

A regular meeting of the University Curriculum Committee was held on March 31, 2017 at 2:00 p.m.

Members present: Chair Carole Makela, Professors Bradley Goetz, Paul Mallette, Howard Ramsdell, Sally Sutton, Beth Oehlerts, Ed DeLosh, Mike Hogan, and Graduate Student Rep. Kevin Jablonski.

Curriculum Unit: Shelly Ellerby and Kayleen Allen.

Guests: Julia Murphy (Registrar's Office).

Absent: Brad Reisfeld (excused), Undergraduate Student Rep. Mahalia Henschel and VPUA Kelly Long (excused).

Minutes

The Minutes of March 24, 2017 were approved electronically on March 27, 2017.

Consent Agenda

None.

<i>New Courses</i>	<i>Effective Term</i>
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ANTH 458 Archaeology and Cultural Resource Management 3(3-0-0) S, SS	Spring 2018
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Prerequisite: ANTH - at least 6 credits.

Registration Information: Offered as an online course only.

Description: Cultural Resource Management as a career, the network of regulations that form the backbone of the industry, and the process for conducting a CRM investigation as an archaeologist. Topics include cultural resource legislation, project planning, execution, management, client communications, site analysis and evaluation, effects determinations, and agency and tribal consultations. Topical issues including case studies and industry trends will be explored.

Grade Mode: Traditional



<i>Study Abroad Courses</i>	<i>Effective Term</i>
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IE 382A Study Abroad: Community Engagement in Nicaragua 1(1-0-0) S [2 nd offering]	Spring 2018
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Prerequisite: None.

Registration Information: None.

Description: Exploration of the history and culture of Nicaragua. Fair trade processes, issues, and organizations.

Grade Mode: Traditional



<i>Major Changes to Courses</i>	<i>Effective Term</i>
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ART 496H Group Study: Art History 31-4(30-0-0) As Needed F,S,SS	Fall 2017
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Prerequisite: ART 212.

Registration Information: Maximum of ~~9-8~~ credits allowed in course.

Description: Topical studies in Art History.

Grade Mode: Traditional ~~Instructor Option~~

[approved AUCC 4A: Using Competencies & AUCC 4B: Building Upon Foundations and Perspectives for the following:

[Bachelor of Arts, Art Education Concentration](#)

[Bachelor of Arts, Art History Concentration](#)

[Bachelor of Arts, Studio Concentration](#)

[Bachelor of Arts, Integrated Visual Studies Concentration](#)

[Major in Art, BFA \(all 10 concentrations\)\]](#)

CHEM 473 Foundations of Physical Chemistry 4(4-0-0) S	Fall 2017
Prerequisite: (CHEM 113) and (MATH 161 or MATH 255) and (PH 122 or PH 142)	
Registration Information: None.	
Description: Quantum chemistry; molecular structure and spectroscopy; equilibrium thermodynamics; kinetics.	
Grade Mode: Traditional	
[approved AUCC 4B: Building Upon Foundations and Perspectives in the following: Major in Chemistry, ACS Certified Concentration Major in Chemistry, Non-ACS Certificated Concentration]	

CHEM 487 Internship Var. 1-121-18-F, S, SS	Spring 2018
Prerequisite: CHEM 476.	
Registration Information: Maximum of 12 credits allowed for any combination of CHEM 384, CHEM 487, CHEM 495, and CHEM 498.	
Description: Supervised work experience in approved off-campus chemical laboratory setting. Consultation with faculty adviser/instructor.	
Grade Mode: Instructor Option	

CON 359 Structures I 4(4-0-0) F, S	Spring 2018
Prerequisite: CON 151 with a C or better ; MATH 125.	
Registration Information: Construction Management majors only . Junior or senior standing.	
Description: Behavior of structural components and systems, overview of structural engineering analysis and the design analysis/design process.	
Grade Mode: Traditional	

CON 360 Electrical and Control Systems in Construction 3(2-2-0) F, S	Spring 2018
Prerequisite: CON 265 with a C or better .	
Registration Information: Must register for lecture and laboratory. Construction Management Majors Only .	
Description: Electrical terminology, theory, components, systems, and applications within control systems and their application in the construction industry.	
Grade Mode: Traditional	

CON 365 Construction Estimating H-3(2-2-0) F, S	Spring 2018
Prerequisite: CON 265 with a C or better .	
Registration Information: Must register for lecture and laboratory. Construction Management majors and minors only .	
Description: Industry-recognized methods for work item analysis, quantity surveying, resource estimating, and bid development using a work breakdown structures.	
Grade Mode: Traditional	

CON 367 Construction Contracts/Project Administration 3(3-0-0) F, S	Spring 2018
Prerequisite: CON 265 and CON 351, may be taken concurrently	
Registration Information: Construction management majors and minors only.	
Description: Construction contracts and clauses, stakeholder responsibilities, disputes, resolution methods and risk. Utilization of construction administration documents, field engineering systems and procedures to effectively meet project requirements, objectives.	
Grade Mode: Traditional	

CON 371 Mechanical and Plumbing Systems 3(3-0-0) F, S	Spring 2018
Prerequisite: CON 360, may be taken concurrently or INTD 276, may be taken concurrently	
Registration Information: Interior Design and Construction Management Majors Only .	
Description: Heating, ventilation, air conditioning, plumbing, and fire suppression in the built environment, with emphasis on design, operation, and interaction.	
Grade Mode: Traditional	

FW 533 Adaptive Fish and Wildlife Management 3(2-2-0) S

Spring 2018

Offering Year: Odd

Prerequisite: ~~FW 401 or FW 471~~. [FW 104 or FW 260 or FW 555 or LIFE 320 or NR 300; STAT 301 or STAT 307.](#)

Registration Information: [Must register for lecture and laboratory. Sections may be offered: Online.](#)

Description: Formal approaches to making management decisions about wildlife and fish populations, using tools of decision analysis.

