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UMM Curriculum Course Change Proposals Fall 2016

Curriculum Committee

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UNIVERSITY OF MINNESOTA

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September 15, 2016

Memo To: Steering Committee

From: Bart Finzel, Chair, Curriculum Committee

Subject: UMM Curriculum Course Change Proposals, Fall 2016

Below are items approved by the Curriculum Committee, which we request be placed on the agenda for the September 27, 2016 meeting of the Campus Assembly. All Curriculum Committee Change Proposals from recent years can be found at www.morris.umn.edu/committees/Curriculum/.

A summary of votes cast by Curriculum Committee members (13 voting, 3 non-voting) is presented below:

Division of Education Proposals:

Course Action	Meeting Date	Vote (For-Against-Abstentions)
Education (Ed) Course Revisions: 2121, 2601	Sept. 14	(12-0-0)
Elementary Education (ElEd) Course Revisions: 3111, 4201, 4202, 4204, 4206, 4207 Course Deactivation: 4205	Sept. 14	(12-0-0)
Secondary Education (SeEd) Course Revisions: 4104, 4201, 4202, 4204 Course Deactivation: 4205	Sept. 14	(12-0-0)
Sport Studies and Athletics (SSA) Course Revisions: 1219, 3172 New Course: SSA 1108 – The Aussie Sport Experience: Culture, Identity and Impact (4 cr; IP)	Sept. 14	(12-0-0)

Division of Science and Mathematics Proposals:

Course Action	Meeting Date	Vote (For-Against-Abstentions)
<p>Biology (Biol) Course Revisions: 2101, 2111, 3121, 3131, 4103, 4131, 4321, 4351 Course Deactivation: 1053, 4311 New Course: Biol 4182 – Ecological Developmental Biology (4 cr)</p>	Sept. 14	(12-0-0)
<p>Chemistry (Chem) Course Revision: Chem 3411 Course Deactivations: 3401 (same as ESci 3401) New Courses: Chem 1006 – The Chemical World (4 cr; SCI) Chem 1007 – The Chemical World with Lab (5 cr; SCI-L) Chem 3406 – Polymer Properties and Characterization (2 cr) Chem 3407 – Polymer Synthesis (2 cr)</p>	Sept. 14	(12-0-0)
<p>Computer Science (CSci) Course Revisions: 3402, 3403, 3501, 3601, 4454, 4554, 4555, 4556, 4557, 4654, 4901</p>	Sept. 14	(12-0-0)
<p>Environmental Science (ESci) Course Deactivations: 3401 (same as Chem 3401)</p>	Sept. 14	(12-0-0)
<p>Geology (Geol) Course Revisions: 2001, 2311, 3101, 3401, 3501, 3601 Course Deactivations: 1012, 3006</p>	Sept. 14	(12-0-0)
<p>Mathematics (Math) Course Revisions: 2111 Course Deactivations: 1014</p>	Sept. 14	(12-0-0)
<p>Physics (Phys) Course Revisions: 2301, 2401</p>	Sept. 14	(12-0-0)
<p>Statistics (Stat) Course Revisions: 4901 Course Deactivations: 4611</p>	Sept. 14	(12-0-0)

Multiple Course Revisions

Route this form to:
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Revisions

Rev: 08/2016

This form is for presenting changes to Curriculum Committee; the information will still need to be entered in ECAS. Sending this form to Curriculum Committee for approval means Discipline and Division approval has been received.

Date: September 2, 2016

Discipline: Education

Curriculum Committee Approval Date: September 14, 2016

Course Revision #1

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

ED 2121. Introduction to Education. (SS; ~~3~~ 4 cr; A-F only; prereq coreq 2111; fall, spring, ~~summer~~, every year) History, philosophy, and purposes of American education; classroom practices and effective teaching; instructional technology; and certification requirements in education.

Rationale for change:

The credit increase to Ed 2121 reflects additional content and increased depth of study (due to redistribution of program standards).

Course Revision #2

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

ED 2601. Development, Learning, and Teaching. (SS; ~~4~~ 2 cr; A-F only; spring, every year) Introductory exploration of perspectives on child and adolescent development including cognitive, social/emotional, personal, physical, and language development and theories of learning, with a strong focus on the implications for effective teaching in the P-12 classroom. This course is a prerequisite for admission to the Elementary and Secondary Education programs.

Rationale for change:

The course content at the survey level can be sufficiently addressed in two credits. This allow for the redistribution of credit to Ed 2121, allowing for additional content and in-depth study.

Multiple Course Revisions

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Rev: 08/2016

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Date: September 2, 2016

Discipline: Elementary Education

Curriculum Committee Approval Date: September 14, 2016

Course Revision #1

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

ELED 3111. Practicum I: Field Experience in the Elementary Classroom. (~~1~~ 2 cr; S-N only; prereq admission to the elementary teacher education program; fall, every year) Field experience in the elementary classroom.

Rationale for change:

Students needed additional hours in the field to complete assignments that fulfill state standards.

