Add Undergraduate Course

0001 NC

Course Attributes

Subject Abbreviation:	CH-Chemistry	**Catalog Title:**	Mechanisms of Inorganic Reactions
Course Number:	4040	**Transcript Title:**	Inorganic Reactions
Effective Term:	Spring 2018	**Cross-reference(s):**	
College:	Science	**Grade Mode:**	Standard Letter
Department:	Chemistry		

☐ **Additional Fee?**

Justification

Undergraduate chemistry majors currently receive very little exposure to the basics of reaction mechanisms. Important fundamental concepts such as the steady-state assumption, pseudo-first-order conditions, rate-determining steps and rate law deduction are not presented in the existing curriculum in any depth.

Form

User ID: kjoseph **Name:** Joseph Kolis
Date: 02/24/2017 **Number:** 29945

Hours

Fixed Credit Course

Credit Hrs	Contact Hrs
3	3

Variable Credit Course

Credit Hrs		Contact Hrs	
Min	Max	Min	Max

Rationale for Add Course

- ☒ Strengthen Program Requirement(s)
- ☐ Alignment of Student Learning Outcomes
- ☐ Alternative Delivery of Content
- ☒ Improve Time to Degree
- ☐ Evolution of the Discipline
- ☐ Changing Prerequisites
- ☐ Address DWF Rates
- ☐ General Education Modifications
- ☐ Other (Please specify.)

Schedule Types

- ○ Field Course
- ○ Independent Study
- ○ Internship
- ○ Lab No Fee
- ○ Lab With Fee
- ◉ Lecture
- ○ Other
- ○ Seminar
- ○ Studio
- ○ Tutorial

Projected Enrollment

Year 1: 8
Year 2: 10
Year 3: 15
Year 4: 15

Evaluation

Undergraduate

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

Homework: 15% of total grade
Midterm 1: 25% of total grade
Midterm 2: 25% of total grade
Final exam: 35% of total grade

Catalog Description

This course will provide an introduction to the fundamentals of inorganic reaction mechanisms, including substitution reactions, electron transfer and atom transfer reactions. The important factors of detailed reaction mechanistic study, including linear free energy relationships, stereochemistry, catalysts and isotope effects will be introduced.

☒ Prerequisite(s) ☐ Corequisite(s)

CH 2050 or permission of instructor

Statement of need and justification based on assessment of student learning outcomes

Undergraduate chemistry majors currently receive very little exposure to the basics of reaction mechanisms. Important fundamental concepts such as the steady-state assumption, pseudo-first-order conditions, rate-determining steps and rate law deduction are not presented in the existing curriculum in any depth. Discussions with faculty all identify this area as one that is important for full intellectual development for chemistry majors. It is particularly so for students going on to advanced degrees. Also at present Chemistry has a limited offering of advanced elective courses and this creates problems for students completing their degrees.

Textbook(s)

"Reaction Mechanisms of Inorganic and Organometallic Systems" 3rd ed. R.B. Jordan, Oxford Press, or similar.

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Learning Objectives

Students will develop the ability to correlate an observed kinetic rate law to proposed reaction mechanism and relate that to a range of chemical reactions. The course would allow the students to apply their understanding of fundamentals to evaluate proposed reaction mechanisms based on the observed chemical data. Ultimately the students should be able to propose a reasonable reaction mechanism and design experiments to test their proposed mechanisms Finally they should be able to relate broader descriptive inorganic chemistry to a particular reaction type.

Topical Outline

Mechanisms of Inorganic Reactions – Topical Outline
Week 1. Kinetics Basics: Arrhenius Equation, Reaction Profiles, Rate Equation, Hammond Relationship, Transition State versus Intermediate, Microscopic Reversibility
Week 2. Rate Laws and Integrated Rate Laws, First- and Second-Order, Rate-Determining Steps, Steady-State Assumption, Proposal of Mechanisms Based on Observed Rate Equations
Week 3. Thermodynamic Considerations, Experimental Methodology
Week 4. Substitution Reactions – Octahedra: Basics, Pseudo-First-Order Conditions Applied, Stereochemistry, Solvent Effects, Common-Ion Effects
Week 5. Substitution Reactions – Octahedra: Introduction to Linear Free Energy Relationships, Leaving Group Properties, Base-Catalyzed Substitution
Week 6. Substitution Reactions – Square Planar: Basics, Solvent Assisted Pathways, Nucleophiles, More Linear Free Energy Relationships
Week 7. Substitution Reactions – Square Planar: Trans Effect and Trans Influence
Week 8. Electron Transfer - Inert and Labile
Week 9. Electron Transfer – Inner Sphere and Outer Sphere Transfer, Marcus Theory
Week 10. Redox Chemistry - Redox Potential, Latimer Diagrams
Week 11. Mixed Valent Dimers and Chains (Creutz-Taube, Robin-Day)
Week 12. Biochemical Mechanisms: Electron Transfer Mechanisms and Atom Transfers
Week. 13. Ligand Reactivity: Hydrolysis, Rearrangements
Week 14. More Complex Reactions – Multiple Step Rate Laws – Atom Transfer Reactions
Week. 15. Metal Carbonyls: Mechanisms of Substitution Reactions and Related Reactions

