edu" <rjksn@clemson.edu>

See this and the next to the AAH rep. We should be okay for this round.

Hap

From: Alfred Wheeler
Sent: Wednesday, November 09, 2011 8:29 AM
To: Sean Williams
Subject: RE: BioSci/Micro Curriculum Revisions

Dear Sean:

That should do it. I very much appreciate your help in this Odyssey toward the most suitable way to give students advanced training in writing in the discipline. Our next step will be to touch up our sophomore course proposal and bring it your way. I look forward to continuing our splendid relationship with English and the writing program.

Cheers

Hap

From: Sean Williams
Sent: Wednesday, November 09, 2011 8:20 AM
To: Alfred Wheeler
Subject: BioSci/Micro Curriculum Revisions

Dear Hap:

Thank you very much for including English in the conversations about the curriculum revisions in BioSci/Micro. You are doing some exciting things by thinking through a sophomore course to supplement the other writing experiences of your students.

As we discussed, in the short term while the curriculum is revised, English will work with your department on course substitutions and special permissions for sophomores to enter the junior-level 315 course. Of course this is only a temporary fix and once the sophomore course has been implemented and approved, we'll return to the standard model of requiring junior standing for 315.

As always, it's a pleasure to work with other department so engaged in teaching writing for the students. I look forward to helping your faculty develop the sophomore course.

Best Wishes.

SDW

Sean D. Williams, Ph.D. sean@clemson.edu
Professor & Chair of English, Clemson University
864.656.3151

Rhonda Todd

From: Janice Murdoch
Sent: Wednesday, November 09, 2011 3:13 PM
To: Michael Silvestri
Cc: Rhonda Todd
Subject: RE: BioSci/Micro Curriculum...

I agree it's good to have this for the UCC to see that the agreement has been made. Thanks for the heads up.

Jan

Jan W. Murdoch
Vice-Provost and Dean of Undergraduate Studies Professor of Psychology Clemson University
E-101 Martin Hall
Clemson, SC 29634

-----Original Message-----

From: Michael Silvestri
Sent: Wednesday, November 09, 2011 3:08 PM
To: Sean Williams; Janice Murdoch
Subject: RE: BioSci/Micro Curriculum...

Hello, Sean--

Thanks for the message, and the heads up. I don't think is a big deal at all, since students can be admitted to ENGL 315 already via "consent of instructor." It might be a good idea to address an email on the subject to Jan Murdoch, which could be inserted into the curriculum agenda items along with the rest of the BIOL materials. That way everyone will be aware that ENGL and BIOL are on the same page.

Thanks,

Michael

From: Sean Williams
Sent: Wednesday, November 09, 2011 8:27 AM
To: Michael Silvestri
Subject: BioSci/Micro Curriculum...

Hi, Michael.

I wanted to give you a heads up that BioSci will be putting forth a new curriculum for Microbiology. English has been working very closely with them on a number things, most notably the construction of a new, writing-intensive sophomore course.

Unfortunately, that particular course didn't make it into the curriculum process in time for this coming year. You probably know that BioSci has a special 300-level writing course for BioSci, ENGL 315. For the time being, in the short term only, English agrees to work with BioSci on admitting sophomores into that course until the sophomore course has passed.

37. B

In principle, it shouldn't be a problem at all because the new course will come through the process soon. It just didn't make the "large packet" of the curriculum process and without the English Department "Sign off" Hap Wheeler is concerned that the whole curriculum will be shot down. So, for now, English has given BioSci the go-ahead and we're happy to work with them for the short term while they implement the new curriculum.

I wanted to pass this along to you so that when you see this at the UCC, you won't have any concerns that BioSci is bypassing important conversations with involved parties. Please let me know if you have any questions!

SDW

Sean D. Williams, Ph.D. sean@clemsun.edu
Professor & Chair of English, Clemson University
864.656.3151



Curriculum and Course Change System - Print Major Form

000038

Change Major Name: Microbiology (Biomedicine)
Degree: BS
Effective Catalog Year: 2012
 .. **Change Major Name to:**
 .. **Change Degree to:** (CHE approval required)
 Change Curriculum Requirements
 (Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
 .. **Change General Education Requirements**
 (Must also submit a General Education Checklist)
 .. **Add, Change or Delete Concentration(s)**
 (Submit or upload Curriculum map in catalog format. CHE approval required)
 .. **Add, Change or Delete Emphasis Area(s)**

Explanation: The primary purpose of this revision is to condense the currently offered nine microbiology labs into a three semester series. The series will also offer experiences in laboratory techniques in virology and mycology which are not currently being offered. A sequenced series of courses allows for the reduction of redundancy and an increase in efficiency. The revision brings the program in line with the American Society for Microbiology curriculum recommendations for microbiology majors. The separation of the courses into lecture only and the lab series also will encourage participation in lecture courses by non-majors. Currently, many non-microbiology students find it difficult to work the combined lecture/lab course offered in microbiology into their schedule. These labs will ensure that our microbiology majors get practical experience in the areas and techniques which are needed for immediate employment after graduation.

Summary of changes:

New Courses

MICRO 450,451,452 Advanced Microbiology Laboratory Series I - III

Courses changed to Lecture only:

MICRO 401: Microbial Ecology and Diversity

MICRO 412: Bacterial Physiology

MICRO 415: Microbial Genetics

MICRO (AVS, BIOSC) 414: Immunology

MICRO 417: Cancer and Aging

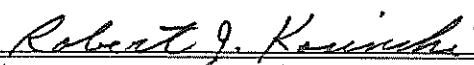
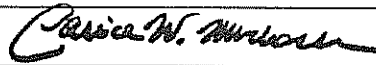


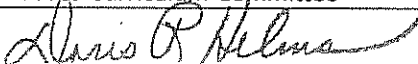
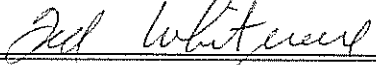

Separate Lab courses for each of these have been submitted to bridge students currently under curricula that require these laboratories.

