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SciMath Course Proposals 09-10-2012

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Multiple Course Revisions

USE FOR CATALOG YEAR CHANGES ONLY

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 Department and Discipline approval has been received.

Date: September 10, 2012

Discipline: **Biology (BIOL)**

Curriculum Committee Approval Date: 9/13/12

Course Revision #1

BIOL 1051–Wildlife Biology. (SCI-L; 4 cr; **=[Biol 1801]**; No elective cr for biol majors or minors; ~~fall, even years~~ **fall, spring, offered periodically**)

Biological principles and practices illustrated through studies of North American wildlife, Wildlife taxonomy, identification, migration and dispersal, ecological relationships, contemporary problems associated with human activities. (two 65-min lect, ~~one 120- or 180-min lab or field study~~ **one 120-180 min lab/field study**)

Rationale for change: Because of the addition of an IC course, this course can only be offered by the instructor periodically. Equivalency added to inform students of credit restrictions for duplicate courses.

Course Revision #2

BIOL 1801–The Animals Around U: Wildlife of Minnesota. (IC; 4 cr; **=[Biol 1051]**; prereq new college student in their first semester of enrollment at UMM; fall, offered periodically)

Discussion and examination of basic biological principles illustrated through studies of North American wildlife. Topics include movements and migration, behavior, conservation, and ecological relationships. Students research and discuss wildlife-related issues, and work together to learn how to identify species found in Minnesota. At least one field trip to observe local wildlife; additional field trips, time and weather permitting. (two 65-min lect, one 180-min lab or field study) (two 65-min lect, one 180-min lab or field study)

Rationale for change: Equivalency added to inform students of credit restrictions for duplicate courses.

Course Revision #3

BIOL 3121–Molecular Biology. (SCI-L; 5 cr; prereq 2111, Chem 2301 or #; spring, every year)

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, one 180-min lab, **additional lab time arranged**)

Rationale for change: Change reflects the need for instructor to require students to occasionally return to lab for additional work during the week.

Course Revision #4

BIOL 3700–Biological Communication I. (1 cr; prereq Biol 2101, 2111; fall, spring, every year)

Finding and utilizing sources of biological information. Modern techniques for searching the biological literature, as well as reading and interpreting those sources. Principles ~~and practices~~ of **writing technical written and oral communication in biology**.

Rationale for change: This course includes a required oral presentation. Description change reflects that requirement.

Course Revision #5

BIOL 4003–Neurobiology. (~~Sci-L~~; 4 cr; prereq 2111; fall, ~~odd years~~ **offered periodically**)

Surveys of general principles of neuronal function and formation. Emphasis on comparative aspects of simple nervous systems.

Rationale for change: Change reflects the addition of another course and its implications for staffing. GER designator removed per request from Registrar's Office.

Course Revision #6

BIOL 4161–Evolution. (Sci; 4 cr; prereq Biol 2101, 2111 or EnSt 2101 or #; spring, even years)
Survey of the history, evidence, and mechanisms of organic evolution. (three 65-min lect)

Rationale for change: GER requirement removed because it is met by prereqs for the course. Prerequisite change more accurately reflects the skill set needed for students taking the course.

Course Revision #7

BIOL 4181–Developmental Biology. (Sci-L; 4 cr; prereq 2111; 4312 recommended; fall, spring, even years offered periodically)
Survey of general concepts in developmental biology, emphasizing molecular mechanisms of positional information, pattern formation, and cellular interactions. Stresses comparative aspects of developmental processes, and the role of development in evolution. (two 65-min lect, one 180-min lab)

Rationale for change: GER requirement removed because it is met by prereqs for the course. Change to offering periodically reflects addition of another elective in instructor's course rotation.

Course Revisions #8-24

BIOL 4071–Flora of Minnesota. (Sci-L; 4 cr; prereq Biol 2111; summer, offered periodically)

BIOL 4103–Cancer Biology. (Sci; 4 cr; prereq 2111; spring, offered periodically)

BIOL 4111–Microbiology. (Sci-L; 4 cr; prereq 2111; prereq or coreq 3121 or #; spring, every year)

BIOL 4121–Herpetology. (Sci-L; 4 cr; prereq Biol 2101 or EnSt 2101 or #; spring, even years)

BIOL 4131–Vertebrate Natural History. (Sci-L; 4 cr; prereq Biol 2101 or EnSt 2101 or #; fall, odd years)

BIOL 4141–Comparative Invertebrate Zoology. [inactive]. (Sci-L; 4 cr; prereq Biol 2101 #; fall, spring, offered periodically)