Syllabus

Upload File: Mechanisms of Inorganic Reactions Tentative Syl.-20170224102039.docx

Daniel C. Hildreth 2/24/17

Chair, Department Curriculum Committee — Date

R Karl Dieter 02-24-17

Department Chair — Date

Robert J. Kominski 3/9/17

Chair, College Curriculum Committee — Date

3/9/17

College Dean — Date

Director, Calhoun Honors College — Date

John D. Wright 4/7/2017

Chair, Undergraduate Curriculum Committee — Date

Chair, Graduate Curriculum Committee — Date

Robert H. Jones 3/24/17

Provost — Date

President — Date

Change Undergraduate Course

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Change a Course

Subject: BIOL-Biology

Number: 4030

Effective Term: Fall 2017

Title: Intro to Applied Genomics

Honors Course:

☐ Add Honors Course:

Last Term Course was taught: 201608

Brief Statement of Change Based on Assessment Results:
Experience shows that students who have had BIOL 1100 do just as well in the course as students with more extensive backgrounds in genetics. Therefore, we would like to change the prerequisites for the undergraduate course to BIOL 1100 or 1030. We're also changing the grad course prerequisites to "an introductory biology course."

Rationale for Changing a Course

- ☐ **Strengthen Program Requirement(s)**
- ☐ **Alignment of Student Learning Outcomes**
- ☐ **Alternative Delivery of Content**
- ☐ **Improve Time to Degree**
- ☐ **Evolution of the Discipline**
- ☑ **Changing Prerequisites**
- ☐ **Address DWF Rates**
- ☐ **General Education Modifications**
- ☐ **Other (Please specify.)**

☑ Change Prerequisite(s) / Corequisite(s)

From GEN 3000 or GEN 3020 or MICR 4150

To for BIOL 4030: BIOL 1100 or BIOL 1030

for BIOL 6030: an introductory biology course

Form

User ID: rjksn **Name:** Robert Kosinski

Date: 03/09/2017 **Number:** 30283

Robert J. Kaminski — 3/9/17

Chair, Department Curriculum Committee — Date

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R D M A Cohn — 3/9/17

Department Chair — Date

Robert J. Kaminski — 3/9/17

Chair, College Curriculum Committee — Date

3/9/17

College Dean — Date

Director, Calhoun Honors College — Date

John D. Riffle — 4/7/2017

Chair, Undergraduate Curriculum Committee — Date

Chair, Graduate Curriculum Committee — Date

Robert W Jones — 9/24/17

Provost — Date

President — Date

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Change Undergraduate Course

Change a Course

Subject:	BIOL-Biology	
Number:	4480	
Effective Term:	Spring 2018	
Title:	Marine Ecology	
Honors Course:	BIOL	4480
☑ Add Honors Course:	BIOL	4480
Last Term Course was taught:	999999	

Brief Statement of Change Based on Assessment Results:
Marine ecology
is a course that fulfills the Department of Biological Sciences ecology requirement. Honors students in Biological Sciences would benefit from an honors section of marine ecology by the opportunity for the in-depth analysis of the primary literature afforded in the honors discussion group. Such an opportunity will significantly benefit those honor students planning to attend graduate school in marine biology or marine conservation.

Rationale for Changing a Course

- ☑ **Strengthen Program Requirement(s)**
- ☑ **Alignment of Student Learning Outcomes**
- ☐ **Alternative Delivery of Content**
- ☐ **Improve Time to Degree**
- ☑ **Evolution of the Discipline**
- ☐ **Changing Prerequisites**
- ☐ **Address DWF Rates**
- ☐ **General Education Modifications**
- ☐ **Other (Please specify.)**

Honors

- ☐ **Honors Students Only?**
- ☑ **Honors sections allowed to be offered?**

☑ Change Catalog Description

From Study of
ecological principles underlying the relationships of marine organisms to their ocean environment. Includes physiological, behavioral, population, and community ecology with applications to conservation and sustainability of marine resources. Preq: BIOL 3020 or BIOL 4170.

To Study
of ecological principles underlying the relationships of marine organisms to their ocean environment. Includes physiological, behavioral, population, and community ecology with applications to conservation and sustainability of marine resources. Includes honors section. Preq: BIOL 3020 or BIOL 4170.

Learning Objectives

Students in Marine Ecology will be able to (1) assign ecological roles of marine animals within a given environment based on an understanding of the relationship of their form, function and ecology, (2) quantify the flow of energy and matter within an ecological community given the constraints imposed by the abiotic conditions, and (3) debate alternative solutions regarding the impact of humans and climate change on the sustainability of the planet given the current and projected levels of exploitation and habitat alteration.