Note: The ninth lab is MICRO 411, Bacterial Pathogenesis that was separated into MICRO 411 (Lecture) and MICRO 421 (lab) last year.

Form Originator: TMCNEAL, Tamara Mcnealy **Date Form Created:** 10/27/2011

Form Last Updated by: , **Date Form Last Updated:** 11/4/2011

Form Number: 4575

Approval			
	11/4/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/4/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
	11/11/11		12/21/11
College Dean	Date	President	Date

BS Microbiology /Biomed

Freshman Year			
First Semester		Second Semester	
BIOL 110 Prin of Biol I ¹	5 (4,3)	BIOL 111 Prin of Biol II ¹	5 (4,3)
CH 101 General Chemistry I	4 (3,3)	CH 102 General Chemistry	4 (4,3)
MICRO 101 Microbes and Human Affairs	1 (1,0)	ENGL 103 Accelerated Composition	3 (3,1)
MTHSC 106 Calc of One Var I	4 (4,0)	Mathematical Sciences Requirement ²	3-4
COMM 150 Intro. to Human Comm or COMM 250 Public Speaking	3(3,0)		
	17		15-16
Sophomore Year			
CH 223 Organic Chemistry	3 (3,0)	General Microbiology Requirement ⁵	4 (3,3)
CH 227 Organic Chemistry Lab	1 (0,3)	CH 224 Organic Chemistry II	3 (3,0)
ENGL 315 Sci Writing & Comm	3 (3,0)	CH 228 Organic Chemistry II Lab	1 (0, 3)
Arts and Humanities (Lit) Requirement ³	3 (3,0)	Biochemistry Requirement ⁶	3 (3,0)
Social Science Requirement ³	3 (3,0)	Biomed Requirement ⁷	3 (3,0)
Elective ⁴	3 (3,0)	Art and Humanities (Non-Lit) Requirement ³	3 (3,0)
	16		17
Junior Year			
MICRO 401 Microbial Ecol and Diversity	3 (3,0)	MICRO 412 Bacterial Physiology	3 (3,0)
PHYS 207 General Physics I	3 (3,0)	MICRO 450 Advanced Micro Lab I	2 (1,2)
PHYS 209 General Physics I Lab	1 (0, 3)	PHYS 208 General Physics II	3 (3,0)
or PHYS 122 Physics with Calc I PHYS 124 Physics Lab I	3 (3,0) 1 (0,3)	PHYS 210 General Physics II Lab	1 (0,3)
Genetics Requirement ⁸	3 (3,0)	or PHYS 221 Physics with Calc II	3 (3,0)
BIOSC 461 Cell Biology	3 (3,0)	PHYS 223 Physics Lab II	1 (0,3)
BIOSC 462 Cell biology lab	2 (2,2)	Social Science Requirement ³	3 (3,0)
	15	Elective ⁴	3 (3,0)
			15
Senior Year			
MICRO 415 Microbial Genetics	3 (3,0)	MICRO 493 Senior Seminar	2 (2,0)
MICRO 414 Immunology	3 (3,0)	MICRO 411 Pathogenic Bacteriology	3 (3,0)
MICRO 451 Advanced Micro Lab II	2 (1,3)	MICRO 417 Mol Mech Carcinogenesis and Aging	3 (3,0)
MICRO 416 Virology	3 (3,0)	MICRO 452 Advanced Micro Lab III	2 (1,3)
Biomed Requirement ⁷	3 (3,0)	Biomed Requirement ⁷	3 (3,0)
		Elective ⁴	3 (3,0)
	14		16

Total Credits

125-126

¹ BIOL 110 and BIOL 111 are strongly recommended; however, BIOL 103/105 may substitute for BIOL 110 and BIOL 104/106 may substitute for BIOL 111. The remaining 1-2 credits required must be satisfied by completing 1-2 extra credits from departmental course offerings at the 300 level or above. See advisor

² MTHSC 111, 301, EX ST 301 or other approved coursework. See advisor. Medical/dental schools have different mathematics requirements.

³ See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

⁴ Elective hours may be used toward satisfying the requirements of a minor.

⁵ MICRO 305 or other approved coursework.

⁶ BIOCH 301, 305 or other approved coursework.

⁷ See advisor. Minimum 9 hours required. BIOCH 423, 432, BIOSC 420, (PL PA) 425, 434, 456 & 457, 467, 484, 489, HLTH 380, MICRO 400, 491

⁸ GEN 300, 302 or other approved coursework



Curriculum and Course Change System - Print Major Form

Change Major Name: Biochemistry
 Degree: BS
 Effective Catalog Year: 2012
 Change Major Name to:
 Change Degree to: (CHE approval required)
 Change Curriculum Requirements
 (Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
 Change General Education Requirements
 (Must also submit a General Education Checklist)
 Add, Change or Delete Concentration(s)
 (Submit or upload Curriculum map in catalog format. CHE approval required)
 Add, Change or Delete Emphasis Area(s)

Explanation: A mistake was made in footnotes section - the curriculum map indicated that the Arts and Humanities (Literature) Requirement must also fulfill the Cross-Cultural Awareness Requirement. This has been fixed to indicate that one of the Social Science Requirements should also fulfill the Cross-Cultural Awareness Requirement.