Grade Mode: Traditional



New Specialization

College of Liberal Arts

Effective Fall 2017

Department of Music, Theatre, and Dance

Master of Music, Music Education-Composition Specialization

First Year		
<u>MU 510</u>	Foundations of Music Education	3
<u>MU 511</u>	Advanced Arranging for Educational Ensembles	3
<u>MU 518</u>	Analytic Techniques II	3
<u>MU 630</u>	Methods of Music Research	3
<u>MU 673</u> ¹	Composition Instruction	4
Total Credits		16
Second Year		
<u>MU 512</u>	Pedagogy of Musical Creativity	3
<u>MU 673</u>	Composition Instruction	2
<u>MU 699</u>	Thesis	2
Select one course from the following:		3
<u>MU 520</u>	Elementary School Music	
<u>MU 521</u>	Junior and Senior High School Music	
Select one course from the following:		3
<u>MU 531</u>	Music of the Renaissance	
<u>MU 532</u>	Music of the Baroque	
<u>MU 533</u>	Music of the Classical Era	
<u>MU 534</u>	Music of the Romantic Era	
<u>MU 535</u>	Contemporary Music	
Select one course from the following:		3
<u>MU 555</u>	Choral Techniques, Style, and Interpretation	
<u>MU 556</u>	Advanced Instrumental Conducting and Techniques	
Total Credits		16
Program Total Credits:		32

A minimum of 32 credits are required to complete this program.

¹ Select 2 credits each semester during the first year.



Major Changes to Existing Programs

College of Natural Sciences
 Department of Chemistry
 Major in Chemistry, ACS Certified Concentration

Effective Fall 2017

Effective Fall ~~2015~~ 2017

Chemistry majors must achieve a minimum grade of C- in all the listed courses required for the major in chemistry.

FRESHMAN		AUCC	CREDITS
Select one group from the following:		-	4
Group A:		-	-
CHEM 111	General Chemistry I (GT-SC2)	3A	-
Group B:		-	-
CHEM 117	General Chemistry I for Chemistry Majors	-	-
CHEM 192	Introductory Seminar in Chemistry	-	-
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
<u>CHEM 192</u>	<u>Introductory Seminar in Chemistry</u>	-	<u>1</u>
<u>CHEM 261</u>	<u>Fundamentals of Inorganic Chemistry</u>	-	<u>3</u>
<u>PH 141</u>	<u>Physics for Scientists and Engineers I (GT-SC1)</u>	<u>3A</u>	<u>5</u>
<u>STAT 301 or 315</u>	<u>Introduction to Statistical Methods Statistics for Engineers and Scientists</u>	-	<u>3</u>
<u>Select one course from the following:</u>			<u>3-4</u>
<u>CHEM 111</u>	<u>General Chemistry I (GT-SC2)</u>	<u>3A</u>	
<u>CHEM 117</u>	<u>General Chemistry I for Chemistry Majors</u>		
Arts and Humanities		3B	3
Biological and Physical Sciences[†]		3A	4
Electives		-	<u>3</u>
Total Credits			<u>31-30</u> 30
SOPHOMORE			
CHEM 261	Fundamentals of Inorganic Chemistry	-	3
CHEM 334	Quantitative Analysis Laboratory		1

CHEM 335	Introduction to Analytical Chemistry	4A	3
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
<u>Select one group from the following:</u>			<u>8</u>
<u>Group A:</u>			
<u>MATH 161</u>	Calculus for Physical Scientists II (GT-MA1)		
<u>MATH 261</u>	Calculus for Physical Scientists III		
<u>Group B (strongly recommended for all Chemistry majors):</u>			
<u>MATH 271</u>	<u>Applied Mathematics for Chemists I</u>	-	
<u>MATH 272</u>	<u>Applied Mathematics for Chemists II</u>	-	
<u>Select one group from the following:</u>			<u>8</u>
<u>Group A:</u>			
CHEM 345	Organic Chemistry I		
CHEM 346	Organic Chemistry II		
<u>Group B:</u>			
<u>CHEM 341</u>	<u>Modern Organic Chemistry I</u>		
<u>CHEM 343</u>	<u>Modern Organic Chemistry II</u>		
<u>CHEM 344</u>	<u>Modern Organic Chemistry Laboratory</u>		
MATH 261	Calculus for Physical Scientists III	-	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
STAT 301 or 315	Introduction to Statistical Methods Statistics for Engineers and Scientists	-	3
<u>Biological and Physical Sciences¹</u>			<u>4</u>
Total Credits			<u>29 32</u>
JUNIOR			
CHEM 440	Advanced Organic Chemistry Laboratory	4B	2
CHEM 475	Physical Chemistry Laboratory I		1
<u>Select one group from the following:</u>			10-11
<u>Group A:</u>			
<u>BC 351 or 401</u>	Principles of Biochemistry Comprehensive Biochemistry I		
<u>CHEM 474</u>	Physical Chemistry I		
<u>CHEM 476</u>	Physical Chemistry II	4B	
<u>CHEM 477</u>	Physical Chemistry Laboratory II		
<u>Group B:</u>			
<u>BC 351 or 401</u>	<u>Principles of Biochemistry Comprehensive Biochemistry I</u>	-	
<u>CHEM 473</u>	<u>Foundations of Physical Chemistry</u>	<u>4B</u>	