BIOL 4151–Entomology. (Sci-L; 4 cr; prereq Biol 2101 or EnSt 2101 or #; fall, even years)

BIOL 4171–Plant Systematics and Evolution. [inactive]. (Sci-L; 4 cr; prereq 2101, 3121; spring, odd years)

BIOL 4172–Plant Systematics. (Sci-L; 4 cr; prereq 2101 or EnSt 2101 or #; spring, odd years)

BIOL 4191–Freshwater Biology. (Sci-L; 4 cr; prereq Biol 2101 or EnSt 2101, 2111 or #; fall, odd years)

BIOL 4211–Biochemistry. (Sci; 4 cr; prereq Biol 3121, Chem 2302 or Chem 2304 or #; fall, every year)

BIOL 4301–Plant Biology. (Sci-L; 4 cr; prereq Biol 2101, 2111 or #; fall, even years)

BIOL 4311–Conservation Genetics. (Sci-L; 4 cr; prereq Biol 2101 or #; Stat 1601 or 2601 recommended; fall, offered periodically)

BIOL 4312–Genetics. (Sci-L; 4 cr; =[Biol 3101]; prereq 2111 or #; spring, every year)

BIOL 4321–Animal Physiology. (Sci-L; 4 cr; prereq 2111; spring, offered periodically)

BIOL 4331–Global Change Ecology. (Sci; 4 cr; prereq 3131 or #; spring, odd years)

BIOL 4351–Conservation Biology. (Sci-L; 4 cr; prereq Biol 2101 or EnSt 2101, coreq or prereq Biol 3131 or #; fall, odd years)

Rationale for changes 7-24: GER requirement removed because it is met by prereqs for the course.

Course Deletion #1

~~**BIOL 2151–Natural History of Belize.** (1 cr [max 2 cr]; S-N only; prereq or coreq Biol 2101 or EnSt 2101 or #; spring, offered periodically)~~

~~Brief introduction to the flora, fauna, and ecology of Belize, including visits to coral reef, wetland, mangrove, tropical forest, and savanna habitats.~~

Rationale for change: Study Abroad course no longer being offered by instructors.

Course Deletion #2

~~**BIOL 4004–Principles of Public Health & Epidemiology.** (Sci; 4 cr; prereq Stat 1601 or Stat 2601, jr status or #; spring, every year)
The biology of diseases (infectious and chronic) and the interventions (medical and behavioral) designed to treat or prevent disease. Epidemiologic methods and case studies are examined to understand the determinants of health and disease. (three 65-min lect)~~

Rationale for change: Course made inactive because instructor teaching the course is no longer with the University.

Multiple Course Revisions

Route this form to:
UMM Dean's Office
315 Behmler Hall

UMM
Multiple Course
Revisions

Rev: 02/2008

USE FOR CATALOG YEAR CHANGES ONLY

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 Department and Discipline approval has been received.

Date: September 10, 2012

Discipline: **Chemistry (CHEM)**

Curriculum Committee Approval Date: 9/13/12

Course Revision #1

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

CHEM 1001–Chemistry for the Curious Citizen: The Role of Chemistry in the Environment and Everyday Life. (SCI-L; 4 cr; **[Chem 1801]**; may not count toward chem major or minor; summer, offered periodically)

The central nature and relevance of chemistry to the environment and everyday life. Air quality, the ozone layer, global warming, energy resources, acid rain, and nutrition. Discussion and debate of current events related to these topics. Select readings on significant historical chemical discoveries in these areas that still resonate today. Basic chemistry lab principles and techniques. This course is intended for non-science majors.

Rationale for change: Chem 1801 duplicates much of the information offered in this course.

Course Revision #2

CHEM 1801–Science Savvy in our Modern World. (IC; 2 cr; **[Chem 1001]**; fall, offered periodically)

If students and chemistry were in a Facebook relationship, the status would be "it's complicated." Some students love science and some love to hate it. "America's Finest News Source," The Onion, has repeatedly reported that "science is hard" but are they right? Chemistry is too important in our modern world to be ignored simply because it's complicated or perceived to be hard. Some science is hard but just because a science topic is complex doesn't mean that it can only be understood by rocket scientists. Through written reflections and discussions based on mainstream science books and current event articles, students explore the connections between science and society. The course helps students to understand the role of experts and bias in the reporting. The course also helps students to become more science literate about the green and sustainable activities on campus. Ultimately, this course fosters a relationship where students both need and want to be engaged with chemistry.

Rationale for change: Chem 1001 duplicates much of the information offered in this course.