Form Originator: CHERYLI, Cheryl Ingramsmith Date Form Created: 10/28/2011
 Form Last Updated by: CHERYLI, Cheryl Ingramsmith Date Form Last Updated: 10/28/2011
 Form Number: 4605

Approval			
	10/31/2011		10/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	10/31/2011		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
	11/11/11		12/21/11
College Dean	Date	President	Date

BIOCHEMISTRY
Bachelor of Science
Effective August 2012

Freshman Year

First Semester

- 1 - BIOCH 103 Careers in Biochemistry and Genetics
 - 5 - BIOL 110 Principles of Biology I
 - 4 - CH 101 General Chemistry
 - 4 - MTHSC 106 Calculus of One Variable I
- 14

Second Semester

- 5 - BIOL 111 Principles of Biology II
 - 4 - CH 102 General Chemistry
 - 3 - ENGL 103 Accelerated Composition
 - 4 - MTHSC 108 Calculus of One Variable II
- 16

Sophomore Year

First Semester

- 3 - CH 223 Organic Chemistry
 - 1 - CH 227 Organic Chemistry Lab.
 - 3 - GEN 302 Molecular and General Genetics
 - 2 - GEN 303 Molecular and General Genetics Lab.
 - 3 - PHYS 122 Physics with Calculus
 - 1 - PHYS 124 Physics Lab. I
 - 3-4 Advanced Mathematics Requirement¹
- 16-17

Second Semester

- 3 - BIOCH 301 Molecular Biochemistry
 - 3 - CH 224 Organic Chemistry
 - 1 - CH 228 Organic Chemistry Lab.
 - 3 - COMM 150 Introduction to Human Communication or COMM 250 Public Speaking
 - 3 - PHYS 221 Physics with Calculus II
 - 1 - PHYS 223 Physics Lab. II
 - 3 - Arts and Humanities (Literature) Requirement
- 17

Junior Year**First Semester**

- 3 - BIOCH 431 Physical Approach to Biochemistry
- 2 - BIOCH 433 General Biochemistry Lab. I
- 3 - CH 330 Introduction to Physical Chemistry²
- 3 - Science Requirement³
- 5 - Elective
- 16

Second Semester

- 3 - BIOCH 432 Biochemistry of Metabolism
- 2 - BIOCH 434 General Biochemistry Lab. II
- 3 - BIOCH 436 Nucleic Acid and Protein Biosynthesis
- 3 - PHIL 326 Science and Values
- 3 - Science Requirement³
- 14

Senior Year**First Semester**

- 3 - BIOSC 461 Cell Biology
- 3 - GEN (BIOCH) 440 Bioinformatics
- 3 - Social Science Requirement⁴
- 4 - Elective⁵
- 13

Second Semester

- 2 - BIOCH 493 Senior Seminar
- 3 - Social Science Requirement⁴
- 3 - Science Requirement³
- 6 - Elective⁵
- 14

120-121 Total Semester Hours

¹EX ST 301, MTHSC 206, 301, or 302.

²CH 331 may be substituted.

³BIOSC 222, 223, or any courses at 300 level or above in BIOCH, BIO E, BIOSC, CH, EX ST, GEN, MICRO, MTHSC, PHYS, PL PA, and PL PH. Other courses must be approved by advisor.

⁴See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.

⁵Two semesters of a foreign language are strongly recommended.

Notes:

1. A student is allowed to enroll in science and mathematics course only when all prerequisites have been passed with a grade of C or higher.

2. A minimum grade of C is required in all science and mathematics courses. No student may exceed a maximum of two attempts, excluding a W, to complete successfully any science or mathematics course.

000048



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: BIOCH- 301
 Corresponding Lab Course: --
 Corresponding Honors course: BIOCH-H-301
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: MOLECULAR BIOCHEM

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1101 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from:	.. Change Transcript Title: from: MOLECULAR BIOCHEM to:

..	From: Fixed Credit: 3 (3,)	To: Fixed Credit: (,)
Change of Credit:	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
X A-Lecture Only Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar Variable Title	..	.. Mathematics	..
.. E-Independent Study Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee) Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee) CCA	..
.. N/B-Lecture/Lab(w/fee) STS	..
.. N/L-Lecture/Lab(no fee)

.. **Change Catalog Description:**
 from:
 to:

X **Change Prerequisite(s):**
 from: CH 223
 to: BIOL 110 and CH 223 with C or better

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: CHERYLI, Cheryl Ingramsmith **Date Form Last Updated:** 11/7/2011
Form Number: 4583

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kasinski</i>	<i>11/11/11</i>	<i>David R. Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Paul Whitman</i>	<i>11/11/11</i>	<i>James J. Helms</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

0000:50



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: BIOCH- 302
 Corresponding Lab Course: --
 Corresponding Honors course: --
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: MOLEC BIOCH LAB

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1101 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from: to:	.. Change Transcript Title: from: MOLEC BIOCH LAB to:

.. Change of Credit:	From: Fixed Credit: 2 (0,) Variable Credit: - (-), (-)	To: Fixed Credit: (,) Variable Credit: - (-),(-)
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.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
.. A-Lecture Only Pass/Fail Only	..	.. English Composition	..
X B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar Variable Title	..	.. Mathematics	..
.. E-Independent Study Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee) Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee) CCA	..
.. N/B-Lecture/Lab(w/fee) STS	..
.. N/L-Lecture/Lab(no fee)		

.. **Change Catalog Description:**
 from:
 to:

X Change Prerequisite(s):
 from: Prereq: CH 223. Coreq: BIOCH 301
 to: BIOL 110 and CH 223 with C or better; Coreq: BIOCH 301

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingrasmith **Date Form Created:** 10/28/2011
Form Last Updated by: CHERYLI, Cheryl Ingrasmith **Date Form Last Updated:** 11/7/2011
Form Number: 4584

Approval

	11/10/11		12/2/11
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kowinski</i>	11/11/11	<i>Chris R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Paul Whitwell</i>	11/11/11	<i>James T. [Signature]</i>	12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000052