Topical Outline

Each topic is one 75 minute lecture Physical Oceanography • Introduction • Salinity, light, temperature • Tides, waves, currents Marine Biodiversity • Richness & historical diversity • Variation & geographic diversity • Factors determining biodiversity Primary Productivity • Phytoplankton diversity • Nutrients and productivity • Chemosynthesis Primary Consumption • Trophic guilds • Sediment & suspension feeders • Grazers Predators, Parasites and Pathogens • Predators • Parasites • Pathogens Competition and Succession • Intraspecific competition • Interspecific competition • Succession Dispersal and Settlement • Dispersal • Transport • Settlement Overfishing • Over-exploitation • Loss of top predators • Fisheries collapse Climate Change & Habitat Loss • Global warming • Ocean acidification • Habitat loss – species invasions Marine Conservation • Restoration & rehabilitation • Artificial reefs • Marine protected areas (MPAs)

Add course requirements for honors courses (if applicable)

Students
in the honors section will chose one of two possible honors assignments. Option 1 is a weekly discussion group where students will read and discuss the topics presented in the Marine Ecology book chosen for the discussion group. Each student will be assigned a chapter to lead the discussion and will distribute a journal article on that specific topic for discussion. Option 2 is a literature

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review paper on a topic from the Marine Ecology book chosen for the discussion group. The student will submit his or her proposed literature review topic to the instructor for approval. Once approved the literature review paper will synthesize the results from 50+ primary journal articles on that topic.

Evaluation

Undergraduate

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

Regular section: three exams worth 100 points each (75%), ten class participation activities worth 10 points each (25%). Honors section: three exams worth 100 point each (60%), 10 class participation activities worth 10 points each (20%), and honors discussion group worth 100 points (20%).

Syllabus

Upload File: BIOL 4480-6840 Marine Ecology Syllabus-20161204075746.pdf

Description: BIOL 4480-6480 Marine Ecology Syllabus

Form

User ID: mchildr **Name:** Michael Childress

Date: 02/27/2017 **Number:** 28373

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Robert J. Kaminski 3/9/17
Chair, Department Curriculum Committee Date

Robert G. Mc 3/9/17
Department Chair Date

Robert J. Kaminski 3/9/17
Chair, College Curriculum Committee Date

3/9/17
College Dean Date

Director, Calhoun Honors College Date

John D. Riffe 4/7/2017
Chair, Undergraduate Curriculum Committee Date

Chair, Graduate Curriculum Committee Date

Robert W. Jones 8/24/17
Provost Date

President Date

Change Major

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If Gen Ed requirements are changed a separate Gen Ed Checklist form must accompany this form.

Major Name: Biological Sciences

Degree: Bachelor of Science

Effective Catalog Year: 2018-2019

- ☐ **Change Major Name to:** BIOS
- ☐ **Change Degree to:** Bachelor of Science
- ☑ **Change Curriculum Requirements**
- ☐ **Change General Education Requirements**
- ☐ **Add, Change, or Delete Concentration(s)**
- ☐ **Add, Change, or Delete Emphasis Area(s)**

Curriculum Map: BIOSC_BS_2_2017-20170224123135.docx

Description: Biological Sciences BS Curriculum

Additional Information:

Description:

Summary/Explanation

We wish to make two changes. First, we have just added a new course (BIOL 4480, Marine Ecology), and we wish to add it to the Ecology Requirement option list for the BIOL BS. Second, we wish to add WFB 4720/4721 (Ornithology) and WFB 4770/4771 (Ichthyology) to our Major Requirement option list. The curriculum map is attached, with the changes bolded and underlined.

We also wish to make these same changes (both to the Ecology and Major Requirement option lists) for the Entomology, Prepharmacy, and Toxicology emphasis areas of the BIOL BS, and to the BIOL BA. The BIOL BA Prerehabilitation Sciences Emphasis area does not have a Major Requirement, so for that degree we only wish to add Marine Ecology to the Ecology Requirement option list.

Rationale for Change Major

- ☑ **Strengthen Program Requirement(s)**
- ☐ **Alignment of Student Learning Outcomes**
- ☐ **Alternative Delivery of Content**
- ☐ **Improve Time to Degree**
- ☑ **Evolution of the Discipline**
- ☐ **Changing Prerequisites**
- ☐ **Address DWF Rates**
- ☐ **General Education Modifications**
- ☐ **Other (Please specify.)**

Form

User ID: rjksn **Name:** Robert Kosinski

Date: 02/24/2017 **Number:** 28812

Robert J. Kosinski — 2/24/17

Chair, Department Curriculum Committee — Date

Robert Cohen — 2/24/17

Department Chair — Date

Robert J. Kosinski — 3/9/17

Chair, College Curriculum Committee — Date

3/9/17

College Dean — Date

Director, Calhoun Honors College — Date

John D. Wolff — 4/7/2017

Chair, Undergraduate Curriculum Committee — Date

Chair, Graduate Curriculum Committee — Date

Robert W Jones — 9/24/17

Provost — Date

President — Date

B. S. BIOLOGICAL SCIENCES 2018-2019

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FRESHMAN YEAR

First Semester		Second Semester	
BIOL 1010 Frontiers in Biol. I	1(1,0)	BIOL 1110 Prin. of Biol. II[1]	5(4,3)
BIOL 1100 Prin. of Biol. I[1]	5(4,3)	CH 1020 General Chemistry	4(3,3)
CH 1010 General Chemistry	4(3,3)	ENGL 1030 Accelerated Composition.	3(3,1)
MATH 1060 Calculus of One Var. I	4(4,0)	Mathematical Sciences Requirement[3]	3
Oral Communication Requirement[2]	3		15
	17		