Course Revision #3

CHEM 2301–Organic Chemistry I. (Sci; 4 cr; prereq 1102; fall, every year)

Introduction to the structure and reactivity of organic molecules; nomenclature and functional groups; stereochemistry; mechanisms of substitution and elimination pathways; physical organic chemistry; introduction to synthetic strategy; fundamentals of spectroscopic techniques. ~~(4 hrs lect)~~

Rationale for change: Removed redundant information in course description.

Course Revision #4

CHEM 2302–Organic Chemistry II. (Sci; 4 cr; **[Chem 2304]**; prereq **C or better in 2301**, coreq 2321 or # for chem majors; spring, every year)

Continuation of topics from Chem 2301; spectroscopy; chemistry of polyenes, aromatic systems, and amines; enol and enolate chemistry; free-radical chemistry; retrosynthetic analysis; special topics. ~~(4 hrs lect)~~

Rationale for change: Students with less than a C in Chem 2301 would be unable to complete this course successfully. Removed redundant information in course description.

Course Revision #5

CHEM 2304—Organic Chemistry II with a Biological Emphasis. (Sci; 4 cr; =[Chem 2302]; prereq **C or better in Chem 2301**, Biol 2111 or #; spring, **every year offered periodically**)

Continuation of topics from Chem 2301, with an emphasis on compounds and reactions of biological interest. Topics include spectroscopy, structure and reactivity of aromatic compounds, phosphoryl and acyl group transfer, nucleophilic carbonyl addition, reactions involving enolate and enamine intermediates, coenzyme chemistry, electrophilic addition, beta elimination, oxidation and reduction of organic compounds, and reactions involving free radical intermediates. ~~(4 hrs-lect)~~

Rationale for change: Changed when to offer more accurately reflects when course will be offered due to sabbaticals and leaves.

Prereq change reflects the fact that students who earn a grade below C in Chem 2301 will not be successful in this course. Removed redundant information in course description.

Course Revision #6

CHEM 3301—The Chemistry of Sustainable Energy. (Sci; **3-4** cr; =[ESci 3301]; prereq 2302 or 2304 or #; fall, even years)

The fundamental chemical concepts underlying energy sources. Topics include: energy basics, fossil fuels, "sustainable" energy sources, biomass, solar voltaics, hydrogen fuel cells, and nuclear energy.

Rationale for change: Credit change accurately reflects time and work required for the course.

Course Revision #7

CHEM 3401—Polymer Chemistry and the Environment. (Sci; **3-4** cr; =[ESci 3401]; prereq 2302 or 2304 or #; spring, even years)

Same as ESci 3401. Introduction to many traditional topics in polymer chemistry including those with a connection to elements of the environment and environmental science such as the preparation of polymers from renewable feedstocks, polymers in renewable energy, green syntheses of polymers, and environmental impacts of polymers. ~~(3 hrs-lect)~~

Rationale for change: Credit change accurately reflects time and work required for the course. Removed redundant information in course description.

Course Revision #8

CHEM 3501—Physical Chemistry I. (Sci; 4 cr; prereq 1102, Phys 1101, Math 1102 or #; fall, every year)

The gas state. Classical thermodynamics. Phase, chemical and heterogeneous equilibria. Chemical kinetics. Kinetic theory of gases. Transport. ~~(4 hrs-lect)~~

Rationale for change: Removed redundant information in course description.

Course Revision #9

CHEM 3502—Physical Chemistry II. (Sci; 4 cr; prereq 3501, coreq 3511 or # for chem majors; spring, every year)

Introduction to quantum theory. Atomic and molecular structure. Group Theory. Introduction to statistical mechanics. Chemical dynamics. Topics drawn from the liquid and solid states, advanced kinetics, electrochemistry, and surfaces. ~~(4 hrs-lect)~~

Rationale for change: Removed redundant information in course description.

Course Revision #10

CHEM 3801—History of Chemistry. (Sci; **3-4** cr; prereq 2301 or #; fall, odd years)

Theories of atoms, elements, principles. Alchemy. Pneumatic chemistry. Phlogiston. Lavoisier and chemical revolution. Dalton and atomic weight scales. Physical and chemical atoms. Cannizzaro and Karlsruhe Congress. Einstein, Perrin and the reality of atoms. Niels Bohr and periodic table. ~~(3 hrs-lect)~~

Rationale for change: Credit change accurately reflects time and work required for the course. Removed redundant information in course description.

Course Revision #11

CHEM 4111—Instrumental Analysis. (Sci-L; 5 cr; prereq 3101; spring, odd years)

Principles of chemical instrumentation and instrumental methods of analysis; extensive lab work using chromatographic, spectrophotometric, and electrochemical methods of analysis. (~~2~~ 3 hrs lect, 6 hrs lab)

Rationale for change: Credit change accurately reflects time and work required for the course. GER designation removed because prereq has the same Gen Ed designation.