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: BIOCH- 432
 Corresponding Lab Course: --
 Corresponding Honors course: BIOCH-H-432
 .. **Add Honors course:** --
 Corresponding Graduate course: BIOCH- -632
 .. **Add Graduate course:** --
Course Title: BIOCH OF METABOLISM

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1101 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from: to:	.. Change Transcript Title: from: BIOCH OF METABOLISM to:

.. Change of Credit:	From: Fixed Credit: 3 (3,) Variable Credit: - (-), (-)	To: Fixed Credit: (,) Variable Credit: - (-),(-)
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.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction	.. Change Course Modifier	.. Change General Education Designation
from: to:	from: to:	from: to:
X A-Lecture Only	.. Pass/Fail Only	.. English Composition
.. B-Lab (w/fee)	.. X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	.. maximum credits	.. A&H (Literature)
.. H-Field course	.. from:	.. A&H (Non-Literature)
.. I-Study Abroad	.. to:	.. Social Science
.. L-Lab (no/fee)		.. CCA
.. N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

.. **Change Catalog Description:**
 from:
 to:

X **Change Prerequisite(s):**
 from: BIOCH 423 or 431 or consent of instructor
 to: BIOCH 301 and BIOCH 431 with C or better or consent of instructor

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: CHERYLI, Cheryl Ingramsmith **Date Form Last Updated:** 11/7/2011
Form Number: 4585

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kasinski</i>	12/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Paul Whitener</i>	12/14/11	<i>James J. Helms</i>	12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000054



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: BIOCH- 433
 Corresponding Lab Course: --
 Corresponding Honors course: --
 .. **Add Honors course:** --
 Corresponding Graduate course: BIOCH- -633
 .. **Add Graduate course:** --
Course Title: GEN BIOCH LAB I

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1108	.. Change Abbrev to:
Effective Term: 01/2012	.. Change Number to:
.. Change Catalog Title:	.. Change Transcript Title:
from:	from: GEN BIOCH LAB I
to:	to:

.. Change of Credit	From: Fixed Credit: 2 (0,)	To: Fixed Credit: (,)
	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
.. A-Lecture Only	.. .. Pass/Fail Only	.. .. English Composition	.. ..	.. English Composition	.. ..
X B-Lab (w/fee)	.. X Graded	.. .. Oral Communication	.. ..	.. Oral Communication	.. ..
.. D-Seminar	.. .. Variable Title	.. .. Mathematics	.. ..	.. Mathematics	.. ..
.. E-Independent Study	.. .. Creative Inquiry	.. .. Natural Science w/Lab	.. ..	.. Natural Science w/Lab	.. ..
.. F-Tutorial (w/fee)	.. .. Repeatable	.. .. Math or Science	.. ..	.. Math or Science	.. ..
.. G-Studio	.. maximum credits	.. .. A&H (Literature)	.. ..	.. A&H (Literature)	.. ..
.. H-Field course	.. from:	.. .. A&H (Non-Literature)	.. ..	.. A&H (Non-Literature)	.. ..
.. I-Study Abroad	.. to:	.. .. Social Science	.. ..	.. Social Science	.. ..
.. L-Lab (no/fee)	.. ..	.. .. CCA	.. ..	.. CCA	.. ..
.. N/B-Lecture/Lab(w/fee)	.. ..	.. .. STS	.. ..	.. STS	.. ..
.. N/L-Lecture/Lab(no fee)	.. ..			

.. **Change Catalog Description:**
 from:
 to:

X Change Prerequisite(s):
 from: Concurrent enrollment in BIOCH 423 or 431
 to: Coreq: BIOCH 431

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: CHERYLI, Cheryl Ingramsmith **Date Form Last Updated:** 11/7/2011
Form Number: 4586

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kasinski</i>	11/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Jed Whitcomb</i>	11/11/11	<i>James S. [Signature]</i>	12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: BIOCH- 436
 Corresponding Lab Course: --
 Corresponding Honors course: BIOCH-H-436
 .. **Add Honors course:** --
 Corresponding Graduate course: BIOCH- -636
 .. **Add Graduate course:** --
Course Title: GENES TO PROTEINS

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1101 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from: to:	.. Change Transcript Title: from: GENES TO PROTEINS to:

.. Change of Credit	From: Fixed Credit: 3 (3,) Variable Credit: - (-), (-)	To: Fixed Credit: (,) Variable Credit: - (-),(-)
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.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
X A-Lecture Only	..	.. Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits		.. A&H (Literature)	..
.. H-Field course	..	from:		.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:		.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
.. N/B-Lecture/Lab(w/fee)	..			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**
 from:
 to:

X **Change Prerequisite(s):**
 from: BIOCH 301 and GEN 302, or consent of instructor
 to: BIOCH 301 and GEN 302 with C or better, or consent of instructor

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingrasmith **Date Form Created:** 10/28/2011
Form Last Updated by: CHERYLI, Cheryl Ingrasmith **Date Form Last Updated:** 11/7/2011
Form Number: 4587

Approval

	11/10/11		12/20/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/2/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kosinski</i>	11/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Geel Whitman</i>	11/14/11	<i>James H. Helms</i>	12/21/11
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: BIOCH- 443
 Corresponding Lab Course: --
 Corresponding Honors course: --
 .. **Add Honors course:** --
 Corresponding Graduate course: BIOCH- -643
 .. **Add Graduate course:** --
Course Title: BIOCH BASIS DISEASE

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course. As this is an elective course that may be of interest to students outside the major, we have also expanded the prereqs to include the equivalent nonmajors courses BIOCH 305 and GEN 300 as prereqs. The name change is to more accurately reflect the nature of the material covered.