SOPHOMORE YEAR

CH 2230 Organic Chemistry[4,5]	3(3,0)	BCHM 3050 Essential Elements of Bioch[8]	3(3,0)
CH 2270 Organic Chemistry Lab[4,5]	1(0,3)	Electives	6
GEN 3000 Fundamental Genetics[6]	3(3,0)	Major Requirement[4,9]	4
Arts and Humanities (Literature) Req.[2]	3	Social Science Requirement[10]	3
Organismal Diversity Requirement[7]	4		16
Elective	2		
	16		

JUNIOR YEAR

BIOL 3350 Evolutionary Biology	3(3,0)	ENGL 3150 Scientific Writing and Comm.[13]	3(3,0)
BIOL 4610 Cell Biology	3(3,0)	PHYS 2080 General Physics II[14]	3(3,0)
BIOL 4620 Cell Biology Laboratory	2(1,2)	PHYS 2100 General Physics II Lab[14]	1(0,2)
PHYS 2070 General Physics I[11]	3(3,0)	Arts and Humanities (Non-Lit) Req.[10]	3
PHYS 2090 General Physics Lab I[11]	1(0,3)	Functional Biol. Requirement[15]	3
Ecology Requirement[12]	3	Major Requirement[9]	2
	15		15

SENIOR YEAR

BIOL 4930 Senior Seminar **or**	2(2,0)	Major Requirement[9]	9
MICR 4930 Senior Seminar	2(2,0)	Elective	3
Major Requirement[9]	6		12
Social Science Requirement[10]	3		
Elective	4		
	15		

Total Semester Hours = 121

[1] BIOL 1100 and 1110 are strongly recommended; however, BIOL 1030/1050 may substitute for BIOL 1100 and BIOL 1040/1060 may substitute for BIOL 1110. The remaining 1-2 credit hours required must be satisfied by completing 1-2 extra credits.

[2] See General Education Requirements.

[3] MATH 1080, STAT 2300, or other approved coursework. See advisor. Medical/dental schools have different mathematics requirements. The Medical Colleges Admissions Test (MCAT) includes questions on statistics.

[4] Most professional health sciences schools require the second semester of organic chemistry with laboratory, CH 2240/2280.

[5] CH 2010 Survey of Organic Chemistry and CH 2020 Survey of Organic Chemistry Laboratory may substitute.

[6] GEN 3020 may substitute.

[7] At least one lecture and associated laboratory selected from BIOL 3010, 3020/3060, 3030/3070, 3040/3080, 3200, 4060/4070, 4250/4260.

[8] BCHM 3010 may substitute.

[9] Twenty-one credit hours from BIOL or MICR courses at the 3000-level or above (except for MICR 3000) or from CH 2240/2280, **WFB 4720, or WFB 4770. Selections must include** at least three laboratory courses. Any combination of BIOL or MICR 3940, 4910, 4920, 4940 and 4950 may not exceed eight credit hours.

[10] See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and the Science and Technology in Society Requirements. The Medical Colleges Admissions Test (MCAT) includes questions on psychology and sociology.

[11] PHYS 1220/1240 may substitute.

[12] At least one course selected from BIOL 4100, 4410, 4420, 4430, 4460, **4480**, 4700, MICR 4010, or 4030.

[13] ENGL 3140 may substitute.

[14] PHYS 2210/2230 may substitute

[15] At least one course selected from selected from BIOL 4010, 4080, 4200, 4400, 4590, 4750, 4800, 4830, 4840, or MICR 4140.

B. S. BIOLOGICAL SCIENCES 2018-2019
ENTOMOLOGY EMPHASIS

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FRESHMAN YEAR

First Semester		Second Semester	
BIOL 1010 Frontiers in Biol. I **or**	1(1,0)	BIOL 1110 Prin. of Biol. II[1]	5(4,3)
BIOL 1100 Prin. of Biol. I[1]	5(4,3)	CH 1020 General Chemistry	4(3,3)
CH 1010 General Chemistry	4(3,3)	ENGL 1030 Accelerated Composition.	3(3,1)
MATH 1060 Calculus of One Var. I	4(4,0)	Mathematical Sciences Requirement[3]	3
Oral Communication Requirement[2]	3		15
	17		

SOPHOMORE YEAR

CH 2230 Organic Chemistry **and**	3(3,0)	BCHM 3050 Essential Elements of Bioch.[8]	3(3,0)
CH 2270 Organic Chemistry Lab[4,5]	1(0,3)	BIOL 3350 Evolutionary Biology	3(3,0)
ENT (BIOL) 3010 Insect Biol. & Div.	4(3,3)	Major Requirement[4,9]	4
GEN 3000 Fundamental Genetics[6]	3(3,0)	Social Science Requirement[7]	3
Arts and Humanities (Literature) Req.[2]	3	Elective	3
Elective	2		16
	16		

JUNIOR YEAR

BIOL 4610 Cell Biology	3(3,0)	ENGL 3150 Scientific Writing and Comm.[13]	3(3,0)
BIOL 4620 Cell Biology Laboratory	2(1,2)	PHYS 2080 General Physics II **and**	3(3,0)
PHYS 2070 General Physics I **and**	3(3,0)	PHYS 2100 General Physics II Lab[14]	1(0,2)
PHYS 2090 General Physics Lab I[10]	1(0,3)	Arts and Humanities (Non-Lit) Req.[7]	3
Ecology Requirement[11]	3	Entomology Requirement[12]	3
Entomology Requirement[12]	3	Functional Biol. Requirement[15]	3
	15		16

SENIOR YEAR

BIOL 4930 Senior Seminar **or**	2(2,0)	Entomology Requirement[12]	4
MICR 4930 Senior Seminar	2(2,0)	Major Requirement[4,9]	3
Entomology Requirement[12]	4	Elective	6
Social Science Requirement[7]	3		13
Elective	4		
	13		

Total Semester Hours = 121

[1] BIOL 1100 and 1110 are strongly recommended; however, BIOL 1030/1050 may substitute for BIOL 1100 and BIOL 1040/1060 may substitute for BIOL 1110. The remaining 1-2 credit hours required must be satisfied by completing 1-2 extra credits.