Course Revision #12

CHEM 4351—Bioorganic Chemistry. (Sci; ~~3~~ 4 cr; prereq 2302 or 2304, Biol 4211; spring, every year)

Discussion of the theory of enzyme catalysis and catalytic antibodies, experimental determination of catalytic mechanisms for a variety of organic reactions in biological systems, and elucidation of biosynthetic pathways. Involves extensive reading in the primary literature. (~~3 hrs lect~~)

Rationale for change: Credit change accurately reflects time and work required for the course. GER designation removed because prereq has the same Gen Ed designation.

Course Revision #13

CHEM 4352—Synthesis. (Sci; ~~3~~ 4 cr; prereq 2302 or 2304; fall, odd years)

Study of the preparation of biologically active molecules, emphasizing the application of transition metal chemistry to modern synthetic methods. (~~3 hrs lect~~)

Rationale for change: Credit change accurately reflects time and work required for the course. GER designation removed because prereq has the same Gen Ed designation. Removed redundant information in course description.

Course Revision #14

CHEM 4551—Theoretical Chemistry. (Sci; ~~3~~ 4 cr; prereq or coreq 3502 or #; spring, offered periodically)

Quantum theory of molecules. Statistical thermodynamics; Gibbsian ensembles; applications. (~~3 hrs lect~~)

Rationale for change: Credit change accurately reflects time and work required for the course. GER designation removed because prereq has the same Gen Ed designation. Removed redundant information in course description.

Course Revision #15

CHEM 4552—Molecular Spectroscopy. (Sci; 3 cr; prereq 2302 or 2304, 3101 or #; spring, even years)

Interaction of molecules and electromagnetic radiation. Spectroscopic determination of molecular structure. Operation of spectrometers and spectrophotometers. (~~3 hrs lect~~)

Rationale for change: GER designation removed because prereq has the same Gen Ed designation. Removed redundant information in course description.

Course Revision #16

CHEM 4701—Inorganic Chemistry. (Sci; ~~3~~ 4 cr; prereq 3501 or #; spring, odd years)

The periodic table; models of structure and bonding of main group elements and transition metals, nomenclature, symmetry, and bonding theory of coordination compounds. (~~3 hrs lect~~)

Rationale for change: Credit change accurately reflects time and work required for the course. GER designation removed because prereq has the same Gen Ed designation. Removed redundant information in course description.

Course Revision #17

CHEM 4711–Inorganic Chemistry Lab. (1 cr; prereq **2322**, coreq 4701 or #; spring, odd years)

Lab experiments in inorganic/organometallic chemistry illustrating synthetic and spectroscopic techniques. (3 hrs lab)

Rationale for change: Students without Chem 2322 would not be able to be successful in the lab due to lack of experience in lab skills.

Course Revision #18

CHEM 4751–Advanced Inorganic Chemistry. (~~Sci~~; **3 4** cr; prereq 3701 or #; fall, spring, offered periodically)

The periodic table; models of structure and bonding of main group elements and transition metals, nomenclature, symmetry, and bonding theory of coordination compounds. (~~3 hrs lect~~)

Rationale for change: Change of credits more accurately reflects the amount of work expected of students in this course. GER designation removed because prereq has the same Gen Ed designation.

Multiple Course Revisions

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Date: September 10, 2012

Discipline: **Computer Science (CSCI)**

Curriculum Committee Approval Date: 9/13/12

Course Revisions #1

CSCI 3601–Software Design and Development. (M/SR; 5 cr; prereq 1302, **grade of at least C- in** 2101 or #; spring, every year)
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. (4 hrs lect, 2 hrs lab)

Rationale: Students cannot succeed in this course without a minimum grade of C- in 2101

Course Revisions #2-33

CSCI 4403–Systems: Data Mining. (M/SR; 2 cr; prereq 2101 or #; fall, spring, offered periodically)

CSCI 4404–Systems: Parallel Systems. [inactive] (M/SR; 2 cr; prereq 2901, 3401 or #; fall, spring, offered periodically)

CSCI 4405–Systems: Computer Architecture and Organization. [inactive] (M/SR; 2 cr; prereq 2901, 3401 or #; fall, spring, offered periodically)

CSCI 4406–Systems: Wireless Data Networks. (M/SR; 2 cr; prereq 3401 or #; fall, spring, offered periodically)