Course Revision #2

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

ELED 4201. Directed Student Teaching in Primary and Intermediate Grades. (HDIV; 12 cr; S-N only; prereq 4102, 4103, 4104, 4111, 4112, passing scores on ~~MTLE basic skills~~ basic skills exams or #; special fee required; spring, every year) Students teach for a period of 10 to 12 weeks demonstrating application of approaches to teaching and learning in primary and intermediate grades under the guidance of a cooperating teacher and University supervisor.

Rationale for change:

The language addresses changes in Minnesota licensure requirements.

Course Revision #3

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

ELED 4202. Directed Student Teaching in Primary and Intermediate Grades. (1-16 cr ; S-N only; prereq passing scores on ~~MTLE basic skills~~ basic skills exams or #; special fee required; fall, spring, every year) For students who need alternative or additional student teaching experience. Students demonstrate application of approaches to teaching and learning in primary and intermediate grades under guidance of a cooperating teacher and University supervisor.

Rationale for change:

The language addresses changes in Minnesota licensure requirements.

Course Revision #4

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

ELED 4204. Directed Global Student Teaching at the Primary and Intermediate Level. (IP; 1-16 ~~12-cr; S-N only~~; prereq 4102, 4103, 4104, 4111, 4112, passing scores on MTLE basic skills basic skills exams or #; special fee required; fall, spring, summer every year) Students ~~teach for a period of 10 to 12 weeks~~ complete Global Student Teaching demonstrating application of approaches to teaching and learning in primary and intermediate grades under the guidance of a cooperating teacher and University supervisor.

Rationale for change:

These changes allow all participants to register in a single course thus eliminating confusion in registration.

Course Revision #5

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

ELED 4206. Directed Student Teaching in Preprimary Classroom. (HDIV; 4 cr; S-N only; prereq 3201, 3203, 3211, passing scores on ~~MTLE basic skills~~ basic skills exams or #; special fee required; spring, every year) Students teach for a period of 4 weeks demonstrating application of approaches to teaching and learning in preprimary grades under the guidance of a cooperating teacher and University supervisor.

Rationale for change:

The language addresses changes in Minnesota licensure requirements.

Course Revision #6

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

ELED 4207. Directed Student Teaching in Middle Level Classroom. (HDIV; 4 cr; S-N only; prereq 3202, 3212, appropriate methods course, passing scores on ~~MTLE basic skills~~ basic skills exams or #; special fee required; spring, every year) Students teach for a period of 4 weeks demonstrating application of approaches to teaching and learning in middle level grades under the guidance of a cooperating teacher and University supervisor.

Rationale for change:

The language addresses changes in Minnesota licensure requirements.

Course Revision #7

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

~~ELED 4205. Directed Global Student Teaching at the Primary and Intermediate Level (A-F grading). (IP; 1-16 cr; A-F grading only; prereq: passing scores on MTLE basic skills or #; special fee required; spring, every year) For students from colleges that require A-F grading for student teaching through the Global Student Teaching Program.~~

Rationale for change:

The changes to ELED 4204 allow all participants to register in a single course thus eliminating confusion in registration. This course is being DEACTIVATED.

Multiple Course Revisions

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Rev: 08/2016

This form is for presenting changes to Curriculum Committee; the information will still need to be entered in ECAS. Sending this form to Curriculum Committee for approval means Discipline and Division approval has been received.

Date: September 2, 2016

Discipline: Secondary Education

Curriculum Committee Approval Date: September 14, 2016

Course Revision #1

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

SeEd 4104 Teaching Diverse Learners

Study of teaching/learning in diverse settings. Topics include ~~multiple intelligences~~/learning styles; multicultural education; race, gender, sexual orientation, ~~disability~~, culture, and class; effects of inequity on schooling; preventing and responding to prejudice and discrimination; and intercultural communication.

prereq: admission to the secondary teacher education program; coreq 4102, 4103, 4105, methods

Rationale for change:

ED 4121 *Strategies for Inclusive Schooling* addresses these topics. They are no longer included in SEED 4104.

Course Revision #2

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

SEED 4201. Directed Student Teaching in the Middle and Secondary School. (HDIV; 12 cr; S-N only; prereq 4102, 4103, 4104, 4105, methods, CMR 1042 or CMR 1052, passing scores ~~on MTLLE basic skills~~ basic skills exams or #; special fee required; spring, every year) Students teach for a period of 10 to 12 weeks demonstrating application of approaches to teaching and learning in the middle and secondary grades under the guidance of a cooperating teacher and University supervisor.

Rationale for change:

The language addresses changes in Minnesota licensure requirements.

Course Revision #3

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

SEED 4202. Directed Student Teaching in the Middle and Secondary School. (1-16 cr ; S-N only; prereq passing scores ~~on MTLE basic skills~~ basic skills exams or #; special fee required; fall, spring, every year) For students who need alternative or additional student teaching experience. Students demonstrate application of approaches to teaching and learning in middle and secondary grades under the guidance of a cooperating teacher and University supervisor.

Rationale for change:

The language addresses changes in Minnesota licensure requirements.