Select one course from the following:	-	
BC 403 Comprehensive Biochemistry II	-	
BC 463 Molecular Genetics	-	
BC 465 Molecular Regulation of Cell Function	-	
Advanced Writing	2	3
Arts and Humanities	3B	3
Historical Perspectives	3D	3
Social and Behavioral Sciences	3C	3
Electives		3
	Total Credits	28-29
SENIOR		
CHEM 431	Instrumental Analysis	4
CHEM 461	Inorganic Chemistry	3
CHEM 462	Inorganic Chemistry Laboratory	2
Select one course from the following:		<u>2</u>
CHEM 493	Seminar	4C
CHEM 499²	Senior Thesis	<u>4C</u>
Advanced Science Electives ^{3,2}		<u>6-7</u> 7-8
Global and Cultural Awareness	3E	3
Electives ^{4,3}		<u>11-12</u> 7-9
	Total Credits	31-32 33
Program Total Credits:		120

Advanced Science Electives List

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>College of Natural Sciences</u>		
BC 3XX or BC 4XX		
CHEM 3XX or CHEM 4XX		
CS 3XX or CS 4XX		
LIFE 3XX or LIFE 4XX		
MATH 3XX or MATH 4XX		
PH 3XX or 4XX		
PSY 3XX or PSY 4XX		
STAT 3XX or STAT 4XX		
<u>College of Veterinary Medicine and Biomedical Sciences</u>		
BMS 300	Principles of Human Physiology	<u>4</u>
BMS 301	Human Gross Anatomy	<u>5</u>

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>BMS 302</u>	<u>Laboratory in Principles of Physiology</u>	<u>2</u>
<u>BMS 310</u>	<u>Anatomy for the Health Professions</u>	<u>4</u>
<u>BMS 325</u>	<u>Cellular Neurobiology</u>	<u>3</u>
<u>BMS 330</u>	<u>Microscopic Anatomy</u>	<u>4</u>
<u>BMS 345</u>	<u>Functional Neuroanatomy</u>	<u>4</u>
<u>BMS 360</u>	<u>Fundamentals of Physiology</u>	<u>4</u>
<u>BMS 405</u>	<u>Nerve and Muscle-Toxins, Trauma and Disease</u>	<u>3</u>
<u>BMS 420</u>	<u>Cardiopulmonary Physiology</u>	<u>3</u>
<u>BMS 425</u>	<u>Introduction to Systems Neurobiology</u>	<u>3</u>
<u>BMS 450</u>	<u>Pharmacology</u>	<u>3</u>
<u>ERHS 320</u>	<u>Environmental Health - Water and Food Safety</u>	<u>3</u>
<u>ERHS 332</u>	<u>Principles of Epidemiology</u>	<u>3</u>
<u>ERHS 410</u>	<u>Environmental Health and Waste Management</u>	<u>3</u>
<u>ERHS 446</u>	<u>Environmental Toxicology</u>	<u>3</u>
<u>ERHS 450</u>	<u>Introduction to Radiation Biology</u>	<u>3</u>
<u>MIP 300</u>	<u>General Microbiology</u>	<u>3</u>
<u>MIP 302</u>	<u>General Microbiology Laboratory</u>	<u>2</u>
<u>MIP 334</u>	<u>Food Microbiology</u>	<u>3</u>
<u>MIP 335</u>	<u>Food Microbiology Laboratory</u>	<u>2</u>
<u>MIP 342</u>	<u>Immunology</u>	<u>4</u>
<u>MIP 343</u>	<u>Immunology Laboratory</u>	<u>2</u>
<u>College of Engineering</u>		
<u>ATS 350</u>	<u>Introduction to Weather and Climate</u>	<u>2</u>
<u>ATS 351</u>	<u>Introduction to Weather and Climate Laboratory</u>	<u>1</u>
<u>BIOM 306/BTEC 306</u>	<u>Bioprocess Engineering</u>	<u>4</u>
<u>BIOM 421</u>	<u>Transport Phenomena in Biomedical Engineering</u>	<u>3</u>
<u>BIOM 422</u>	<u>Kinetics of Biomolecular and Cellular Systems</u>	<u>3</u>
<u>BIOM 441</u>	<u>Biomechanics and Biomaterials</u>	<u>3</u>
<u>CBE 310</u>	<u>Molecular Concepts and Applications</u>	<u>3</u>
<u>CBE 320</u>	<u>Chemical and Biological Reactor Design</u>	<u>3</u>
<u>CBE 330</u>	<u>Process Simulation</u>	<u>3</u>
<u>CBE 331</u>	<u>Momentum Transfer and Mechanical Separations</u>	<u>3</u>
<u>CBE 332</u>	<u>Heat and Mass Transfer Fundamentals</u>	<u>3</u>
<u>CBE 439/CIVE 439</u>	<u>Environmental Engineering Chemical Concepts</u>	<u>3</u>
<u>CBE 442</u>	<u>Separation Processes</u>	<u>4</u>
<u>CIVE 300</u>	<u>Fluid Mechanics</u>	<u>3</u>