CSCI 4408–Systems: Computer Forensics. (M/SR; 2 cr; prereq 3401 or #; spring, offered periodically)

CSCI 4409–Systems: Programming for Parallel Architecture. (M/SR; 2 cr; prereq 3401; spring, offered periodically)

CSCI 4451–Distributed Systems. (M/SR; 4 cr; prereq 3401 or #; fall, spring, offered periodically)

CSCI 4452–Systems: Computer Networks. (M/SR; 4 cr; prereq 3401 or #; fall, spring, offered periodically)

CSCI 4453–Systems: Database Systems. (M/SR; 4 cr; prereq 2101 or #; fall, spring, offered periodically)

CSCI 4454–Systems: Robotics. (M/SR; 4 cr; prereq 2101 or #; fall, spring, offered periodically)

CSCI 4456–Systems: Advanced Operating Systems. (M/SR; 4 cr; prereq 3401 or #; fall, spring, offered periodically)

CSCI 4457–Systems: Ubiquitous Computing. (M/SR; 4 cr; prereq 3401 or #; fall, spring, offered periodically)

CSCI 4458–Systems: Bioinformatic Systems. (M/SR; 4 cr; prereq 3401 or #; fall, spring, offered periodically)

CSCI 4506–Theory: Fuzzy Logic and Fuzzy Sets. (M/SR; 2 cr; prereq 3501 or #; fall, spring, offered periodically)

CSCI 4507–Theory: Data Compression. (M/SR; 2 cr; prereq 3501 or #; fall, spring, offered periodically)

CSCI 4508–Theory: Algorithm Design. (M/SR; 2 cr; prereq 3501 or #; fall, spring, offered periodically)

CSCI 4511–Theory: Artificial Life. (M/SR; 2 cr; prereq 2101 or #; fall, spring, offered periodically)

CSCI 4552–Theory: Advanced Algorithms. (M/SR; 4 cr; prereq 3501 or #; fall, spring, offered periodically)

CSCI 4553–Theory: Evolutionary Computation and Artificial Intelligence. (M/SR; 4 cr; prereq 2101 or #; fall, spring, offered periodically)

CSCI 4554–Theory: Cryptography. (M/SR; 4 cr; prereq 1302, 2101 or #; fall, spring, offered periodically)

CSCI 4555–Theory: Neural Networks and Machine Learning. (M/SR; 4 cr; prereq 1302, 2101 or #; fall, spring, offered periodically)

CSCI 4556–Theory: Computer Graphics. (M/SR; 4 cr; prereq 1302, 2101 or #; fall, spring, offered periodically)

CSCI 4604–Programming and Languages: Graphical User Interfaces. (M/SR; 2 cr; prereq 3601 or #; fall, spring, offered periodically)

CSCI 4605–Programming and Languages: Refactoring. (M/SR; 2 cr; prereq 3601 or #; fall, spring, offered periodically)

CSCI 4651–Programming and Languages: Programming Languages. (M/SR; 4 cr; prereq 2101 or #; fall, spring, offered periodically)

CSCI 4652–Programming and Languages: Compiler. (M/SR; 4 cr; prereq 2101 or #; fall, spring, offered periodically)

CSCI 4653–Programming and Languages: Software Engineering. (M/SR; 4 cr; prereq 3601 or #; fall, spring, offered periodically)

CSCI 4654–Programming and Languages: Modern Functional Programming. (M/SR; 4 cr; prereq 1302, 2101 or #; fall, spring, offered periodically)

CSCI 4655–Programming and Languages: Software Design and Development II. (M/SR; 4 cr; prereq 3601 or #; summer, offered periodically)

CSCI 4656–Programming and Languages: Human-Computer Interaction and Interface Design. (M/SR; 4 cr; prereq 2101 or #; fall, spring, offered periodically)

CSCI 4657–Programming and Languages: Programming Languages for Client-Server Systems. (M/SR; 4 cr; prereq 3601 or #; fall, spring, offered periodically)

CSCI 4658–Programming and Languages: Usability, Design, and Mobile Technologies. (M/SR; 4 cr; prereq 3601 or #; fall, offered periodically)

Rationale for changes 2-33: GER requirement removed because it is met by prereqs for the course.