[2] See General Education Requirements.

[3] MATH 1080, STAT 2300, or other approved coursework. See advisor. Medical/dental schools have different mathematics requirements.

[4] Most professional health sciences schools require the second semester of organic chemistry with laboratory, CH 2240/2280.

[5] CH 2010 Survey of Organic Chemistry and CH 2020 Survey of Organic Chemistry may substitute.

[6] GEN 3020 may substitute.

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

[8] BCHM 3010 may substitute.

[9] Seven credit hours must be selected from BIOL or MICR courses at the 3000-level or above (except MICR 3000) or CH 2240/2280, **WFB 4720, or WFB 4770**.

[10] PHYS 1220/1240 may substitute.

[11] At least one course selected from BIOL 4100, 4410, 4420, 4430, 4460, **4480**, 4700, MICR 4010, or 4030.

[12] ENT (BIOL) 4000, (BIOL) 4150 and seven additional credits selected from ENT 3000, 3080, 4040/4090, 4070, (BIOL) 4360, (BIOL, WFB) 4690, 4900, (GEN) 4950, or PLPA (ENT) 4060.

[13] ENGL 3140 may substitute.

[14] PHYS 2210/2230 may substitute

[15] At least one course selected from selected from BIOL 3160, 4010, 4080, 4200, 4400, 4590, 4750, 4800, 4830, 4840, or MICR 4140.

B. S. BIOLOGICAL SCIENCES 2018-2019
PREPHARMACY EMPHASIS

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FRESHMAN YEAR

First Semester

BIOL 1010 Frontiers in Biol. I .....1(1,0)
BIOL 1030 General Biology I[1] .....3(3,0)
BIOL 1050 General Biology I Lab .....1(0,3)
CH 1010 General Chemistry .....4(3,3)
MATH 1060 Calculus of One Var. I .....4(4,0)
Oral Communication Requirement[2] 3
16

Second Semester

BIOL 1040 General Biology II[1].....3(3,0)
BIOL 1060 General Biology II Lab.....1(0,3)
CH 1020 General Chemistry .....4(3,3)
ENGL 1030 Accelerated Composition. .....3(3,1)
Mathematical Sciences Requirement[3].....3
14

SOPHOMORE YEAR

CH 2230 Organic Chemistry **and**.....3(3,0)
CH 2270 Organic Chemistry Lab .....1(0,3)
GEN 3000 Fundamental Genetics[4] .....3(3,0)
Arts and Humanities (Literature) Req.[2] 3
Organismal Diversity Requirement[5] 4
Elective 2
16

BCHM 3050 Essential Elements of Bioch.[6] ..... 3(3,0)
BIOL 3350 Evolutionary Biology ..... 3(3,0)
CH 2240 Organic Chemistry **and**..... 3(3,0)
CH 2280 Organic Chemistry Lab ..... 1(0,3)
Social Science Requirement[2] 3
Elective 3
16

JUNIOR YEAR

BIOL 3150 Functional Human Anatomy .....4(3,3)
BIOL 4610 Cell Biology.....3(3,0)
BIOL 4620 Cell Biology Laboratory.....2(1,2)
PHYS 2070 General Physics I **and**.....3(3,0)
PHYS 2090 General Physics Lab I[7].....1(0,3)
PSYC 2010 Introduction to Psychology.....3
16

BIOL 3160 Human Physiology .....4(3,3)
ENGL 3150 Scientific Writing and Comm.[8].....3(3,0)
PHYS 2080 General Physics II **and** .....3(3,0)
PHYS 2100 General Physics II Lab[9] .....1(0,2)
Arts and Humanities (Non-Lit) Req.[2] 3
Economics Requirement[10] 3
17

SENIOR YEAR

BIOL 4930 Senior Seminar **or**.....2(2,0)
MICR 4930 Senior Seminar.....2(2,0)
Ecology Requirement[11] 3
Major Requirement[12] 3
Elective 5
13

MICR 3050 General Microbiology..... 4(3,3)
Major Requirement[12] 3
Elective 6
13

Total Semester Hours = 121

[1] Pharmacy programs require BIOL 1030/1050 and BIOL 1040/1060, or equivalent; however, BIOL 1100 and BIOL 1110 may substitute. The additional 1-2 credit hours will be subtracted from the Major Requirement credits.
[2] See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and the Science and Technology in Society Requirements.
[3] MATH 1080, STAT 2300, or other approved coursework. See advisor. Professional schools have different mathematics requirements.
[4] GEN 3020 may substitute.
[5] At least one lecture and associated laboratory selected from BIOL 3010, 3020/3060, 3030/3070, 3040/3080, 3200, 4060/4070, 4250/4260.
[6] BCHM 3010 may substitute.
[7] PHYS 1220/1240 may substitute.
[8] ENGL 3140 may substitute.
[9] PHYS 2210/2230 may substitute.
[10] ECON 2000, 2110, or 2120
[11] At least one course selected from BIOL 4100, 4410, 4420, 4430, 4460, **4480**, 4700, MICR 4010, or 4030.
[12] Six credit hours must be selected from BIOL or MICR courses at the 3000-level or above (except for MICR 3000), **WFB 4720, or WFB 4770**.

