



Curriculum and Course Change System - Print New Course Form

Course Abbreviation & Number:

X New Undergraduate Course: BIOSC- 434

.. New Honors Course: --

.. New Graduate Course: -

Effective Term: 08/2010**Catalog Title:** Biological Chemistry Laboratory Techniques**Transcript Title:** Biol Chem Lab Techs**Fixed Credit Course:** 2 (1,3)**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	.. Advanced Writing
.. D-Seminar	.. Variable Title	.. Oral Communication
.. E-Independent Study	.. Creative Inquiry	.. Mathematics
.. F-Tutorial (w/fee)	.. Repeatable	.. Natural Science w/Lab
.. G-Studio	maximum credits:	.. Math or Science
.. H-Field course		.. A&H (Literature)
.. I-Study Abroad		.. A&H (Non-Literature)
.. L-Lab (no/fee)		.. Social Science
X N/B-Lecture/Lab(w/fee)		.. CCA
.. N/L-Lecture/Lab(no fee)		.. STS

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

Catalog Description: Theory and application of some of the routine tools and techniques used in biological chemistry. Lectures introduce laboratory theory and provide additional laboratory instructions, discuss results, and conduct student evaluations. Laboratory periods will be used to conduct each activity.

Prerequisite(s): BIOCH 305 or equivalent, or permission of the instructor.

Projected Enrollment:

Year 1 - 70+ &nbsp;Year 2 - 70+ &nbsp;Year 3 - 70+ &nbsp;Year 4 - 70+

Required course for students in: ~~Food Science~~ option for fulfilling requirement for Biological Sciences, Biosystems Engineering (Applied Biotechnology Concentration), Science Teaching (Biological Sciences), and Secondary Education (Biological Sciences).

Statement of need for the course: BIOCH 306 (the laboratory accompanying BIOCH 305) is no longer being offered and access to BIOCH 302 is limited. Consultation with other departments/majors that previously used/required BIOCH 306 indicated that a more accessible biochemical laboratory experience was still important to their majors. The proposed course will replace BIOCH 306, but its content and delivery will be refined, updated, and tailored more closely to the needs of those departments/majors that use the course. It is tentatively expected to be offered in both Fall and Spring semesters. Animal & Veterinary Science and Chemical Engineering have also expressed interest in a new course.

Textbook(s): None. The instructor is preparing a detailed laboratory manual to be used in the course. This will include much of the theory and background for each laboratory activity and an assortment of figures or diagrams for illustration purposes.

Learning Objectives: 1. Experience with the theory and application of selected common biochemical laboratory techniques.
2. Skill in critical assessment and/or interpretation of experimental data.
3. Preparation of laboratory reports.

Topical Outline: Tentative List of Topics/Activities

(Additional details are provided in the attached BIOCH 434 Syllabus Draft). Each activity will take one week.

1. Course introduction and expectations (no laboratory)
2. Weights, Volumes, Solutions.
3. Introduction to UV/Vis Spectroscopy.
4. Amino acids, buffers & pH.
5. Carbohydrates: the extraction, quantification and analysis of simple sugars.
6. Lipids: the extraction and analysis of lipids.
7. Midterm exam
8. Organelles: centrifugation techniques for the isolation of plastids.
9. Proteins & chromatography.
10. Proteins & electrophoresis.

- 11. Proteins & ELISA.
- 12. Enzymes & kinetics.
- 13. Nucleic Acids & PCR.
- 14. Final exam.

Evaluation: Evaluation and grading will be based on four grade components:

- 1. Weekly/topical laboratory reports (11 reports, 50% of final grade);
- 2. Quizzes (6-8, some announced and some unannounced, 10% of final grade);
- 3. Midterm exam (20% of the final grade);
- 4. Final exam (20% of the final grade).

Duplication (if applicable): The proposed course partly overlaps with the offerings of Genetics and Biochemistry, but this overlap is unavoidable. Those departments involved, especially Biological Sciences and Food Science, believe that its students need laboratory experience in biochemistry, and previously they were getting this experience in BIOCH 306. Then Genetics and Biochemistry stopped offering BIOCH 306. Our only options were either to drop our biochemistry laboratory requirement, or offer an introductory biochemistry laboratory course ourselves. The equivalent of BIOCH 306 has already been offered as a BIOSC 490 course, and is currently being offered as a "Special Topics" course (BIOSC 497) to satisfy the needs described here while revisions are being made for developing the new course. We would not be proposing this course if BIOCH 306 were still available to our majors.

Form Originator: SMSPRC, Salvatore Sparace **Date Form Created:** 8/3/2009
Form Last Updated by: RJKSN, Robert Kosinski **Date Form Last Updated:** 8/31/2009
Form Number: 2224

Approval

<i>Robert J. Kosinski</i>	8/31/09	<i>Janice W. Mowbray</i>	10/2/09
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>RP</i>	8/31/09		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Robert J. Kosinski</i>	9/10/09		
Chair, College Curriculum Committee	Date	Provost	Date
<i>Paul Whitwell</i>	9/10/09	<i>David P. Helms</i>	10/19/09
College Dean	Date	President	Date
		<i>John D. ...</i>	10/20/09
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

Course Abbreviation & Number:

X New Undergraduate Course: BIOSC- 467

.. New Honors Course: --

.. New Graduate Course: -

Effective Term: 01/2010**Catalog Title:** Principles of Hematology**Transcript Title:** Prin of Hematology**Fixed Credit Course:** 3 (3,0)**Variable Credit Course:** - (-), (-)

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

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

Catalog Description: Basic hematological principles as they relate to normal blood cell production, as well as in abnormal conditions that result in diseases of the hematological system. Clinical practice, ethics, and controversies in hematology will be discussed.