Multiple Course Revisions

Route this form to:
UMM Dean's Office
315 Behmler Hall

UMM
Multiple Course
Revisions

Rev: 02/2008

USE FOR CATALOG YEAR CHANGES ONLY

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Date: September 20, 2012

Discipline: **Environmental Science (ESCI)**

Curriculum Committee Approval Date: 9/20/12

Course Revisions #1

~~ESCI 2103—The Roots of Modern Science in 16th Century Mining (SCI) (Sci; 3 cr; =[IS 1322]; Prereq Phys 1091, Phys 1101, Chem 1101 or Geol 1001; summer, odd years)~~

~~Study of the works of Georgius Agricola and Lazarus Ercker as examples for the emergence of applied chemistry through economic need during the 16th century; site visits to mines and ore processing technological sites of the period. Emphasis on the chemical, physical, and geological aspects of mining and ore processing technology in a region with an ongoing 800-year history of mining. This course is part of the international program "Journey to the Roots of Modern Science" in Freiberg, Germany.~~

Rationale: Inactive per Sylke Boyd, faculty sponsor; never offered.

Multiple Course Revisions

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Date: September 10, 2012

Discipline: **Geology (GEOL)**

Curriculum Committee Approval Date: 9/13/12

Course Revisions #1

GEOL 2121–Sedimentology and Stratigraphy. (Sci-L; 4 cr; prereq 2101; fall, ~~every-year~~ **even years**)

Processes of sedimentation, including origin, transportation, and deposition of sediments; interpretation of sedimentary environments. Principles of stratigraphy and their applications. Lab work includes sedimentary particle analysis; stratigraphic sections; and interpretation of ancient sedimentary environments based on stratified sequences of sedimentary rock. (3 hrs lect, 3 hrs lab and field trips)

Rationale: Semester offered is updated to reflect that the course is only taught in even years.

Course Revisions #2

GEOL 2131–Geomorphology. (Sci; 4 cr; prereq 1101; ~~spring, fall,~~ **even years**)

Study of the Earth's surface and surficial processes; weathering, erosion, and deposition, and the resulting landforms and products; the history of the study of landforms in the United States. (3 hrs lect, 3 hrs lab and field trips)

Rationale: Changed semester offered reflects when course is actually offered.

Course Revisions #3

GEOL 2141–Glacial and Quaternary Geology. (Sci; 4 cr; prereq 1101; ~~fall,~~ **spring, even-years odd years**)

Glaciers, glaciology, glacial deposition, glacial erosion; climatic change and the growth and advance of ice sheets; effect of glaciations on flora and fauna. (3 hrs lect, 3 hrs lab and field trips)

Rationale: Changed semester and odd/even offering reflects when course is actually offered.

Course Revisions #4

GEOL 2151–Historical Geology: Earth History and Changing Scientific Perspectives. (Sci-Li; 4 cr; ~~spring, fall,~~ **every-year odd years**)

Development of fundamental theories and principles of geology, including stratigraphy, uniformitarianism, geologic time, evolution, and plate tectonics. Emphasis on how geological thought has evolved through time as the scientific, religious, and political climate has changed. Discussion of the Earth's history and science's changing views of the Earth; continental movements, mountain building, and the evolution and development of organisms and ecosystems. Lab experience on methods of interpreting Earth's history from rocks, fossils, and structures and solving geological problems. (3 hrs lect, 3 hrs lab)

Rationale: Changed semester and odd/even offering reflects when course is actually offered.

Course Revisions #5

GEOL 2161–GIS and Remote Sensing. (Sci-Li; 4 cr; prereq 1101 or Biol 1101 or Biol 1111 or #; spring, ~~offered-periodically~~ **every year**)

Introduction to design, development, and application of Geographic Information Systems (GIS); overview of acquisition and utility of satellite data and imagery; emphasis on applications in Earth and environmental sciences; lab component focuses on practical aspects of GIS development and use and involves original semester projects designed and implemented by individual students.

Rationale: Changed offering reflects when course is actually offered.

Course Revisions #6

GEOL 3111–Introduction to ~~Invertebrate~~ Paleontology. (Sci-Li; 4 cr; prereq 2151 or Biol 2101 or EnSt 2101 or #; ~~spring~~, fall, even years)

~~Morphology and evolutionary record of the major invertebrate groups characterized by significant fossil representation. Principles of evolution, paleoecology, and paleoenvironmental interpretations of fossil assemblages. (3 hrs lect, 3 hrs lab).~~

An introduction to the study of the evolutionary history of life on earth as revealed in the fossil and geologic record. Laboratory focuses on study of the classification, morphology and paleoecology of invertebrate fossils. (Two 65 min lectures, one 3 hr lab. Weekend collecting trip required.)

Rationale: Course redesigned by new instructor.