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>CIVE 322</u>	<u>Basic Hydrology</u>	<u>3</u>
<u>ECE 341</u>	<u>Electromagnetic Fields and Devices I</u>	<u>3</u>
<u>ECE 342</u>	<u>Electromagnetic Fields and Devices II</u>	<u>3</u>
<u>ECE 404</u>	<u>Experiments in Optical Electronics</u>	<u>2</u>
<u>ECE 441</u>	<u>Optical Electronics</u>	<u>3</u>
<u>ECE 442</u>	<u>Numerical Algorithms for VLSI Modeling</u>	<u>4</u>
<u>ECE 457</u>	<u>Fourier Optics</u>	<u>3</u>
<u>ECE 471A</u>	<u>Semiconductor Physics</u>	<u>1</u>
<u>ECE 471B</u>	<u>Semiconductor Junctions</u>	<u>1</u>
<u>MECH 337</u>	<u>Thermodynamics</u>	<u>4</u>
<u>MECH 342</u>	<u>Mechanics and Thermodynamics of Flow Processes</u>	<u>3</u>
<u>MECH 344</u>	<u>Heat and Mass Transfer</u>	<u>3</u>
<u>Warner College of Natural Resources</u>		
<u>ESS 311</u>	<u>Ecosystem Ecology</u>	<u>3</u>
<u>ESS 411</u>	<u>Earth Systems Ecology</u>	<u>3</u>
<u>FW 300</u>	<u>Biology and Diversity of Fishes</u>	<u>2</u>
<u>FW 301</u>	<u>Ichthyology Laboratory</u>	<u>1</u>
<u>FW 400</u>	<u>Conservation of Fish in Aquatic Ecosystems</u>	<u>3</u>
<u>FW 405</u>	<u>Fish Physiology</u>	<u>3</u>
<u>FW 455</u>	<u>Principles of Conservation Biology</u>	<u>3</u>
<u>FW 467</u>	<u>Wildlife Disease Ecology</u>	<u>3</u>
<u>NR 300</u>	<u>Biological Diversity</u>	<u>3</u>
<u>NR 353/BZ 353</u>	<u>Global Change Ecology, Impacts and Mitigation</u>	<u>3</u>
<u>NR 367</u>	<u>Concepts in Vertebrate Nutrition</u>	<u>3</u>
<u>NR 370</u>	<u>Coastal Environmental Ecology</u>	<u>3</u>
<u>College of Agriculture</u>		
<u>AGRI 466</u>	<u>Management of On-Farm Stored Grain</u>	<u>1</u>
<u>AGRI 467</u>	<u>Management and Control of Wood-Destroying Pests</u>	<u>2</u>
<u>ANEO 300B/BSPM 300</u>	<u>Topics in Animal Sciences: Livestock Entomology</u>	<u>1</u>
<u>ANEO 305</u>	<u>Functional Large Animal Anatomy/Physiology</u>	<u>3</u>
<u>ANEO 310</u>	<u>Animal Reproduction</u>	<u>3</u>
<u>ANEO 320</u>	<u>Principles of Animal Nutrition</u>	<u>4</u>
<u>BSPM 302</u>	<u>Applied and General Entomology</u>	<u>2</u>
<u>BSPM 303A</u>	<u>Entomology Laboratory: General</u>	<u>2</u>
<u>BSPM 350</u>	<u>Science Illustration</u>	<u>2</u>
<u>BSPM 361</u>	<u>Elements of Plant Pathology</u>	<u>3</u>

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>BSPM 450</u>	<u>Molecular Plant-Microbe Interaction</u>	<u>3</u>
<u>HORT 401</u>	<u>Medicinal and Value-Added Uses of Plants</u>	<u>3</u>
<u>HORT 476</u>	<u>Environmental Plant Stress Physiology</u>	<u>3</u>
<u>SOCR 322</u>	<u>Principles of Microclimatology</u>	<u>3</u>
<u>SOCR 330</u>	<u>Principles of Genetics</u>	<u>3</u>
<u>SOCR 331</u>	<u>Genetics Laboratory</u>	<u>1</u>
<u>SOCR 341</u>	<u>Microbiology for Sustainable Agriculture</u>	<u>1</u>
<u>SOCR 455</u>	<u>Soil Microbiology</u>	<u>3</u>
<u>SOCR 467</u>	<u>Soil and Environmental Chemistry</u>	<u>3</u>
<u>SOCR 470</u>	<u>Soil Physics</u>	<u>3</u>
<u>College of Health and Human Sciences</u>		
<u>FTEC 350</u>	<u>Fermentation Microbiology</u>	<u>2</u>
<u>FTEC 360</u>	<u>Brewing Processes</u>	<u>3</u>
<u>FTEC 400</u>	<u>Food Safety</u>	<u>3</u>
<u>FTEC 447</u>	<u>Food Chemistry</u>	<u>2</u>
<u>FTEC 572</u>	<u>Food Biotechnology</u>	<u>2</u>
<u>HES 303</u>	<u>Biomechanics and Neurophysiology</u>	<u>3</u>
<u>HES 307</u>	<u>Biomechanical Principles of Human Movement</u>	<u>4</u>
<u>HES 319</u>	<u>Neuromuscular Aspects of Human Movement</u>	<u>4</u>
<u>HES 403</u>	<u>Physiology of Exercise</u>	<u>4</u>
<u>HES 420</u>	<u>Electrocardiography and Exercise Management</u>	<u>3</u>

¹ Select from the list of courses in category 3A of the All-University Core Curriculum (AUCC) with BZ or LIFE subject codes. Must include a laboratory.

² CHEM 499 Senior Thesis by department approval. Students fulfilling the AUCC 4C requirement with CHEM 499 must write a thesis and present it to the department.

^{3,2} Select additional advanced science courses (upper-division, 300- to 400-level) to ~~make a~~ total of at least 17 ~~44~~ credits when combined with Group A or Group B ~~the choice of BC 351 or BC 401~~ in the junior year.

^{4,3} Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).



College of Natural Sciences
 Department of Chemistry
 Major in Chemistry, Non-ACS Certified Concentration

Effective Fall 2017

Effective Fall 2015 2017

Chemistry majors must achieve a minimum grade of C- in all the listed courses required for the major in chemistry.