Course Revision #4

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

SEED 4204. Directed Global Student Teaching at the Middle and Secondary Level. (IP; 1-16 12 cr; ~~S-N only~~; prereq: 4102, 4103, 4104, 4105, CMR 1042 or CMR 1052, passing scores ~~on MTLE basic skills~~ basic skills exams or #; special fee required; fall, spring, summer every year) Students ~~teach for a period of 10 to 12 weeks~~ complete Global Student Teaching demonstrating application of approaches to teaching and learning in primary and intermediate grades under the guidance of a cooperating teacher and University supervisor.

Rationale for change:

These changes allow all participants to register in a single course thus eliminating confusion in registration.

Course Revision #5

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

~~SEED 4205. Directed Global Student Teaching at the Middle and Secondary Level (A-F grading). (IP; 1-16 cr; A-F grading only; prereq: passing scores on MTLE basic skills or #; special fee required; spring, every year) For students from colleges that require A-F grading for student teaching through the Global Student Teaching Program.~~

Rationale for change:

The changes to SEED 4204 allow all participants to register in a single course thus eliminating confusion in registration. This course is being deactivated.

Multiple Course Revisions

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Rev: 08/2016

This form is for presenting changes to Curriculum Committee; the information will still need to be entered in ECAS. Sending this form to Curriculum Committee for approval means Discipline and Division approval has been received.

Date: September 2, 2016

Discipline: Sport Studies and Athletics (SSA)

Curriculum Committee Approval Date: September 14, 2016

Course Revision #1

Give *complete* UMM catalog entry (deletions in strikethru font, additions underlined)

SSA 1219. Strength Training. (~~0.5~~ 1.0 cr [max ~~1.0~~ 2.0 cr]; S-N only; fall, spring, every year) Introductory instruction in the skills and techniques of strength training.

Rationale for change:

Changing course from 0.5 to 1.0 cr to better reflect the time and work of the course.

Course Revision #2

Give *complete* UMM catalog entry (deletions in strikethru font, additions underlined)

SSA 3172. Leadership in Sport Organizations. (SS; 2.0_cr; A-F only; prereq 2302, ~~Mgmt 3171~~; fall, offered periodically) Examination of theories and case studies of organizational leadership within sport. Students learn about additional theories and models of sport leadership and practice and develop their leadership skills. [Note: no cr for students who have received cr for Mgmt 3172]

Rationale for change:

Management is no longer offering 3171 so it is being removed as a prerequisite

SSA 1108 - NEW COURSE PROPOSAL

Approvals Received:	Department on 09-07-16; Curriculum Committee on 9-14-16
Effective Term:	1175 – Summer 2017
Department:	10543 - UMM-Division of Education
General	
Course Title Short:	The Aussie Sport Experience
Course Title Long:	The Aussie Sport Experience: Culture, Identity and Impact
Max-Min Credits for Course:	4.0 to 4.0 credit(s)
Catalog Description:	Provides students with opportunities to engage with sport management-based content on an international level, including content, key concepts, organizations, and personnel representing established partners, sites, and experience in Australia. Specific emphasis is placed on Australia's engagement with sport at the local level, in addition to their position as a global force when considering athlete development, organizational leadership, and international-level events and venues. Course content also includes emphasis on sport and indigenous culture including a service-learning component with local youth and community organizations. prereq: 2302 or instr consent
Grading Basis:	S-N only
Honors Course:	No
Online Course:	No
Course Typically Offered:	Periodic Summer
Component 1:	LEC (with final exam)
Auto-Enroll Course:	Yes
Graded Component:	LEC
Academic Progress Units:	Not allowed to bypass limits. 4.0 credit(s)
Financial Aid Progress Units:	Not allowed to bypass limits. 4.0 credit(s)
Repetition of Course:	Repetition not allowed.
Course Equivalency:	No course equivalencies
Add/Drop Consent Requirement:	No required consent
Enforced Prerequisites:	No prerequisites
Rationale for Changes or Exceptions:	Students will be considered on a rolling basis until space is filled or the deadline for course rosters is reached. It is preferred that students have completed the equivalency of an Introduction to Sport Management type of course. However, lack of completion of this prerequisite will not prevent students from being considered for the course.
General Education	
Faculty Sponsor Name:	Michael Bryant
Requirement this course fulfills:	IP International Perspectives
Regular Approval:	Requested on 9-7-16

Multiple Course Revisions

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Rev: 04/2014

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Date: 9/9/16

Discipline: Biology

Curriculum Committee Approval Date: 9/14/16

Course Revision #1 Biol 2101 Evolution of Biodiversity

Analysis of evolutionary trends using historical and contemporary evidence. Principles of classification and phylogenetic reconstruction. Includes laboratory survey of the major groups of organisms. (two 65-min lect, one 180-min lab)

prereq: **C- or better in** 1101 or 1111 or instr consent

Rationale for change: Prereq changed to reflect need for students to have basic proficiency in topics covered in Biol 1111 to succeed in this course.

Course Revision #2 Biol 2111 Cell Biology

Analysis of evolutionary trends using historical and contemporary evidence. Principles of classification and phylogenetic reconstruction. Includes laboratory survey of the major groups of organisms. (two 65-min lect, one 180-min lab)

prereq: **C- or better in** 1101 or 1111 or instr consent

Rationale for change: Prereq changed to reflect need for students to have basic proficiency in topics covered in Biol 1111 to succeed in this course.