Course Revisions #7

GEOL 3501–Hydrology. (Sci; 4 cr; prereq Math 1101 or #; fall, every year)

~~Elements of surface water hydrology; groundwater occurrence and aquifer characteristics; groundwater flow mechanics and flow nets; well hydraulics; groundwater contamination, contaminant transport, and remediation; management and legal aspects of water resources. (4 hrs lect)~~

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)

Rationale: The updated course description more accurately reflects the evolution of the course's content.

Course Revisions #8

GEOL 4130–Advanced Geomorphology. (Sci; 4 cr [max 8 cr]; prereq Math 2131; ~~fall~~, spring, offered periodically)

Surficial processes and the resulting landforms; may include catastrophic events, large lakes, arid regions geomorphology or the evolution of the Badlands. (3 hrs lect, 3 hrs lab and field trips)

Rationale: Changed odd/even offering reflects when course is actually offered. GER designation removed because prereq fulfills it.

Course Revisions #9

GEOL 4140–Advanced Glacial and Quaternary Geology. (Sci; 4 cr [max 8 cr]; prereq 2141; fall, odd years)

Glacial geology and glacial history; may include pre-pleistocene glaciations, quaternary stratigraphy, or subglacial processes. (3 hrs lect, 3 hrs lab and field trips)

Rationale: GER designation removed because prereq fulfills it.

Course Deletions #1

~~**GEOL 3411–Advanced Stratigraphy: Subsurface Methods.** (Sci; 4 cr; prereq 1101, 2121 or #; spring, even years)~~

~~Techniques and methods of investigating subsurface geologic and stratigraphic features. Includes a discussion of drilling methods, subsurface mapping methods, and techniques for interpreting subsurface geologic trends. (2 hrs lect, 4 hrs lab)~~

Rationale: Faculty person teaching this course retired.

Course Deletions #2

~~**GEOL 3421–Airphoto Interpretation.** (Sci; 4 cr; prereq 1101 or #; spring, offered periodically)~~

~~Interpretation of geologic landforms, cultural features, and vegetative patterns as viewed from aerial photographs. Geologic features studied include volcanic, mass wasting, and glacial flow features; coastal and fluvial features; groundwater solution features; and structural features. (2 hrs lect, 4 hrs lab)~~

Rationale: Faculty person teaching this course retired.

Multiple Course Revisions

Route this form to:
UMM Dean's Office
315 Behmler Hall

UMM
Multiple Course
Revisions

Rev: 02/2008

USE FOR CATALOG YEAR CHANGES ONLY

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 Department and Discipline approval has been received.

Date: September 10, 2012

Discipline: **Mathematics (MATH)**

Curriculum Committee Approval Date: 9/13/12

Course Revisions #1-10

MATH 4201–Complex Analysis. (M/SR; 2 cr; prereq 3221 or #; fall, spring, offered periodically)

MATH 4211–Real Analysis. (M/SR; 2 cr; prereq 3221 or #; fall, spring, offered periodically)

MATH 4221–Topology. (M/SR; 2 cr; prereq 2202 or #; fall, spring, offered periodically)

MATH 4231–Abstract Algebra II. (M/SR; 2 cr; prereq 3231 or #; fall, spring, offered periodically)

MATH 4241–Number Theory. (M/SR; 2 cr; prereq 2202 or #; fall, spring, offered periodically)

MATH 4252–Differential Geometry. (M/SR; 2 cr; prereq #; fall, spring, offered periodically)

MATH 4253–Combinatorics. (M/SR; 2 cr; prereq #; fall, spring, offered periodically)

MATH 4401–Numerical Methods with Applications in Mathematical Modeling. (M/SR; 4 cr; prereq 2111, 2401 or #; fall, spring, offered periodically)

MATH 4452– Mathematical Modeling. (M/SR; 4 cr; prereq #; fall, spring, offered periodically)

MATH 4901–Senior Seminar. (M/SR; 2 cr; prereq sr; full year course begins fall sem; fall, every year)

Rationale for changes 1-10: GER requirement removed because it is met by prereqs.

Multiple Course Revisions

USE FOR CATALOG YEAR CHANGES ONLY

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 Department and Discipline approval has been received.

Date: September 10, 2012

Discipline: **Physics (PHYS)**

Curriculum Committee Approval Date: 9/13/12

Course Revision #1

PHYS 1005–Journal Club I. (1 cr [max 2 4 cr]; S-N only; fall, every year)

~~Exposes freshman and sophomore students to current physics research topics. Students participate at presentations via discussion and are evaluated on a pass/fail basis only.~~

Students will learn about a wide variety of current topics in physics by reading and discussing recent journal articles.

Rationale for change: Course description is updated to give students a clearer sense of what the course includes.