FRESHMAN			
		AUCC	CREDITS
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
<u>CHEM 192</u>	<u>Introductory Seminar in Chemistry</u>	-	<u>1</u>
<u>CHEM 261</u>	<u>Fundamentals of Inorganic Chemistry</u>	-	<u>3</u>
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	4B	4
<u>PH 141</u>	<u>Physics for Scientists and Engineers I (GT-SC1)</u>	<u>3A</u>	<u>5</u>
<u>STAT 301</u>	<u>Introduction to Statistical Methods</u>	-	<u>3</u>
Select one group from the following:		-	4
Group A:		-	
CHEM 114		-	-
Group B:			
CHEM 117	General Chemistry I for Chemistry Majors		
CHEM 192	Introductory Seminar in Chemistry		
<u>Select one course from the following:</u>		-	<u>3-4</u>
<u>CHEM 111</u>	<u>General Chemistry I (GT-SC2)</u>	<u>3A</u>	-
<u>CHEM 117</u>	<u>General Chemistry I for Chemistry Majors</u>	-	-
Arts and Humanities		3B	3
Biological and Physical Sciences[†]		3A	4
Electives		-	3
Total Credits			<u>30-31</u>
SOPHOMORE			
CHEM 261	Fundamentals of Inorganic Chemistry	-	3
CHEM 334	Quantitative Analysis Laboratory		1
CHEM 335	Introduction to Analytical Chemistry	4A	3

PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	5
<u>Select one course from the following:</u>		-	<u>3-4</u>
CHEM 341	<u>Modern Organic Chemistry I</u>	-	-
CHEM 345	Organic Chemistry I		
<u>Select one option from the following:</u>		-	<u>4-5</u>
CHEM 343 & CHEM 344	<u>Modern Organic Chemistry II</u>	-	-
CHEM 346	Organic Chemistry II		
<u>Select one group from the following:</u>		-	<u>8</u>
<u>Group A:</u>			
MATH 161	<u>Calculus for Physical Scientists II (GT-MA1)</u>	<u>1B</u>	
MATH 261	Calculus for Physical Scientists III		
<u>Group B</u>			
MATH 271	<u>Applied Mathematics for Chemists I</u>		
MATH 272	<u>Applied Mathematics for Chemists II</u>		
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Historical Perspectives		3D	3
<u>Biological and Physical Sciences¹</u>		-	<u>4</u>
Total Credits			<u>28-30</u> 32
JUNIOR			
CHEM 475	Physical Chemistry Laboratory I		1
<u>Select one course from the following:</u>			2
CHEM 440	Advanced Organic Chemistry Laboratory		
CHEM 462	Inorganic Chemistry Laboratory		
<u>Select one group from the following:</u>			<u>6-8</u>
<u>Group A:</u>			
CHEM 474	Physical Chemistry I		
CHEM 476	Physical Chemistry II	4B	
<u>Group B:</u>		-	
BC 351 or 401	<u>Principles of Biochemistry Comprehensive Biochemistry I</u>	-	
CHEM 473	<u>Foundations of Physical Chemistry</u>	<u>4B</u>	
Advanced Science Electives ²			3
Mathematics-Based Requirement ^{3,2}			3
Advanced Writing		2	3
Arts and Humanities		3B	3

<u>Historical Perspectives</u>	<u>3D</u>	<u>3</u>
Social and Behavioral Sciences	3C	3
Electives		3
Total Credits		<u>30-32</u> 27
SENIOR		
<u>Select one course from the following:</u>	-	<u>2</u>
CHEM 493 Seminar	4C	
<u>CHEM 499⁴</u> <u>Senior Thesis</u>	<u>4C</u>	
Advanced Science Electives ²		<u>6-8</u> 7
Global and Cultural Awareness	3E	3
Electives ^{5,3}		<u>16-19</u>
Total Credits		<u>27-32</u> 31
Program Total Credits:		120

Advanced Science Electives List

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>College of Natural Sciences</u>		
<u>BC 3XX or BC 4XX</u>		
<u>CHEM 3XX or CHEM 4XX</u>		
<u>CS 3XX or CS 4XX</u>		
<u>LIFE 3XX or LIFE 4XX</u>		
<u>MATH 3XX or MATH 4XX</u>		
<u>PH 3XX or 4XX</u>		
<u>PSY 3XX or PSY 4XX</u>		
<u>STAT 3XX or STAT 4XX</u>		
<u>College of Veterinary Medicine and Biomedical Sciences</u>		
<u>BMS 300</u>	<u>Principles of Human Physiology</u>	<u>4</u>
<u>BMS 301</u>	<u>Human Gross Anatomy</u>	<u>5</u>
<u>BMS 302</u>	<u>Laboratory in Principles of Physiology</u>	<u>2</u>
<u>BMS 310</u>	<u>Anatomy for the Health Professions</u>	<u>4</u>
<u>BMS 325</u>	<u>Cellular Neurobiology</u>	<u>3</u>
<u>BMS 330</u>	<u>Microscopic Anatomy</u>	<u>4</u>
<u>BMS 345</u>	<u>Functional Neuroanatomy</u>	<u>4</u>
<u>BMS 360</u>	<u>Fundamentals of Physiology</u>	<u>4</u>
<u>BMS 405</u>	<u>Nerve and Muscle-Toxins, Trauma and Disease</u>	<u>3</u>
<u>BMS 420</u>	<u>Cardiopulmonary Physiology</u>	<u>3</u>
<u>BMS 425</u>	<u>Introduction to Systems Neurobiology</u>	<u>3</u>