Course Revision #3 Biol 3121 Molecular Biology

Principles and mechanisms of DNA function, protein synthesis, and gene regulation in prokaryotes and eukaryotes. Genetic engineering and evolution at the molecular level. (two 100-min lect, 180-min lab, additional lab time arranged)

prereq: **C- or better in** 2111, Chem 2301 or instr consent

Rationale for change: Prereq changed to reflect need for students to have basic proficiency in topics covered in Biol 2111 to succeed in this course.

Course Revision #4 Biol 3131 Ecology

Basic principles and models of population biology, community structure and function, and ecosystem dynamics. Lab exercises emphasize field work, techniques for characterizing local plant and animal communities, and experimental investigation of topics such as competition and behavioral ecology. (two 65-min lect, one 180-min lab and field study; weekend field trip required)

prereq: **C- or better in** Biol 2101 or EnSt 2101, Stat 1601 or 2601, or instr consent

Rationale for change: Prereq changed to reflect need for students to have basic proficiency in topics covered in Biol 2101 or EnSt 2101 to succeed in this course.

Course Revision #5 Biol 4103 Cancer Biology

Change of grading base from A/F only to Student Option

Change of when offered from Spring to Fall Semester

Rationale for change: Change of "when offered" reflects when course will be taught in the future. Change of grading base is consistent with other biology electives

Course Revision #6 Biol 4131 Vertebrate Natural History

Change of when offered from Spring even years to Fall even years

Rationale for change: Change in "when offered" reflects when course will be offered in the future.

Course Revision #7 Biol 4321 Animal Physiology

Functions of animal structures as they relate to coping with different environmental situations. (two 65-min lect, one 120-min lab)

prereq: 2101, 2111

Rationale for change: This change ensures that students are better prepared for the course.

Course Revision #8 Biol 4351 Conservation Biology

~~Application of demographic and genetic models to protect biodiversity, including planning for uncertainty. Population viability, inbreeding depression, contemporary evolution, design and management of reserves, and invasive species. Lab exercises include field trips and computer modeling of endangered species.~~

Conservation theory and practice, including threats to biodiversity and approaches to overcoming them. Topics include: habitat loss and fragmentation, overexploitation, climate change and invasive species, population viability analysis using demographic and genetic models, reserve design and management and ex situ measures. Emphasis on primary literature. (two 65-min lect, one 180-min lab)

prereq: Biol 2101 or EnSt 2101, ~~coreq or prereq~~ Biol 3131, ~~Biol-3700~~ or instr consent

Rationale for change: Course is being taught by new instructor and some changes have been made to the emphasis of material and "when offered" reflects instructor's teaching schedule. Biol 3131 can no longer be a co-req because Biol 3131 is only offered fall and Biol 4351 will only be offered spring. Biol 3700 is not really necessary as a pre-req, and could limit students' ability to enroll (especially if ESci or EnSt majors) so is being dropped.

Course Revision #9 Biol 1053 Intro to Insect Biology

COURSE **DEACTIVATED**

Rationale for change: Summer course that no current faculty plan to offer again

Course Revision #10 Biol 4311 Conservation Genetics

COURSE **DEACTIVATED**

Rationale for change: Instructor who taught this course is gone and there are no plans to offer it in the future.

BIOL 4182 - NEW COURSE PROPOSAL

Approvals Received:	Department 9-07-16; Curriculum Committee 09-14-16
Effective Term:	1173 – Spring 2017
Department:	10565 - UMM-Division of Science & Math
General	
Course Title Short:	Ecological Developmental Biol
Course Title Long:	Ecological Developmental Biology
Max-Min Credits for Course:	4.0 to 4.0 credit(s)
Catalog Description:	Integrates the fields of ecology, development, and evolution. Topics covered include plasticity, environmental interactions in embryology, and the medical consequences of teratogens and other developmental perturbations. (three 65-min lect) prereq: 3131
Grading Basis:	A-F only
Honors Course:	No
Online Course:	No
Course Typically Offered:	Periodic Spring
Component 1:	LEC (with final exam)
Auto-Enroll Course:	No
Graded Component:	LEC
Academic Progress Units:	Not allowed to bypass limits. 4.0 credit(s)
Financial Aid Progress Units:	Not allowed to bypass limits. 4.0 credit(s)
Repetition of Course:	Repetition not allowed.
Course Equivalency:	No course equivalencies
Add/Drop Consent Requirement:	No required consent
Enforced Prerequisites:	001049 - Biol 3131
Rationale for Changes or Exceptions:	This is a new elective in Development Biology; this elective can be used to meet the requirements in the Biology major or the Environmental Science major.
General Education	
Faculty Sponsor Name:	PZ Myers
Requirement this course fulfills:	
Provisional Approval:	Not Requested
Regular Approval:	Requested Sept 15, 2016

Multiple Course Revisions

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Revisions

Rev: 04/2014

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Date: 9/7/16

Discipline: Chemistry

Curriculum Committee Approval Date: 9/14/16

Course Revision #1 Chem 3411 Polymer Chemistry Lab

Synthesis, characterization, and physical properties of polymers with an emphasis on sustainable polymer chemistry. (3 hrs lab)
prereq: 2322, coreq 3406, 3401 or ESci 3401 or instr consent

Rationale for change: An existing four credit lecture course that is coupled to this lab course is being split into 2 two-credit courses. The co-req for the lab course has changed with this split.