Last Term taught: 1108 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
X Change Catalog Title: from: Biochemical Basis of Disease to: Molecular Basis of Disease	X Change Transcript Title: from: BIOCH BASIS DISEASE to: MOL BASIS DISEASE

.. Change of Credit	From: Fixed Credit: 3 (3,)	To: Fixed Credit: (,)
	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction	.. Change Course Modifier	.. Change General Education Designation
from: to:	from: to:	from: to:
X A-Lecture Only ..	.. Pass/Fail Only ..	.. English Composition ..
.. B-Lab (w/fee) ..	X Graded ..	.. Oral Communication ..
.. D-Seminar ..	.. Variable Title ..	.. Mathematics ..
.. E-Independent Study ..	.. Creative Inquiry ..	.. Natural Science w/Lab ..
.. F-Tutorial (w/fee) ..	.. Repeatable ..	.. Math or Science ..
.. G-Studio ..	maximum credits	.. A&H (Literature) ..
.. H-Field course ..	from:	.. A&H (Non-Literature) ..
.. I-Study Abroad ..	to:	.. Social Science ..
.. L-Lab (no/fee) ..		.. CCA ..
.. N/B-Lecture/Lab(w/fee) ..		.. STS ..
.. N/L-Lecture/Lab(no fee) ..		

.. **Change Catalog Description:**
from:
to:

X Change Prerequisite(s):
from: BIOCH 301, GEN 302, or consent of instructor
to: BIOCH 301 or BIOCH 305 and GEN 302 or GEN 300 with C or better, or consent of instructor

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingrams
Date Form Created: 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4588

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date

<i>Ray Smith for K Murphy</i>	<i>11/9/11</i>	<i>Alvin R. Helms</i>	
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kasinski</i>	<i>11/11/11</i>	<i>James J. Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Paul Whitcomb</i>	<i>11/11/11</i>		<i>12/28/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000050



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: BIOCH- 491
 Corresponding Lab Course: --
 Corresponding Honors course: BIOCH-H-491
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: DIR RESRCH IN BIOCH

Brief Statement of Change:
 We encourage students at any level to participate in undergraduate research under BIOCH 491. As this research is performed in a faculty member's lab, the student must have consent from the professor before signing up.

Last Term taught: 1108 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from: to:	.. Change Transcript Title: from: DIR RESRCH IN BIOCH to:

.. Change of Credit:	From: Fixed Credit: (,) Variable Credit: 1-8 (-), (-)	To: Fixed Credit: (,) Variable Credit: - (-),(-)
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.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
.. A-Lecture Only	..	.. Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
X E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	X Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
.. N/B-Lecture/Lab(w/fee)	..			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**
 from:
 to:

X **Change Prerequisite(s):**
 from: None
 to: By consent of instructor

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4589

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date

<i>Deed Whitwell</i>	<i>11/1/11</i>	<i>[Signature]</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: BIOCH- 493
 Corresponding Lab Course: --
 Corresponding Honors course: BIOCH-H-493
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: SENIOR SEMINAR

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1108	.. Change Abbrev to:
Effective Term: 01/2012	.. Change Number to:
.. Change Catalog Title:	.. Change Transcript Title:
from:	from: SENIOR SEMINAR
to:	to:

..	From: Fixed Credit: 2 (2,)	To: Fixed Credit: (,)
Change of Credit	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
X A-Lecture Only Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee) X Graded	..	.. Oral Communication	..
.. D-Seminar Variable Title	..	.. Mathematics	..
.. E-Independent Study Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee) Repeatable	..	.. Math or Science	..
.. G-Studio maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee) CCA	..
.. N/B-Lecture/Lab(w/fee) STS	..
.. N/L-Lecture/Lab(no fee)

.. **Change Catalog Description:**
from:
to:

X Change Prerequisite(s):
from: None
to: BIOCH 301, GEN 302, and at least one 400-level BIOCH course with C or better

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingrasmith **Date Form Created:** 10/28/2011
Form Last Updated by: CHERYLI, Cheryl Ingrasmith **Date Form Last Updated:** 11/7/2011
Form Number: 4590

Approval

	11/10/11		12/2/11
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kosinski</i>	<i>11/11/11</i>	<i>Louis R. Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Zel Whitman</i>	<i>11/11/11</i>	<i>James O. Holt</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		



Curriculum and Course Change System - Print Major Form

Change Major Name: Genetics
Degree: BS
Effective Catalog Year: 2012
 .. **Change Major Name to:**
 .. **Change Degree to:** (CHE approval required)
 .. **Change Curriculum Requirements**
 (Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
 .. **Change General Education Requirements**
 (Must also submit a General Education Checklist)
 .. **Add, Change or Delete Concentration(s)**
 (Submit or upload Curriculum map in catalog format. CHE approval required)
 .. **Add, Change or Delete Emphasis Area(s)**

Explanation: The curriculum map has been changed to reflect the semesters in which certain courses (GEN 410/411, GEN 420/421, and GEN 440) are offered. GEN 440 is only offered in the fall now, and GEN 410/411 will now be offered in the spring and GEN 420/421 will now be offered in the fall. A minor error in the footnotes has also been corrected.