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>BMS 450</u>	<u>Pharmacology</u>	<u>3</u>
<u>ERHS 320</u>	<u>Environmental Health - Water and Food Safety</u>	<u>3</u>
<u>ERHS 332</u>	<u>Principles of Epidemiology</u>	<u>3</u>
<u>ERHS 410</u>	<u>Environmental Health and Waste Management</u>	<u>3</u>
<u>ERHS 446</u>	<u>Environmental Toxicology</u>	<u>3</u>
<u>ERHS 450</u>	<u>Introduction to Radiation Biology</u>	<u>3</u>
<u>MIP 300</u>	<u>General Microbiology</u>	<u>3</u>
<u>MIP 302</u>	<u>General Microbiology Laboratory</u>	<u>2</u>
<u>MIP 334</u>	<u>Food Microbiology</u>	<u>3</u>
<u>MIP 335</u>	<u>Food Microbiology Laboratory</u>	<u>2</u>
<u>MIP 342</u>	<u>Immunology</u>	<u>4</u>
<u>MIP 343</u>	<u>Immunology Laboratory</u>	<u>2</u>
<u>College of Engineering</u>		
<u>ATS 350</u>	<u>Introduction to Weather and Climate</u>	<u>2</u>
<u>ATS 351</u>	<u>Introduction to Weather and Climate Laboratory</u>	<u>1</u>
<u>BIOM 306/BTEC 306</u>	<u>Bioprocess Engineering</u>	<u>4</u>
<u>BIOM 421</u>	<u>Transport Phenomena in Biomedical Engineering</u>	<u>3</u>
<u>BIOM 422</u>	<u>Kinetics of Biomolecular and Cellular Systems</u>	<u>3</u>
<u>BIOM 441</u>	<u>Biomechanics and Biomaterials</u>	<u>3</u>
<u>CBE 310</u>	<u>Molecular Concepts and Applications</u>	<u>3</u>
<u>CBE 320</u>	<u>Chemical and Biological Reactor Design</u>	<u>3</u>
<u>CBE 330</u>	<u>Process Simulation</u>	<u>3</u>
<u>CBE 331</u>	<u>Momentum Transfer and Mechanical Separations</u>	<u>3</u>
<u>CBE 332</u>	<u>Heat and Mass Transfer Fundamentals</u>	<u>3</u>
<u>CBE 439/CIVE 439</u>	<u>Environmental Engineering Chemical Concepts</u>	<u>3</u>
<u>CBE 442</u>	<u>Separation Processes</u>	<u>4</u>
<u>CIVE 300</u>	<u>Fluid Mechanics</u>	<u>3</u>
<u>CIVE 322</u>	<u>Basic Hydrology</u>	<u>3</u>
<u>ECE 341</u>	<u>Electromagnetic Fields and Devices I</u>	<u>3</u>
<u>ECE 342</u>	<u>Electromagnetic Fields and Devices II</u>	<u>3</u>
<u>ECE 404</u>	<u>Experiments in Optical Electronics</u>	<u>2</u>
<u>ECE 441</u>	<u>Optical Electronics</u>	<u>3</u>
<u>ECE 442</u>	<u>Numerical Algorithms for VLSI Modeling</u>	<u>4</u>
<u>ECE 457</u>	<u>Fourier Optics</u>	<u>3</u>
<u>ECE 471A</u>	<u>Semiconductor Physics</u>	<u>1</u>
<u>ECE 471B</u>	<u>Semiconductor Junctions</u>	<u>1</u>

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>MECH 337</u>	<u>Thermodynamics</u>	<u>4</u>
<u>MECH 342</u>	<u>Mechanics and Thermodynamics of Flow Processes</u>	<u>3</u>
<u>MECH 344</u>	<u>Heat and Mass Transfer</u>	<u>3</u>
<u>Warner College of Natural Resources</u>		
<u>ESS 311</u>	<u>Ecosystem Ecology</u>	<u>3</u>
<u>ESS 411</u>	<u>Earth Systems Ecology</u>	<u>3</u>
<u>FW 300</u>	<u>Biology and Diversity of Fishes</u>	<u>2</u>
<u>FW 301</u>	<u>Ichthyology Laboratory</u>	<u>1</u>
<u>FW 400</u>	<u>Conservation of Fish in Aquatic Ecosystems</u>	<u>3</u>
<u>FW 405</u>	<u>Fish Physiology</u>	<u>3</u>
<u>FW 455</u>	<u>Principles of Conservation Biology</u>	<u>3</u>
<u>FW 467</u>	<u>Wildlife Disease Ecology</u>	<u>3</u>
<u>NR 300</u>	<u>Biological Diversity</u>	<u>3</u>
<u>NR 353/BZ 353</u>	<u>Global Change Ecology, Impacts and Mitigation</u>	<u>3</u>
<u>NR 367</u>	<u>Concepts in Vertebrate Nutrition</u>	<u>3</u>
<u>NR 370</u>	<u>Coastal Environmental Ecology</u>	<u>3</u>
<u>College of Agriculture</u>		
<u>AGRI 466</u>	<u>Management of On-Farm Stored Grain</u>	<u>1</u>
<u>AGRI 467</u>	<u>Management and Control of Wood-Destroying Pests</u>	<u>2</u>
<u>ANEQ 300B/BSPM 300</u>	<u>Topics in Animal Sciences: Livestock Entomology</u>	<u>1</u>
<u>ANEQ 305</u>	<u>Functional Large Animal Anatomy/Physiology</u>	<u>3</u>
<u>ANEQ 310</u>	<u>Animal Reproduction</u>	<u>3</u>
<u>ANEQ 320</u>	<u>Principles of Animal Nutrition</u>	<u>4</u>
<u>BSPM 302</u>	<u>Applied and General Entomology</u>	<u>2</u>
<u>BSPM 303A</u>	<u>Entomology Laboratory: General</u>	<u>2</u>
<u>BSPM 350</u>	<u>Science Illustration</u>	<u>2</u>
<u>BSPM 361</u>	<u>Elements of Plant Pathology</u>	<u>3</u>
<u>BSPM 450</u>	<u>Molecular Plant-Microbe Interaction</u>	<u>3</u>
<u>HORT 401</u>	<u>Medicinal and Value-Added Uses of Plants</u>	<u>3</u>
<u>HORT 476</u>	<u>Environmental Plant Stress Physiology</u>	<u>3</u>
<u>SOCR 322</u>	<u>Principles of Microclimatology</u>	<u>3</u>
<u>SOCR 330</u>	<u>Principles of Genetics</u>	<u>3</u>
<u>SOCR 331</u>	<u>Genetics Laboratory</u>	<u>1</u>
<u>SOCR 341</u>	<u>Microbiology for Sustainable Agriculture</u>	<u>1</u>
<u>SOCR 455</u>	<u>Soil Microbiology</u>	<u>3</u>
<u>SOCR 467</u>	<u>Soil and Environmental Chemistry</u>	<u>3</u>