Course Revision #2 Chem 3401 Poly Chem and the Environment (same as ESci 3401)

COURSE **DEACTIVATED**

Rationale for change: This course is being replaced with two courses because it is being split into 2 two-credit courses, providing more flexibility in our curricular offerings.

CHEM 1006 - NEW COURSE PROPOSAL

Approvals Received:	Department 4-20-16; Curriculum Committee 9-14-16
Effective Term:	1169 – Fall 2016
Department:	10565 - UMM-Division of Science & Math
General	
Course Title Short:	The Chemical World
Course Title Long:	The Chemical World
Max-Min Credits for Course:	4.0 to 4.0 credit(s)
Catalog Description:	An online course intended for non-science majors that introduces the basic principles of chemistry with special emphasis on everyday life and sustainability. Course topics reflect a variety of current societal and technological issues and the chemical principles embedded in them. [Note: recommended for non-science majors to fulfill the Gen Ed science requirement] prereq: Math 0901 (or placement at Math 1012 or higher)
Grading Basis:	Stdnt Opt
Honors Course:	No
Online Course:	Yes
Course Typically Offered:	Periodic Summer
Component 1:	LEC (with final exam)
Auto-Enroll Course:	No
Graded Component:	LEC
Academic Progress Units:	Not allowed to bypass limits. 4.0 credit(s)
Financial Aid Progress Units:	Not allowed to bypass limits. 4.0 credit(s)
Repetition of Course:	Repetition not allowed.
Course Equivalency:	Chem 1001, 1007, 1801
Add/Drop Consent Requirement:	No required consent
Enforced Prerequisites:	004317 – Math 0901 (or placement into Math 1012 [or higher])
Rationale for Changes or Exceptions:	In a review of UMM Summer Term courses, there were no online courses offered that met the Sci (Physical and Biological Sciences) General Education requirement. As such, this course will help non-science majors in meeting their requirements for graduation.
General Education	
Faculty Sponsor Name:	Ted Pappenfus
Requirement this course fulfills:	SCI Physical & Biological Sciences without Lab
Provisional Approval:	Not Requested
Regular Approval:	Requested September 14, 2016

CHEM 1007 - NEW COURSE PROPOSAL

Approvals Received:	Department 4-20-16; Curriculum Committee 9-14-16
Effective Term:	1169 – Fall 2016
Department:	10565 - UMM-Division of Science & Math
General	
Course Title Short:	The Chemical World with Lab
Course Title Long:	The Chemical World with Lab
Max-Min Credits for Course:	5.0 to 5.0 credit(s)
Catalog Description:	An online course intended for non-science majors that introduces the basic principles of chemistry with special emphasis on everyday life and sustainability. Course topics reflect a variety of current societal and technological issues and the chemical principles embedded in them. The laboratory component of the course includes hands-on activities related to concepts presented in the online lecture with an emphasis on scientific methods and basic lab techniques. [Note: recommended for non-science majors to fulfill the Gen Ed science with lab requirement] prereq: Math 0901 or placement at Math 1012 or higher
Grading Basis:	Stdnt Opt
Honors Course:	No
Online Course:	No
Course Typically Offered:	Periodic Summer
Component 1:	LEC (with final exam)
Component 2:	LAB (no final exam)
Auto-Enroll Course:	Yes
Graded Component:	LAB
Academic Progress Units:	Not allowed to bypass limits. 5.0 credit(s)
Financial Aid Progress Units:	Not allowed to bypass limits. 5.0 credit(s)
Repetition of Course:	Repetition not allowed.
Course Equivalency:	Chem 1001, 1006, 1801
Add/Drop Consent Requirement:	No required consent
Enforced Prerequisites:	004317 – Math 0901 (or placement into Math 1012 [or higher])
Rationale for Changes or Exceptions:	In a review of UMM Summer Term courses, there were no online courses offered that met the Sci-L (Physical and Biological Sciences with Lab) Gen Ed requirement. As such, this course will help non-science majors in meeting their requirements for graduation.
General Education	
Faculty Sponsor Name:	Ted Pappenfus
Requirement this course fulfills:	SCI-L Physical & Biological Sciences with Lab
Regular Approval:	Requested Sept 15, 2016