B. S. BIOLOGICAL SCIENCES 2018-2019
TOXICOLOGY EMPHASIS

FRESHMAN YEAR

First Semester

BIOL 1010 Frontiers in Biol. I **or** .....1(1,0)
BIOL 1100 Prin. of Biol. I[1] .....5(4,3)
CH 1010 General Chemistry .....4(3,3)
MATH 1060 Calculus of One Var. I .....4(4,0)
Oral Communication Requirement[2] 3
17

Second Semester

BIOL 1110 Prin. of Biol. II[1] .....5(4,3)
CH 1020 General Chemistry .....4(3,3)
ENGL 1030 Accelerated Composition. .....3(3,1)
Mathematical Sciences Requirement[3] 3
15

SOPHOMORE YEAR

BIOL 2110 Introduction to Toxicology .....3(3,0)
CH 2230 Organic Chemistry **and** .....3(3,0)
CH 2270 Organic Chemistry Lab[4,5] .....1(0,3)
GEN 3000 Fundamental Genetics[6] .....3(3,0)
Social Science Requirement[7] 3
Elective 2
15

BCHM 3050 Essential Elements of Bioch[8] ..... 3(3,0)

BIOL 3350 Evolutionary Biology ..... 3(3,0)
Major Requirement[4,9] 4
Organismal Diversity Requirement[10] 4
Elective 3
17

JUNIOR YEAR

BIOL 4610 Cell Biology .....3(3,0)
BIOL 4620 Cell Biology Laboratory .....2(1,2)
ETOX 4300 Toxicology .....3(3,0)
PHYS 2070 General Physics I **and** .....3(3,0)
PHYS 2090 General Physics Lab I[11] .....1(0,3)
Ecology Requirement[12] 3
15

ENGL 3150 Scientific Writing and Comm. [13] ....3(3,0)
PHYS 2080 General Physics II **and** .....3(3,0)
PHYS 2100 General Physics II Lab[14] .....1(0,2)
Arts and Humanities (Literature) Req.[2] 3
Functional Biol. Requirement[15] 3
Elective 2
15

SENIOR YEAR

BIOL 4930 Senior Seminar **or** .....2(2,0)
MICR 4930 Senior Seminar .....2(2,0)
CH 3130 Quantitative Analysis .....3(3,0)
CH 3170 Quantitative Analysis Lab .....2(0,6)
Social Science Requirement[7] 3
Elective 5
15

CH 4130 Chemistry of Aqueous Systems **or** .....3(3,0)
ETOX 4210 Chemical Fate in Environ. .....3(3,0)
Arts and Humanities (Non-Lit) Req.[7] 3
Toxicology Requirement[16] 3
Elective 3
12

Total Semester Hours = 121

[1] BIOL 1100 and 1110 are strongly recommended; however, BIOL 1030/1050 may substitute for BIOL 1100 and BIOL 1040/1060 may substitute for BIOL 1110. The remaining 1-2 credit hours required must be satisfied by completing 1-2 extra credits.
[2] See General Education Requirements.
[3] MATH 1080, STAT 2300, or other approved coursework. See advisor. Medical/dental schools have different mathematics requirements.
[4] Most professional health sciences schools require the second semester of organic chemistry with laboratory, CH 2240/2280.
[5] CH 2010 and CH 2020 may substitute.
[6] GEN 3020 may substitute.
[7] See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and the Science and Technology in Society Requirements.
[8] BCHM 3010 may substitute.
[9] Four credit hours must be selected from BIOL or MICR courses at the 3000-level or above (except MICR 3000) or CH 2240/2280, **WFB 4720, or WFB 4770**.
[10] At least one lecture and associated laboratory selected from BIOL 3010, 3020/3060, 3030/3070, 3040/3080, 3200, 4060/4070, 4250/4260.
[11] PHYS 1220/1240 may substitute.
[12] At least one course selected from BIOL 4100, 4410, 4420, 4430, 4460, **4480**, 4700, MICR 4010, or 4030.
[13] ENGL 3140 may substitute.
[14] PHYS 2210/2230 may substitute
[15] At least one course selected from selected from BIOL 3160, 4010, 4080, 4200, 4400, 4590, 4750, 4800, 4830, 4840, or MICR 4140.
[16] Any 4000-level ETOX course.