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>SOCR 470</u>	<u>Soil Physics</u>	<u>3</u>
<u>College of Health and Human Sciences</u>		
<u>FTEC 350</u>	<u>Fermentation Microbiology</u>	<u>2</u>
<u>FTEC 360</u>	<u>Brewing Processes</u>	<u>3</u>
<u>FTEC 400</u>	<u>Food Safety</u>	<u>3</u>
<u>FTEC 447</u>	<u>Food Chemistry</u>	<u>2</u>
<u>FTEC 572</u>	<u>Food Biotechnology</u>	<u>2</u>
<u>HES 303</u>	<u>Biomechanics and Neurophysiology</u>	<u>3</u>
<u>HES 307</u>	<u>Biomechanical Principles of Human Movement</u>	<u>4</u>
<u>HES 319</u>	<u>Neuromuscular Aspects of Human Movement</u>	<u>4</u>
<u>HES 403</u>	<u>Physiology of Exercise</u>	<u>4</u>
<u>HES 420</u>	<u>Electrocardiography and Exercise Management</u>	<u>3</u>

- ¹ Select from the list of courses in category 3A of the All-University Core Curriculum (AUCC) with BZ or LIFE subject codes. Must include a lab.
- ² Select additional advanced science courses (upper-division, 300- to 400-level) to total at least 17 credits when combined with Group A or Group B in the Junior year.
- ² Additional mathematics: 300-level MATH, CS, or STAT course.
- ⁴ CHEM 499 Senior Thesis by department approval. Students fulfilling the AUCC 4C requirement with CHEM 499 must write a thesis and present it to the department.
- ⁵ ³ Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level). ~~At least 4 credits must be upper-division to meet the minimum requirement of 42 upper-division credits.~~



College of Natural Sciences
 Department of Statistics
 Minor in Applied Statistics

Effective Fall 2017

Effective Fall 2017

A minimum grade of C must be achieved in all statistics courses (STAT subject code and dual-listed ~~joint-listed~~) required for the minor in applied statistics.

~~Students in the biological sciences should take STAT 307. Students in the social sciences should take STAT 311. Students with a calculus background should take STAT 315. Everyone else should take STAT 301.~~

<u>Code</u>	<u>Title</u>	<u>Credits</u>
<u>STAT 341</u>	Statistical Data Analysis I	3
<u>STAT 342</u>	Statistical Data Analysis II	3
GROUP A (Select one):		3
<u>Students in the biological sciences should take STAT 307. Students in the social sciences should take STAT 311. Students with a calculus background should take STAT 315. Everyone else should take STAT 301.</u>		

Code	Title	Credits
<u>STAT 301</u>	Introduction to Statistical Methods	
<u>STAT 307</u>	Introduction to Biostatistics	
<u>STAT 311</u>	Statistics for Behavioral Sciences I	
<u>STAT 315</u>	Statistics for Engineers and Scientists	
GROUP B (Select one):		3
<u>STAT 305</u>	Sampling Techniques	
<u>STAT 312</u>	Statistics for Behavioral Sciences II	
GROUP C (Must take ALL courses):		9
Electives: choose nine six <u>nine</u> six credits from the following, or permission of advisor: ¹		<u>9</u> 6
<u>ECE 311</u>	Linear System Analysis I	
<u>ECE 312</u>	Linear System Analysis II	
<u>ECON 335/AREC 335</u>	Introduction to Econometrics	
<u>ECON 435</u>	Economic Forecasting	
<u>F 321</u>	Forest Biometry	
<u>F 422</u>	Quantitative Methods in Forest Management	
<u>FW 370</u>	Design of Fish and Wildlife Projects	
<u>FW 471</u>	Wildlife Data Collection and Analysis	
<u>MATH 369</u>	Linear Algebra I	
<u>MATH 435</u>	Projects in Applied Mathematics	
<u>MATH 450</u>	Introduction to Numerical Analysis I	
<u>MATH 451</u>	Introduction to Numerical Analysis II	
<u>MECH 417</u>	Control Systems	
<u>MGT 301</u>	Supply Chain Management	
<u>MGT 475</u>	International Business Management	
<u>NR 421</u>	Natural Resources Sampling	
<u>NR 422</u>	GIS Applications in Natural Resource Management	
<u>PSY 317</u>	Social Psychology Laboratory	
<u>PSY 370</u>	Psychological Measurement and Testing	
<u>PSY 371</u>	Psychological Measurement and Testing Lab	
<u>STAT 358</u>	<u>Introduction to Statistical Computing in SAS</u>	
<u>STAT 400</u>	Statistical Computing	
<u>STAT 420</u>	Probability and Mathematical Statistics I	
<u>STAT 421</u>	Introduction to Stochastic Processes	
<u>STAT 430</u>	Probability and Mathematical Statistics II	
<u>STAT 440</u>	Bayesian Data Analysis	
<u>STAT 460</u>	Applied Multivariate Analysis	

Code	Title	Credits
<u>STAT 472</u>	Statistical Consulting	

Program Total Credits: 21

¹ Electives approved by the undergraduate advisor in statistics or the department chair.