CHEM 3406 - NEW COURSE PROPOSAL

Approvals Received:	Department 09-07-16; Curriculum Committee 09-14-16
Effective Term:	1179 – Fall 2017
Department:	10565 - UMM-Division of Science & Math
General	
Course Title Short:	Polymer Prop/Characterization
Course Title Long:	Polymer Properties and Characterization
Max-Min Credits for Course:	2.0 to 2.0 credit(s)
Catalog Description:	Introduction to the principles and history of polymer chemistry with an emphasis on polymer properties, their characterization, and sustainable sources. prereq: 2302 or 2304
Grading Basis:	Stdnt Opt
Honors Course:	No
Online Course:	No
Course Typically Offered:	Periodic Spring
Component 1:	LEC (with final exam)
Auto-Enroll Course:	No
Graded Component:	LEC
Academic Progress Units:	Not allowed to bypass limits. 2.0 credit(s)
Financial Aid Progress Units:	Not allowed to bypass limits. 2.0 credit(s)
Repetition of Course:	Repetition not allowed.
Course Equivalency:	02492 – Chem 3401/Chem 3406
Add/Drop Consent Requirement:	No required consent
Enforced Prerequisites:	002523 – Chem 2302 or Chem 2304
Rationale for Changes or Exceptions:	An existing 4 credit course is being split into 2 two-credit courses giving more flexibility to our curricular offerings.
General Education	
Faculty Sponsor Name:	Ted Pappenfus
Requirement this course fulfills:	None
Provisional Approval:	Not Requested
Regular Approval:	Requested Sept 15, 2016

CHEM 3407 - NEW COURSE PROPOSAL

Approvals Received:	Department 09-07-16; Curriculum Committee 09-14-16
Effective Term:	1179 – Fall 2017
Department:	10565 - UMM-Division of Science & Math
General	
Course Title Short:	Polymer Synthesis
Course Title Long:	Polymer Synthesis
Max-Min Credits for Course:	2.0 to 2.0 credit(s)
Catalog Description:	Introduction to the synthesis of traditional and sustainable polymers and their role in renewable energy and our environment. prereq: 2302 or 2304
Grading Basis:	Stdnt Opt
Honors Course:	No
Online Course:	No
Course Typically Offered:	Periodic Spring
Component 1:	LEC (with final exam)
Auto-Enroll Course:	No
Graded Component:	LEC
Academic Progress Units:	Not allowed to bypass limits. 2.0 credit(s)
Financial Aid Progress Units:	Not allowed to bypass limits. 2.0 credit(s)
Repetition of Course:	Repetition not allowed.
Course Equivalency:	02492 – Chem 3401/Chem 3407
Add/Drop Consent Requirement:	No required consent
Enforced Prerequisites:	002523 – Chem 2302 or Chem 2304
Rationale for Changes or Exceptions:	An existing 4 credit course is being split into 2 two-credit courses giving more flexibility to our curricular offerings.
General Education	
Faculty Sponsor Name:	Ted Pappenfus
Requirement this course fulfills:	None
Provisional Approval:	Not Requested
Regular Approval:	Requested Sept 15, 2016

Multiple Course Revisions

Route this form to:
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Revisions

Rev: 04/2014

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Date: 9/7/16

Discipline: Computer Science

Curriculum Committee Approval Date: 9/14/16

Course Revision #1 CSci 3402 Computing Systems: Concepts

Give *complete* UMM catalog entry (deletions in strikethru font, additions underlined)

Overview of computing systems, operating systems, and networks. Sources of complexity. Fundamental abstractions such as memory, processing, and communication; memory management and data storage; threads, processes, race conditions and deadlock; and inter-process and inter-computer communication. Modularity and organization; virtualization; protection and security; performance. [Note: Credit will not be granted if credit has been received for CSci 3401]

prereq: 1302 **or both Math 2202 and Math 3411**, 2101 or instr consent

Rationale for change: Math 2202 and 3411 combined provide the key concepts taught in CSci 1302

Course Revision #2 CSci 3403 Computing Systems: Practicum

Give *complete* UMM catalog entry (deletions in strikethru font, additions underlined)

Lab experience with key computing systems tools and concepts. Command-line tools; shell and system scripting; system programming. Pointers and explicit memory management. Digital logic, gates, electronics, and microcomputers. Network organization and communication; client-server programming. Processes and threads; parallel and distributed computing. Performance and profiling. [Note: Credit will not be granted if credit has been received for CSci 3401]

prereq: 1302 **or both Math 2202 and Math 3411**, 2101 or instr consent

Rationale for change: Math 2202 and 3411 combined provide the key concepts taught in CSci 1302

Course Revision #3 CSci 3501 Algorithms and Computability

Give *complete* UMM catalog entry (deletions in strikethru font, additions underlined)

Models of computation (such as Turing machines, deterministic and non-deterministic machines); approaches to the design of algorithms, determining correctness and efficiency of algorithms; complexity classes, NP-completeness, approximation algorithms. (4 hrs lect, 2 hrs lab)

prereq: 1302 **or both Math 2202 and Math 3411**, 2101 or instr consent

Rationale for change: Math 2202 and 3411 combined provide the key concepts taught in CSci 1302. **Also note that the Gen Ed MSR designator has been removed because prereq for this course already has that designator**

Course Revision #4 CSci 3601 Software Design, Development

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

Design and implementation of medium- and large-scale software systems. Principles of organizing and managing such designs and implementations throughout their lifetime. Designing for modularity and software reuse; use of libraries. Dynamics of working in groups. Group work on a substantial software project.

prereq: 1302, grade of at least C- in 2101, or instr consent

Rationale for change: Prereq of CSci 1302 is dropped since the material is not used in this course. Also note that the Gen Ed MSR designator has been removed because prereq for this course already has that designator

Course Revision #5 CSci 4454 Robotics

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

An introduction to robotic systems. Topics may include robot classification, mechanical armatures, concepts of kinematics and coordinate systems, basic electronic circuits as applied to robotic systems, embedded system architecture and programming, communications hardware and protocols, and algorithms in robotics. Some lecture times may be replaced by supervised work in electronics lab and machine shop; times for this work are to be arranged with the instructor.