B.A. BIOLOGICAL SCIENCES 2018-2019

000172

FRESHMAN YEAR

First Semester		Second Semester	
BIOL 1010 Frontiers in Biol. I[1]	1(1,0)	BIOL 1110 Prin. of Biol. II[2]	5(4,3)
BIOL 1100 Prin. of Biol. I[2]	5(4,3)	CH 1020 General Chemistry	4(3,3)
CH 1010 General Chemistry	4(3,3)	ENGL 1030 Accelerated Composition.	3(3,1)
MATH 1060 Calculus of One Var. I	4(4,0)	Mathematical Sciences Requirement[4]	3
Oral Communication Requirement[3]	3		15
	17		

SOPHOMORE YEAR

CH 2230 Organic Chemistry **and**	3(3,0)	BCHM 3050 Essential Elements of Bioch.[10]	3(3,0)
CH 2270 Organic Chemistry Lab[5,6]	1(0,3)	Modern Language Requirement[9]	4
GEN 3000 Fundamental Genetics[7]	3(3,0)	Major Requirement[5,11]	4
Arts and Humanities (Literature) Req.[3]	3	Organismal Diversity Requirement[12]	4
Foreign Language Requirement[9]	4		15
Social Science Requirement[8]	3		
	17		

JUNIOR YEAR

BIOL 3350 Evolutionary Biology	3(3,0)	Arts and Humanities (Non-Lit) Req.[8]	3
BIOL 4610 Cell Biology	3(3,0)	Foreign Language Requirement[9]	3
BIOL 4620 Cell Biology Laboratory	2(1,2)	Ecology Requirement[15]	3
ENGL 3150 Scientific Writing & Comm[13]	3(3,0)	Minor Requirement[14]	6
Modern Language Requirement[9]	3		15
Minor Requirement[14]	3		
	17		

SENIOR YEAR

BIOL 4930 Senior Seminar[16] **or**	2(2,0)	PHYS 2080 General Physics II[19]	3(3,0)
MICR 4930 Senior Seminar[16]	2(2,0)	PHYS 2100 General Physics II Lab	1(0,2)
PHYS 2070 General Physics I[17]	3(3,0)	Minor Requirement[14]	6
PHYS 2090 General Physics I Lab	1(0,2)	Elective	3
Functional Biology Requirement[18]	3		13
Social Science Requirement[8]	3		
	12		

Total Semester Hours = 121

[1] Students seeking a double major in Science Teaching/Biological Sciences should substitute ED 1050 for BIOL 1010.

[2] BIOL 1100 and 1110 are strongly recommended; however, BIOL 1030/1050 may substitute for BIOL 1100 and BIOL 1040/1060 may substitute for BIOL 1110. The remaining 1-2 credits required must be satisfied by completing 1-2 extra credits.

[3] See General Education Requirements.

[4] MATH 1080, STAT 2300, or other approved coursework. See advisor. Medical/dental schools have different mathematics requirements. The Medical Colleges Admission Test (MCAT) includes questions on statistics.

[5] Most professional health sciences schools require the second semester of organic chemistry with laboratory, CH 2240/2280.

[6] CH 2010 Survey of Organic Chemistry and CH 2020 Survey of Organic Chemistry may substitute.

[7] GEN 3020 may substitute.

[8] See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and the Science and Technology in Society Requirements. The Medical Colleges Admission Test (MCAT) includes questions on psychology and sociology.

[9] Four semesters (through 2020) in the same modern foreign language are required.

[10] BCHM 3010 may substitute.

[11] Four credit hours must be selected from BIOL or MICR courses at the 3000-level or above (except MICR 3000) or CH 2240/2280, **WFB 4720, or WFB 4770**. Students seeking a double major in Science Teaching/Biological Sciences should substitute EDSC 4470 for Major Requirement.

[12] At least one lecture and associated laboratory selected from BIOL 3010, 3020/3060, 3030/3070, 3040/3080, 3200, 4060/4070, 4250/4260.

[13] ENGL 3140 may substitute.

[14] See page 132 for approved minors.

[15] At least one course selected from BIOL 4100, 4410, 4420, 4430, 4460, **4480**, 4700, MICR 4010, or 4030.

[16] Students seeking a double major in Science Teaching/Biological Sciences should substitute EDSC 4570 for BIOL 4930 or MICR 4930.

[17] PHYS 1220/1240 may substitute

[18] At least one course selected from selected from BIOL 3160, 4010, 4080, 4200, 4400, 4590, 4750, 4800, 4830, 4840, or MICR 4140.

[19] PHYS 2210/2230 may substitute

B. A. BIOLOGICAL SCIENCES 2017-2018
PREREHABILITATION SCIENCES EMPHASIS

FRESHMAN YEAR

First Semester		Second Semester	
BIOL 1010 Frontiers in Biol. I	1(1,0)	BIOL 1040 General Biology II[1] **and**	3(3,0)
BIOL 1030 General Biology I[1] **and**	3(3,0)	BIOL 1060 General Biology II Lab	1(0,3)
BIOL 1050 General Biology I Lab	1(0,3)	CH 1020 General Chemistry	4(3,3)
CH 1010 General Chemistry	4(3,3)	ENGL 1030 Accelerated Composition.	3(3,1)
MATH 1060 Cal. of One Var. I	4(4,0)	Statistics Requirement[3]	3
Oral Communication Requirement[2]	3		14
	16		

SOPHOMORE YEAR[4]