College of Veterinary Medicine and Biomedical Sciences
Department of Biomedical Sciences
Minor in Biomedical Sciences

Effective Fall 2018

A minimum grade of C (2.000) in either BMS 300 or BMS 360 will be required for those students who are seeking to graduate with a minor in biomedical sciences. ~~and who take one of these courses as fulfillment of the requirements.~~

Code	Title	Credits
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Required Courses

<u>BMS 300</u> or <u>BMS 360</u>	Principles of Human Physiology Fundamentals of Physiology	4
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Elective Courses

Select 17 credits from the following:		17
<u>BMS 200</u>	Concepts in Human Anatomy and Physiology	
<u>BMS 301</u>	Human Gross Anatomy	
<u>BMS 302</u>	Laboratory in Principles of Physiology	
<u>BMS 305</u>	Domestic Animal Gross Anatomy	
<u>BMS 325</u>	Cellular Neurobiology	
<u>BMS 330</u>	Microscopic Anatomy	
<u>BMS 345</u>	Functional Neuroanatomy	
<u>BMS 384</u>	Supervised College Teaching ¹	
<u>BMS 401</u>	<u>Laboratory Research in Biomedical Sciences</u>	
<u>BMS 405</u>	Nerve and Muscle-Toxins, Trauma and Disease	
<u>BMS 409</u>	Human and Animal Reproductive Biology	
<u>BMS 420</u>	Cardiopulmonary Physiology	
<u>BMS 425</u>	Introduction to Systems Neurobiology	
<u>BMS 430</u>	Endocrinology	
<u>BMS 450</u>	Pharmacology	
<u>BMS 495</u>	Independent Study ¹	
<u>BMS 531</u>	Domestic Animal Dissection	
<u>BMS 575</u>	Human Anatomy Dissection	

Program Total Credits: 21

¹ A maximum total of 6 credits earned in BMS 384 and BMS 495 may be used toward the Elective Courses for the Biomedical Sciences minor.



Corrections/Updates to Previous Minutes

- The following courses, CO 301A, CO 301B, CO 301D and CO 302 were approved effective Fall 2017 on the UCC 3/10/17 minutes with the Registration Information of “Sections may be offered: Online.” Because the online component for each course has been removed, the Registration Information shall also be deleted.

3/10/17 Course Information	Correct Course Information
CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3) 3(3-0-0) F, S, SS Registration Information: Sections may be offered: Online.	CO 301A Writing in the Disciplines: Arts and Humanities (GT-CO3) 3(3-0-0) F, S, SS Registration Information: None.
CO 301B Writing in the Disciplines: Sciences (GT-CO3) 3(3-0-0) F, S, SS Registration Information: Sections may be offered: Online.	CO 301B Writing in the Disciplines: Sciences (GT-CO3) 3(3-0-0) F, S, SS Registration Information: None.
CO 301D Writing in the Disciplines: Education (GT-CO3) 3(3-0-0) F, S, SS Registration Information: Sections may be offered: Online.	CO 301D Writing in the Disciplines: Education (GT-CO3) 3(3-0-0) F, S, SS Registration Information: None.
CO 302 Writing in Digital Environments 3(3-0-0) F, S Registration Information: Sections may be offered: Online.	CO 302 Writing in Digital Environments 3(3-0-0) F, S Registration Information: None.

- In the Minor in Entomology, the credits for the Entomology Laboratory requirement (Select one from the following: BSPM 303A, 303B, 303C) were listed as 3 credits. However, 303A is a 2 credit course and 303B and 303C are 1 credit courses, so the credits have changed from 3 to 1-2, which changes the total credits required for the minor from 24-26 to 22-25.

Code	Title	Credits
Lower Division		
Select one group from the following:		7-8
Group A:		
BZ 110	Principles of Animal Biology (GT-SC2)	
BZ 120	Principles of Plant Biology (GT-SC1)	
Group B:		
LIFE 102	Attributes of Living Systems (GT-SC1)	
LIFE 103	Biology of Organisms-Animals and Plants	
Upper Division		
BSPM 302	Applied and General Entomology	2

Select one from the following:	1-2 3
<u>BSPM 303A</u>	Entomology Laboratory: General
<u>BSPM 303B</u>	Entomology Laboratory: Horticultural
<u>BSPM 303C</u>	Entomology Laboratory: Agricultural
Select 12-13 credits from the following:	12-13
<u>BSPM 423</u>	Evolution and Classification of Insects
<u>BSPM 445</u>	Aquatic Insects
<u>BSPM 451</u>	Integrated Pest Management
<u>BSPM 462/MIP 462/BZ 462</u>	Parasitology and Vector Biology
<u>BSPM 487</u> or <u>BSPM 495</u>	Internship Independent Study

Program Total Credits: 22-25 24-26

3. The following edits have been made to the footnotes on the Major in Interdisciplinary Liberal Arts (ILAR-BA):

Footnotes #1 and #2 as published on the 3/24/17 UCC minutes:

- ¹ Choose courses not ~~taken elsewhere~~ fulfilling another requirement anywhere in this program from the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY, SOC, SPCM, TH.
- ² Select a total of ~~15~~ 18 upper-division (300- to 400-level) credits not ~~taken elsewhere~~ fulfilling another requirement anywhere in this program from at least two of the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY (only 6 credits may come from PSY), SOC, SPCM, TH, WS.

Updated language to footnotes #1 and #2:

- ¹ Choose courses not fulfilling another requirement ~~anywhere~~ in this ~~program~~ major or the second field requirements from the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY, SOC, SPCM, TH.
- ² Select a total of 15 upper-division (300- to 400-level) credits not fulfilling another requirement ~~anywhere~~ in this ~~program~~ major or the second field requirements from at least two of the following subject codes: ANTH, ART, CO, D, E, ECON, ETST, GR, HIST, JTC, L***, LB, MU, PHIL, POLS, PSY (only 6 credits may come from PSY), SOC, SPCM, TH, WS.



The meeting adjourned at 3:10 p.m.

Carole Makela, Chair
 Shelly Ellerby, Curriculum Liaison Specialist
 Kayleen Allen, Curriculum and Catalog Assistant