~~An introduction to robotic systems including robot mechanics, algorithms in robotics, and sensor interfaces for autonomous mobile and arm robots. Concepts of kinematics and coordinate systems, real time programming, embedded systems, pattern recognition algorithms, simulation environments, and subsumption architecture within the context of robotics applications are explored.~~

prereq: 1302 or both Math 2202 and Math 3411, 2101 or instr consent

Rationale for change: The list of topics was changed to more accurately reflect the material covered in the recent course offerings. The course description was modified to include possibility of required attendance scheduled outside of the course lecture hours.

Course Revision #6 CSci 4554 Theory: Cryptography

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

Theory and applications of cryptography. Overview of necessary mathematical concepts. Discussion of algorithms and protocols including public and private key encryption, authentication, and zero knowledge proofs.

prereq: 1302 or both Math 2202 and Math 3411, 2101 or instr consent

Rationale for change: Math 2202 and 3411 combined provide the key concepts taught in CSci 1302

Course Revision #7 CSci 4555 Theory: Neural Network, Mach Lrng

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

Study of the underlying theory, structure, and behavior of neural networks and of how neural networks compare to and can be used to supplement other methods of machine learning. Methods such as decision tree learning, inductive learning, reinforcement learning, supervised learning, and explanation-based learning are examined. Analysis of the strengths and weaknesses of various approaches to machine learning. Includes an implementation project.

prereq: 1302 or both Math 2202 and Math 3411, 2101 or instr consent

Rationale for change: Math 2202 and 3411 combined provide the key concepts taught in CSci 1302

Course Revision #8 CSci 4556 Theory: Computer Graphics

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

Introduction to basic concepts and algorithms in computer graphics, including three-dimensional geometry and various approaches to modeling three-dimensional scenes. An introduction to transformation and viewing, lighting, shading, texture, and color. Advanced topics may include ray tracing, radiosity, and animation. Students complete several significant projects.

prereq: 1302 or both Math 2202 and Math 3411, 2101 or instr consent

Rationale for change: Math 2202 and 3411 combined provide the key concepts taught in CSci 1302

Course Revision #9 CSci 4557 Theory: Quantum Computing

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

Summarization of relevant mathematical and quantum mechanical concepts. Basic quantum algorithms concepts and simple algorithms are explored, along with Shor's algorithm, Grover's algorithm, and the quantum Fourier transform.

prereq: 1302 or both Math 2202 and Math 3411, 2101 or instr consent

Rationale for change: Math 2202 and 3411 combined provide the key concepts taught in CSci 1302

Course Revision #10 CSci 4654 PPL: Modern Functional Programming

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

Survey of concepts, tools, and techniques from the realm of functional programming. Topics include higher order functions, currying, type systems, concurrency models, mechanisms for managing state, and methods of compilation and evaluation such as graph reduction and term rewriting.

prereq: 1302 or both Math 2202 and Math 3411, 2101 or instr consent

Rationale for change: Math 2202 and 3411 combined provide the key concepts taught in CSci 1302

Course Revision #11 CSci 4901: Senior Seminar

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

Change from 1 credit to 2 credit course

Rationale for change: Reflects actual student workload due to changes in the nature of CSci published research.

Multiple Course Revisions

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Revisions

Rev: 04/2014

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Date: 9/7/16

Discipline: Environmental Science

Curriculum Committee Approval Date: 9/14/16

Course Revision #1 ESci 3401 Poly Chem and the Environment (same as Chem 3401)

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)

Course Deactivated

Rationale for change: Course has been split into two separate new chem courses

Multiple Course Revisions

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Rev: 04/2014

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Date: 9/7/16

Discipline: Geology

Curriculum Committee Approval Date: 9/14/16

Course Revision #1 Geol 2001 Natural/Unnatural Geological Hazards

Examination of the more significant interactions between humans and geologic environments and processes. Earthquake and volcanic hazards, river flooding, mass movements and slope stability, coastal hazards, and water resources and pollution. Lectures and problems sets emphasize the quantitative approaches used to determine the likelihood and frequency of natural hazards, assess associated risks, and mitigate damage.

prereq: 1001 or 1101

Rationale for change: Students should be familiar with basic geological principles to succeed at this course. The new prerequisites provide that background

Course Revision #2 Geol 2311 Forensic Geology

Introduction to the application of geological concepts, principles, and research methods in the field of forensic studies. Includes analysis of rocks, minerals, soils, and microfossils; air photo and seismic interpretations; applications to gemology, art, and archaeology; and tracing of pollutants, among other topics. Students will learn how interactions between people and the natural world or natural materials leaves evidence of those interactions. Regular discussion periods focus on actual case histories and real-world scenarios. **[Note: This course does not satisfy the Geology elective requirements for the major.]**

prereq: 1001 or 1101 or Chem 1101

Rationale for change: This is not a substantive enough course to count for the major.