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: CHERYLI, Cheryl Ingramsmith **Date Form Last Updated:** 10/28/2011
Form Number: 4606

Approval			
<i>Zif</i>	10/31/2011	<i>Carrie W. Anderson</i>	12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>Shelley Macbeth FOR KEM</i>	10/31/2011		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kasinski</i>	11/11/11	<i>David R. Helms</i>	12/20/11
Chair, College Curriculum Committee	Date	Provost	Date
<i>Bob Whitwell</i>	11/11/11	<i>Christy J. ...</i>	12/21/11
College Dean	Date	President	Date

GENETICS
Bachelor of Science
Effective August 2012

Freshman Year

First Semester

- 1 - GEN 103 Careers in Biochemistry and Genetics
 - 5 - BIOL 110 Principles of Biology I
 - 4 - CH 101 General Chemistry
 - 4 - MTHSC 106 Calculus of One Variable I
- 14

Second Semester

- 5 - BIOL 111 Principles of Biology II
 - 4 - CH 102 General Chemistry
 - 4 - MTHSC 108 Calculus of One Variable II
 - 3 - ENGL 103 Accelerated Composition.
- 16

Sophomore Year

First Semester

- 3 - CH 223 Organic Chemistry
 - 1 - CH 227 Organic Chemistry Lab.
 - 3 - COMM 150 Introduction to Human Communication or COMM 250 Public Speaking
 - 3 - GEN 302 Molecular and General Genetics
 - 3 - PHYS 122 Physics with Calculus I¹
 - 1 - PHYS 124 Physics Lab. I¹
- 14

Second Semester

- 3 - BIOCH 301 Molecular Biochemistry
 - 2 - BIOCH 302 Molecular Biochemistry Lab.
 - 3 - CH 224 Organic Chemistry
 - 1 - CH 228 Organic Chemistry Lab.
 - 3 - EX ST 301 Introductory Statistics
 - 3 - Arts and Humanities (Literature) Requirement
 - 3 - Social Science Requirement²
- 18

Junior Year**First Semester**

- 3 - GEN 420 Molecular Genetics and Gene Regulation
 - 2 - GEN 421 Molecular Genetics and Gene Regulation Lab.
 - 3 - GEN (BIOCH) 440 Bioinformatics
 - 3 - Science Requirement³
 - 3 - Elective⁴
- 14

Second Semester

- 3 - GEN 410 Population and Quantitative Genetics
 - 2 - GEN 411 Population and Quantitative Genetics Lab.
 - 3 - BIOSC 461 Cell Biology
 - 3 - PHIL 326 Science and Values
 - 3 - Genetics Requirement⁵
 - 3 - Elective⁴
- 17

Senior Year**First Semester**

- 3 - GEN 450 Comparative Genetics
 - 3 - Science Requirement³
 - 3 - Social Science Requirement²
 - 6 - Elective⁴
- 15

Second Semester

- 2 - GEN 493 Senior Seminar
 - 6 - Genetics Requirement⁵
 - 3 - Science Requirement³
 - 4 - Elective⁴
- 15

123 Total Semester Hours

¹Medical, veterinary, and graduate school requirements often include two semesters of physics taught with calculus and the physics laboratory. Students are encouraged to check requirements for admission to professional postgraduate programs.

²See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.

³BIOSC 222, 223, PHYS 208, 210, 221, 223 or any courses at the 300 level or above in BIOCH, BIO E, BIOSC, CH, EX ST, GEN, MTHSC, MICRO, PHYS, PL PA, and PL PH. Other courses must be approved by the advisor. A maximum of 9 credit hours from undergraduate research courses (491, creative inquiry, or similar courses) may be used towards the combined science and genetics requirements.

⁴Two semesters of a foreign language are strongly recommended.

⁵AVS 470, BIOCH 431, 432, 433, 434, 436, 443, 491, BIOSCI 335, 440, 450, (PL PA) 454, 456, 457, CSENV 405, GEN 470, 491, MICRO 305, 415, 417. Other courses must be approved by the advisor.

Notes:

1. A student is allowed to enroll in science and mathematics course only when all prerequisites have been passed with a grade of C or higher.

2. A minimum grade of C is required in all science and mathematics courses. No student may exceed a maximum of two attempts, excluding a W, to complete successfully any science or mathematics course.



Curriculum and Course Change System - Print Change/Delete Course Form

000087

X Change a Course - Abbrev & Number: GEN- 300
 Corresponding Lab Course: --
 Corresponding Honors course: --
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: FUNDAMENTAL GENETICS

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. A sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1108 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from: to:	.. Change Transcript Title: from: FUNDAMENTAL GENETICS to:

.. Change of Credit	From: Fixed Credit: 3 (3,) Variable Credit: - (-), (-)	To: Fixed Credit: (,) Variable Credit: - (-),(-)
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.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
X A-Lecture Only Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar Variable Title	..	.. Mathematics	..
.. E-Independent Study Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee) Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee) CCA	..
.. N/B-Lecture/Lab(w/fee) STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**
 from:
 to:

X Change Prerequisite(s):
 from: BIOL 104/106 or consent of instructor
 to: BIOL 103 or BIOL 110 or consent of instructor

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingrasmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4592

Approval

	11/10/11		12/2/11
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date

<i>Jed Whitwell</i>	<i>11/11/11</i>	<i>[Signature]</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000009



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: GEN- 302
 Corresponding Lab Course: --
 Corresponding Honors course: GEN-H-302
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: MOLEC & GENERAL GENE

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1108 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from:	.. Change Transcript Title: from: MOLEC & GENERAL GENE
to:	to:

.. Change of Credit:	From: Fixed Credit: 3 (3,0) Variable Credit: - (-), (-)	To: Fixed Credit: (,) Variable Credit: - (-),(-)
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.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction	.. Change Course Modifier	.. Change General Education Designation
from: to:	from: to:	from: to:
X A-Lecture Only ..	.. Pass/Fail Only ..	.. English Composition ..
.. B-Lab (w/fee) ..	X Graded ..	.. Oral Communication ..
.. D-Seminar ..	.. Variable Title ..	.. Mathematics ..
.. E-Independent Study ..	.. Creative Inquiry ..	.. Natural Science w/Lab ..
.. F-Tutorial (w/fee) ..	.. Repeatable ..	.. Math or Science ..
.. G-Studio ..	maximum credits	.. A&H (Literature) ..
.. H-Field course ..	from:	.. A&H (Non-Literature) ..
.. I-Study Abroad ..	to:	.. Social Science ..
.. L-Lab (no/fee) ..		.. CCA ..
.. N/B-Lecture/Lab(w/fee) ..		.. STS ..
.. N/L-Lecture/Lab(no fee) ..		