CH 2230 Organic Chemistry **and**	3(3,0)	BCHM 3050 Essential Elements of Bioch.[10]	3(3,0)
CH 2270 Organic Chemistry Lab[5,6]	1(0,3)	PSYC 2010 Introduction to Psychology	3(3,0)
GEN 3000 Fundamental Genetics[7]	3(3,0)	Arts and Humanities (Literature) Req.[11]	3
Modern Language Requirement[8]	4	Modern Language Requirement[8]	4
Organismal Diversity Requirement[9]	4	Social Science Requirement[11]	3
	15		16

JUNIOR YEAR

BIOL 3150 Functional Human Anatomy[4]	4(3,3)	BIOL 3160 Human Physiology[4]	4(3,3)
BIOL 3350 Evolutionary Biology	3(3,0)	Arts and Humanities (Non-Lit) Req.[11]	3
BIOL 4610 Cell Biology	3(3,0)	Modern Language Requirement[8]	3
BIOL 4620 Cell Biology Laboratory	2(1,2)	Minor Requirement[12]	6
Modern Language Requirement[8]	3		16
	15		

SENIOR YEAR

BIOL 4930 Senior Seminar **or**	2(2,0)	PHYS 2080 General Physics II[16]	3(3,0)
MICR 4930 Senior Seminar	2(2,0)	PHYS 2100 General Physics II Lab[16]	1(0,2)
ENGL 3150 Scientific Writing and Comm[13]	3(3,0)	Minor Requirement[12]	6
PHYS 2070 General Physics I[14]	3(3,0)	Elective[17]	5
PHYS 2090 General Physics I Lab[14]	1(0,2)		
Ecology Requirement[15]	3		15
Minor Requirement[12]	3		
	15		

Total Semester Hours = 122

[1] Rehabilitation programs require BIOL 1030/1050 and BIOL 1040/1060, or equivalent; however, BIOL 1100 and BIOL 1110 may substitute.
[2] See General Education Requirements.
[3] STAT 2300 or other approved coursework. See advisor. Professional schools have different mathematics requirements.
[4] Students applying to professional schools that require a course in exercise physiology may substitute BIOL 2220 and 2230 for BIOL 3150 and 3160 during their sophomore year.
[5] CH 2010 Survey of Organic Chemistry and CH 2020 Survey of Organic Chemistry may substitute.
[6] Most professional health sciences schools require two semesters of organic chemistry with laboratory, CH 2230/2270 and 2240/2280.
[7] GEN 3020 may substitute.
[8] Four semesters (through 2020) in the same modern foreign language are required.
[9] At least one lecture and associated laboratory selected from BIOL 3010, 3020/3060, 3030/3070, 3040/3080, 3200, 4060/4070, and 4250/4260.
[10] BCHM 3010 may substitute.
[11] See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and the Science and Technology in Society Requirements.
[12] See page 63 in the Undergraduate Announcements for approved minors. Psychology is recommended. The Medical University of South Carolina and other Rehabilitation Sciences programs require PSYC 2010 and 3830.
[13] ENGL 3140 may substitute.
[14] PHYS 1220/1240 may substitute.
[15] At least one course selected from BIOL 4100, 4410, 4420, 4430, 4460, **4480**, 4700, MICR 4010, or 4030.
[16] PHYS 2210/2230 may substitute.
[17] These hours should be used to satisfy specific prerequisite requirements for your professional school program. For example, some PT and OT school require exercise physiology, medical terminology, abnormal psychology, and/or lifespan development courses. MICR 3050 is recommended for PA programs.

Change 4000/6000 Course

000174

Change a Course

Subject: ETOX-Environmental Toxicology

Number: 4370/6370

Effective Term: Fall 2017

Title:

Honors Course:

☐ Add Honors Course:

Last Term Course was taught: 999999

Brief Statement of Change Based on Assessment Results:
At present, both ETOX 4370 and 6370 have a prerequisite of ETOX 4300. We wish to change this to ETOX 6300 for the graduate course.

Rationale for Changing a Course

- ☐ **Strengthen Program Requirement(s)**
- ☐ **Alignment of Student Learning Outcomes**
- ☐ **Alternative Delivery of Content**
- ☐ **Improve Time to Degree**
- ☐ **Evolution of the Discipline**
- ☑ **Changing Prerequisites**
- ☐ **Address DWF Rates**
- ☐ **General Education Modifications**
- ☐ **Other (Please specify.)**

☑ Change Prerequisite(s) / Corequisite(s)

From	ETOX 4370 and 6370: ETOX 4300
To	ETOX 4370: ETOX 4300 ETOX 6370: ETOX 6300

Form

User ID: rjksn **Name:** Robert Kosinski

Date: 01/10/2017 **Number:** 28809

Robert J. Kowinski — 2/24/17

Chair, Department Curriculum Committee — Date

Robert Cohen — 2/24/17

Department Chair — Date

Robert J. Kowinski — 3/9/17

Chair, College Curriculum Committee — Date

3/9/17

College Dean — Date

Director, Calhoun Honors College — Date

John D. Wiffin — 4/7/2017

Chair, Undergraduate Curriculum Committee — Date

Chair, Graduate Curriculum Committee — Date

Robert W. Jones — 8/24/17

Provost — Date

President — Date