Course Revision #3 Geol 3101 Structural Geology

Elementary concepts of stress and strain, theory of rock deformation; description and classification of structures in the Earth's crust; application of geometric, analytical, and map interpretation techniques to solving structural problems; field mapping problems. **(3 hrs lect, 3 hrs lab and field trips) (three 50 min lect, one 3-hour lab and field trips)**

prereq: 2111, **Math 1021 or Math 1101** or instr consent

Rationale for change: Students need background in mathematical concepts covered in the new prerequisites to succeed in this course.

Course Revision #4 Geol 3401 Geophysics

Change when offered from Fall Odd Year to Periodic Fall

Propagation of seismic waves, earthquake seismology, and the structure of the Earth; the origin and nature of the Earth's magnetic and gravitational fields; the Earth's internal production and flow of heat; composition, state, and rheology of the Earth's interior; plate tectonics and elementary geodynamics. ~~(4 hrs lect)-(three 65-min lect)~~

prereq: Math 1101, Phys 1101 or instr consent

Rationale for change: Change in when course is offered reflects frequency of student demand.

Course Revision #5 Geol 3501 Hydrology

An examination of the hydrological cycle; evapotranspiration and precipitation; processes of infiltration; rainfall-runoff relationships and the generation of overland flow; response of the drainage basin to storm events; flood-frequency analysis; elements of groundwater flow and evaluation of aquifer characteristics; water quality, contamination, and contaminant transport. ~~(4 hrs lect)-(three 65-min lect)~~

prereq: **Math 1021 or** Math 1101 or instr consent

Rationale for change: Instructor wants prereqs to be enforced. Both calculus courses listed meet this prereq.

Course Revision #6 Geol 3601 Intro to Geochemistry

COURSE IS BEING REACTIVATED—no change in course description. Pre-reqs enforced.

Applying chemistry to geologic problems such as weathering, sedimentary processes and diagenesis, formation of evaporites and ore deposits, magma genesis and magmatic differentiation; thermodynamic functions and the Phase Rule; oxidation potential and Eh-pH diagrams; isotopic geochemistry and geochronology. ~~(4 hrs lect)-(three 65-min lect)~~

Rationale for change: This course was deactivated in 2006 to reflect changes in Geology faculty. It is being reactivated now in an effort to expand the 3xxx offerings by Geology, incorporate a specialty of current faculty in the curriculum, and to meet student interest in upper-level interdisciplinary coursework. Prereq are being enforced to ensure students are prepared to succeed in coursework.

Course Revision #7 Geol 1012 Oceanography

Deactivate course

Rationale for change: Course is no longer offered

Course Revision #8 Geol 3006 X-ray Diffraction Techniques

Deactivate course

Rationale for change: Course is no longer offered

Multiple Course Revisions

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Date: 9/7/16

Discipline: Mathematics

Curriculum Committee Approval Date: 9/14/16

Course Revision #1 Math 2111 (3111)

Course number change from 2111 to 3111

Rationale for change: Course content is unchanged but course number change more accurately reflects the level of the course content.

Course Revision #2 Math 1014 Intensive Pre-Calc

Deactivate Course

Rationale for change: Course is not currently offered. Any online offerings in the future would be Math 1013.

Multiple Course Revisions

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Rev: 04/2014

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Date: 9/7/16

Discipline: Physics

Curriculum Committee Approval Date: 9/14/16

Course Revision #1 Phys 2301 (3004)

Course number change from ~~2301~~ to 3004. No change in course description.

Rationale for change: The content of the course justifies the course number change and allows the course to satisfy requirements for the minor.

Course Revision #2 Phys 2401 (3301) Optics

Course number change from ~~2401~~ to 3301. No change in course description.

Rationale for change: The content of the course justifies the course number change and allows the course to satisfy requirements for the minor.

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Date: 9/7/16

Discipline: Statistics

Curriculum Committee Approval Date: 9/14/16

Course Revision #1 Stat 4901 Senior Seminar

Changed from ~~one credit~~ to **two credit** course.

Change from ~~Stdnt-Opt~~ to **S-N only** grading

Required for all statistics majors. Seminar on student-selected statistical topics. Includes preparation and presentation of a seminar based on original research, a data analysis, or results of a detailed study of a topic in statistics. Begins in fall semester, and continues all year. Students attend year round and present one of the seminars in Spring semester. Requires attendance and a presentation in addition to regular class meetings.

prereq: 3901, sr status

~~Full year course. Required for all statistics majors. Students must attend year round and present one of the seminars.
prereq: sr~~

Rationale for change: Credits changed from 1 to 2 to better reflect student work load for course. Change to S/N grading addresses difficulty for statistics faculty to find consensus on letter grading of presentations. Course description was enhanced to provide more detail regarding course content.

Course Revision #2 Stat 4611 Statistical Consulting

Deactivate course

Rationale for change: Course inactivated due to creation of new course, Stat 3901