.. **Change Catalog Description:**
 from:
 to:

X **Change Prerequisite(s):**
 from: BIOL 111 or consent of instructor
 to: BIOL 110 with C or better

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYL, Cheryl Ingrasmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4593

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kasinski</i>	<i>11/11/11</i>	<i>Chris R Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Jeff Whitbeck</i>	<i>11/14/11</i>	<i>James S. Holt</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000071



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: GEN- 303
 Corresponding Lab Course: --
 Corresponding Honors course: --
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: MOL GEN GENET LAB

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1108	.. Change Abbrev to:
Effective Term: 01/2012	.. Change Number to:
.. Change Catalog Title:	.. Change Transcript Title:
from:	from: MOL GEN GENET LAB
to:	to:

..	From: Fixed Credit: 2 (0,)	To: Fixed Credit: (,)
Change of Credit:	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
.. A-Lecture Only	..	.. Pass/Fail Only	..	.. English Composition	..
X B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	.. maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee)	..		..	.. CCA	..
.. N/B-Lecture/Lab(w/fee)	..		..	.. STS	..
.. N/L-Lecture/Lab(no fee)	..		..		..

.. **Change Catalog Description:**
 from:
 to:

X Change Prerequisite(s):
 from: GEN 302 or concurrent enrollment
 to: BIOL 110 with C or better and GEN 302 or concurrent enrollment

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4594

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kasinski</i>	<i>11/11/11</i>	<i>David R. Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Jeff Whitman</i>	<i>11/6/11</i>	<i>James J. [Signature]</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000073



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: GEN- 410
 Corresponding Lab Course: --
 Corresponding Honors course: GEN-H-410
 .. **Add Honors course:** --
 Corresponding Graduate course: GEN- -610
 .. **Add Graduate course:** --
Course Title: FUND GENETICS I

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course. We also changed the name of the course to give an indication of the subject matter. The previous name was uninformative and misleading, as GEN 410 and 420 (previously named Fundamentals I and II) do not have to be taken in order and 410 is not a prereq for 420, as the names would otherwise imply.

Last Term taught: 1108 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
X Change Catalog Title: from: Fundamentals of Genetics I to: Population and Quantitative Genetics	X Change Transcript Title: from: FUND GENETICS I to: POP QUANT GENETICS

.. Change of Credit	From: Fixed Credit: 3 (3,) Variable Credit: - (-), (-)	To: Fixed Credit: (,) Variable Credit: - (-),(-)
----------------------------	---	---

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
X A-Lecture Only Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar Variable Title	..	.. Mathematics	..
.. E-Independent Study Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee) Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits		.. A&H (Literature)	..
.. H-Field course	..	from:		.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:		.. Social Science	..
.. L-Lab (no/fee) CCA	..
.. N/B-Lecture/Lab(w/fee) STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**
 from:
 to:

X Change Prerequisite(s):
 from: EXST 301, GEN 302, or consent of instructor
 to: EXST 301 and GEN 302 with C or better

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4595

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date

<i>Key Smith for Murphy</i>	<i>11/9/11</i>		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kasinski</i>	<i>11/11/11</i>	<i>David R. Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Jeff Whitman</i>	<i>11/11/11</i>	<i>James T. [Signature]</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000075



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: GEN- 411
 Corresponding Lab Course: --
 Corresponding Honors course: --
 .. **Add Honors course:** --
 Corresponding Graduate course: GEN- -611
 .. **Add Graduate course:** --
Course Title: FUND GENETICS I LAB

Brief Statement of Change:
 The name of the corresponding lecture course is being changed, so this name change reflects that.

Last Term taught: 1108 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
X Change Catalog Title: from: Fundamentals of Genetics I Laboratory to: Population and Quantitative Genetics Laboratory	X Change Transcript Title: from: FUND GENETICS I LAB to: POP QUANT GENET LAB

.. Change of Credit:	From: Fixed Credit: 2 (0,) Variable Credit: - (-), (-)	To: Fixed Credit: (,) Variable Credit: - (-),(-)
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.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
.. A-Lecture Only	..	.. Pass/Fail Only	..	.. English Composition	..
X B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
.. N/B-Lecture/Lab(w/fee)	..			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**
 from:
 to:

.. **Change Prerequisite(s):**
 from:
 to:

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4596

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/20/11
Chair, College Curriculum Committee	Date	Provost	Date

500075

<i>Paul Whitman</i>	<i>1/1/11</i>	<i>Christy Hall</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000077



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: GEN- 420
 Corresponding Lab Course: --
 Corresponding Honors course: GEN-H-420
 .. **Add Honors course:** --
 Corresponding Graduate course: GEN- -620
 .. **Add Graduate course:** --
Course Title: FUND GENETICS II

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course. We also changed the name of the course to give an indication of the subject matter. The previous name was uninformative and misleading, as GEN 410 and 420 (previously named Fundamentals I and II) do not have to be taken in order and 410 is not a prereq for 420, as the names would otherwise imply.