Prerequisite(s): BIOSC 461 and 462**Projected Enrollment:**

Year 1 - 10 Year 2 - 15 Year 3 - 15 Year 4 - 15

Required course for students in:

Statement of need for the course: We are planning the development of a new Microbiology emphasis area in clinical/biochemical laboratory science that will be accomplished in partnership with Tri-County Tech. Graduates from this program will help address the critical workforce shortages that currently exist in the field in the U.S. and in fact exist in many of the developed countries of the world.

Textbook(s): Hematology in Practice, ed. Betty Ciesla, F.A. Davis Company, Philadelphia, PA; ISBN-13: 978-0-8036-1526-7; 348 pages, 2007

Learning Objectives: Students will learn and understand the basic principles of hematology, including:
 how blood cells are formed from stem cells and how they are controlled and regulated;
 identification of specific types of blood cells and their functions;
 stages in the maturation of erythrocytes, lymphocytes, platelets and granulocytes, plus pathologies of maturation;
 the myeloproliferative disorders (aplastic anemia, the leukemias and lymphomas)
 types of anemia;
 the formation and function of hemoglobin;
 the clotting cascade and the role of complement in it;
 preparation of blood smears and use of hematological stains;
 basic microscopy and cell counting techniques used in the hematology laboratory;
 basic laboratory management, quality assurance, and use of automation in the clinical hematology laboratory.

Topical Outline: Week 1: Course introduction and basic peripheral blood techniques.

Week 2: Bone marrow procedures and red blood cell indices.

Week 3: Introduction to hematopoiesis.

Week 4: Red blood cell development.

Week 5: Hemoglobin synthesis and function; hemolysis.

Week 6: The macrocytic anemias.

Week 7: Midterm exam.

Week 8: Macrocytic anemias, continued.

Week 9: Normochromic anemias due to hemoglobinopathies.

Week 10: Development and function of white blood cells.

Week 11: Abnormalities of white blood cells.

Week 12: Leukemias.

Week 13: Lymphomas.
 Week 14: Clotting and clotting disorders.
 Week 15: Term papers due; review.
 Week 16: Final exam.

Evaluation: Grading will be based upon the following: mid-year exam (worth 200 points), a term paper assignment (100 points) and a final exam (200 points). Final grades will be assigned using the following scale: A (>450), B (400-449), C (350-399), D (300-349), F (<300), I (failure to complete all of the assignments listed above). Each student will research and write a 25-page paper on an approved topic related to a hematological topic discussed in class. Each student will also deliver a 10-min presentation on his or her topic to share findings with the class.

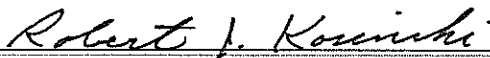

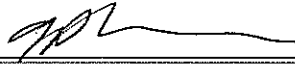



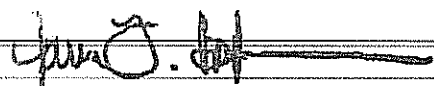
Duplication (if applicable): Several courses in Biological Sciences such as BIOSC 316 (Human Physiology) and BIOSC 459 (Systems Physiology) briefly discuss the blood as one of several systems they cover, but no other Clemson course has the sustained hematological focus and clinical orientation of this proposed course.

Form Originator: RJKSN, Robert Kosinski **Date Form Created:** 8/19/2009

Form Last Updated by: RJKSN, Robert Kosinski **Date Form Last Updated:** 8/26/2009

Form Number: 2284

Approval

	8/31/09		10/2/09
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	8/31/09		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	9/10/09		
Chair, College Curriculum Committee	Date	Provost	Date
	9/10/09		10/19/09
College Dean	Date	President	Date
			10/20/09
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

X Change a Course - Abbrev & Number: BIOCH- 305
 Corresponding Lab Course: --
 Corresponding Honors course: --
 .. **Add Honors course:** --
 Corresponding Graduate course: --
 .. **Add Graduate course:** --
Course Title: ESSEN ELEMENTS BIOCH

Brief Statement of Change:
 Change prerequisite from "CH 201 or equivalent " to "CH 201 (or equivalent) and BIOL 103, or consent of instructor". BIOL 103 is needed to ensure that students have sufficient biology background.

Last Term taught: 0905	.. Change Abbrev to:
Effective Term: 01/2010	.. Change Number to:
.. Change Catalog Title:	.. Change Transcript Title:
from:	from: ESSEN ELEMENTS BIOCH
to:	to:

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

.. **Change Catalog Description:**
from:
to:
X Change Prerequisite(s):
from: CH 201 or equivalent
to: CH 201 (or equivalent) and BIOL 103 or BIOL 110
Learning Objectives:
Topical Outline:
Evaluation:
Duplication (if applicable):

Form Originator: WGC, Weiguo Cao **Date Form Created:** 6/9/2009
Form Last Updated by: WGC, Weiguo Cao **Date Form Last Updated:** 8/7/2009
Form Number: 2168

Approval

	8/7/09		10/2/2009
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Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
<i>Robert J. Kavinski</i>	9/10/09		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
<i>Kurt E. Murphy</i>	8-7-09		
Chair, College Curriculum Committee	Date	Provost	Date
<i>Zeel Whitman</i>	9/10/09	<i>Chris P. Helms</i>	10/11/09
College Dean	Date	President	Date
		<i>John O. ...</i>	10/20/09
Director, Calhoun Honors College	Date		
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