Last Term taught: 1101	.. Change Abbrev to:
Effective Term: 01/2012	.. Change Number to:
X Change Catalog Title: from: Fundamentals of Genetics II to: Molecular Genetics and Gene Regulation	X Change Transcript Title: from: FUND GENETICS II to: MOL GEN & GENE REG

.. Change of Credit:	From: Fixed Credit: 3 (3,)	To: Fixed Credit: (,)
	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
X A-Lecture Only Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar Variable Title	..	.. Mathematics	..
.. E-Independent Study Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee) Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits		.. A&H (Literature)	..
.. H-Field course	..	from:		.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:		.. Social Science	..
.. L-Lab (no/fee) CCA	..
.. N/B-Lecture/Lab(w/fee) STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**
 from:
 to:

X Change Prerequisite(s):
 from: BIOCH 301 or concurrent enrollment, GEN 302, or consent of instructor
 to: BIOCH 301 and GEN 302 with C or better, or consent of instructor

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: CHERYLI, Cheryl Ingramsmith **Date Form Last Updated:** 11/7/2011
Form Number: 4597

Approval

	11/10/11		12/2/11
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date

501078

<i>Ken Smith</i> <i>So: K Murphy</i>	<i>11/9/11</i>		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kocinski</i>	<i>11/11/11</i>	<i>David R. Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Jed Whitcomb</i>	<i>11/11/11</i>	<i>Christy J. [Signature]</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000079



Curriculum and Course Change System - Print Change/Delete Course Form

Change a Course - Abbrev & Number: GEN- 421
 Corresponding Lab Course: --
 Corresponding Honors course: --
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: **FUND GENETICS II LAB**

Brief Statement of Change:
 The name of the corresponding lecture course is being changed and this name change is to reflect that.

Last Term taught: 1101 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
X Change Catalog Title: from: Fundamentals of Genetics II Laboratory to: Molecular Genetics and Gene Regulation Laboratory	X Change Transcript Title: from: FUND GENETICS II LAB to: MOL GEN GENE REG LAB

..	From: Fixed Credit: 2 (0,)	To: Fixed Credit: (,)
Change of Credit	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
.. A-Lecture Only	..	.. Pass/Fail Only	..	.. English Composition	..
X B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
.. N/B-Lecture/Lab(w/fee)	..			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**
 from:
 to:

.. **Change Prerequisite(s):**
 from:
 to:

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4598

Approval

	11/16/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/19/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	11/11/11		12/2/2011
Chair, College Curriculum Committee	Date	Provost	Date

<i>Lee Whitmore</i>	<i>11/11/11</i>	<i>[Signature]</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000081



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: GEN- 440
 Corresponding Lab Course: --
 Corresponding Honors course: GEN-H-440
 .. **Add Honors course:** --
 Corresponding Graduate course: GEN- -640
 .. **Add Graduate course:** --
Course Title: BIOINFORMATICS

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course. We have dropped CP SC 120 as a prereq as we feel this course is not necessary, and we do not mandate it in our curriculum and therefore feel it cannot be listed as a prereq.

Last Term taught: 1108 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from: to:	.. Change Transcript Title: from: BIOINFORMATICS to:

..	From: Fixed Credit: 3 (3,)	To: Fixed Credit: (,)
Change of Credit:	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
X A-Lecture Only	..	.. Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	.. X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	.. maximum credits	..	.. A&H (Literature)	..
.. H-Field course	..	from:	..	.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:	..	.. Social Science	..
.. L-Lab (no/fee)	..		..	.. CCA	..
.. N/B-Lecture/Lab(w/fee)	..		..	.. STS	..
.. N/L-Lecture/Lab(no fee)	..		..		..

.. **Change Catalog Description:**
 from:
 to:

X Change Prerequisite(s):
 from: CP SC 120 (or equivalent), GEN 302, 410, or consent of instructor
 to: GEN 302 and BIOCH 301 with C or better, or consent of instructor

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/8/2011
Form Number: 4599

Approval

	11/10/11		12/2/2011
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		

Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kocinski</i>	<i>11/11/11</i>	<i>David R. Nelson</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Jeff Whitmore</i>	<i>11/11/11</i>	<i>James J. Hill</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

000083



Curriculum and Course Change System - Print Change/Delete Course Form

X Change a Course - Abbrev & Number: GEN- 450
 Corresponding Lab Course: --
 Corresponding Honors course: GEN-H-450
 .. **Add Honors course:** --
 Corresponding Graduate course: GEN- -650
 .. **Add Graduate course:** --
Course Title: COMPARATIVE GENETICS

Brief Statement of Change:
 We updated the prereqs and coreqs on all of our courses to ensure that the students are properly prepared for the material that will be covered. Our curriculum states that our required science and math courses cannot be attempted until all prereqs have been passed with a grade of C or better. We are including a statement to this effect with the prereqs to make sure students understand that each course builds on the material in the prereq courses and that a sufficient understanding of the prereq courses is essential for success in the course.

Last Term taught: 1108 Effective Term: 01/2012	.. Change Abbrev to: .. Change Number to:
.. Change Catalog Title: from:	.. Change Transcript Title: from: COMPARATIVE GENETICS
to:	to:

..	From: Fixed Credit: 3 (3,)	To: Fixed Credit: (,)
Change of Credit:	Variable Credit: - (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
 .. **Delete cross-listing with the following child course(s):**
 .. **Reverse Parent/Child relationship with:**

.. Change Method of Instruction		.. Change Course Modifier		.. Change General Education Designation	
from:	to:	from:	to:	from:	to:
X A-Lecture Only	..	.. Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits		.. A&H (Literature)	..
.. H-Field course	..	from:		.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:		.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
.. N/B-Lecture/Lab(w/fee)	..			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				

.. **Change Catalog Description:**
 from:
 to:

X Change Prerequisite(s):
 from: GEN 420, 440, or consent of instructor
 to: GEN 420 and GEN 440 with C or better, or consent of instructor

Learning Objectives:

Topical Outline:

Evaluation:

Form Originator: CHERYLI, Cheryl Ingramsmith **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 11/7/2011
Form Number: 4601

Approval

	11/10/11		12/2/11
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	11/9/11		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date

<i>Robert J. Kasinski</i>	<i>11/11/11</i>	<i>David R. Helms</i>	<i>12/20/11</i>
Chair, College Curriculum Committee	Date	Provost	Date
<i>Dee Whitener</i>	<i>11/6/11</i>	<i>James J. [Signature]</i>	<i>12/21/11</i>
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		