Course Revision #2

PHYS 1064–High Altitude Ballooning: An Exploration of Near Space. (IC; 2 cr; A-F only; prereq new college student in their first semester of enrollment at UMM; launch and recovery is a required class activity tentatively scheduled for a Saturday about two thirds of the way through the semester; fall, offered periodically)

~~In this hands-on course, students design and build mini spacecraft and use (relatively) inexpensive high altitude helium balloons to launch them into near space (the upper reaches of the atmosphere), which has many of the same physical properties as outer space. The launch and recovery is a required class activity tentatively scheduled for a Saturday about two thirds of the way through the semester. The remainder of the semester involves data analysis from the balloon mission as well as lectures, discussions, and activities associated with full fledged spaceflight, including the scientific accomplishments and engineering challenges of past, current, and future missions.~~ In this hands-on physics course we will study atmospheric and experimental physics. Laboratory experience with microcontrollers and electronics will be developed. We will then use this experience to design and build a mini-spacecraft. High-altitude balloons will carry the spacecraft into near-space, up to an altitude of about 90,000 feet. The launch and recovery will be required class activities tentatively scheduled for a Saturday about two thirds of the way through the semester. The remainder of the semester will involve data analysis from the balloon mission.

Rationale for change: Changes in course description more accurately describe the contents of the course.

Course Revision #3

PHYS 2101–Modern Physics. (Sci-L; 5 4 cr; prereq 1102, Math 2401 or #; spring, every year)

Special relativity, quantum nature of matter and radiation, Bohr-Sommerfeld atom, atomic spectra, uncertainty principle, Schrodinger equation, hydrogen atom, electron spin, Pauli principle, and periodic table, ~~radioactivity, fission and fusion of nuclei, properties of nuclei.~~ (4 3 hrs lect, 3 hrs lab)

Rationale for change: The course credits are being decreased from 5 to 4 because some of the course material is being removed. New courses are being created that will better incorporate that material into the physics curriculum.

Course Revision #4

PHYS 2201–Circuits and Electronic Devices. (Sci-L; 4 cr; prereq 1102 or #; spring, ~~every year~~ even years)

A hands-on practical course in electronics. Analog electronics including AC and DC circuit analysis, passive circuit elements, pn junctions, transistors, and op-amp circuits. Digital electronics including combinational logic, sequential logic, ~~memory, CPU,~~ and ~~assembly programming~~ microprocessors. (3 hrs lect, 3 hrs lab)

Rationale for change: Changing the frequency of offering to alternate years will allow new courses to be offered and additional lab sections to be created to accommodate increasing enrollment in introductory courses.

Course Revision #5

PHYS 3003—Computer Modeling of Materials. (Sci; 4 cr; prereq 1101, 1102; spring, ~~offered periodically~~ **even years**)

Focus on the description of materials as assemblies of microscopic particles, covering aspects of molecular dynamics simulations in various statistical ensembles. Skills in scientific programming, visualization and parallel programming are developed through a semester-long project in which students develop a series of molecular dynamics modules.

Rationale for change: The frequency of offering has been changed because we hope to offer the course on a regular schedule.

Course Revision #6

PHYS 3401—Experimental Physics. (Sci-L; 4 cr; prereq 2101; fall, ~~odd years~~ **even years**)

An introduction to modern experimental methods. (3 hrs lect, 3 hrs lab)

Rationale for change: The semester of offering is being changed to better balance teaching loads.

Course Revision #7

PHYS 4901—Senior Thesis I. (1 cr; prereq sr; ~~course begins in fall and runs all year~~; fall every year)

~~Capstone experience in physics, investigation of a selected topic of current interest in physics. Presentation of results orally and in writing.~~ **Capstone experience in physics. Students will work with recent journal articles in physics, practice technical writing, and identify a thesis topic.**

Rationale for change: Phys 2101 modern physics is being reduced from 5 cr to 4 cr and that credit is being added to senior thesis. The extra credit will allow the senior thesis course to be split into two one-credit courses with some additional writing practice now incorporated into the first course.

Course Revisions #8-9

PHYS 4101—Electromagnetism. (~~Sci~~; 4 cr; prereq 2101, Math 2101 or #; fall, odd years)

PHYS 4201—Quantum Mechanics. (~~Sci~~; 4 cr; prereq 2101, Math 2101; spring, every year)

Rationale for changes 8-9: GER requirement removed because it is met by prereqs for the course.

Course Deletion #1

~~**PHYS 1061—Physics of Sound and Music.** (Sci; 4 cr; fall, offered periodically)~~

~~Wave characteristics, sound properties, resonance, the human voice and hearing, basic musical instruments, analysis and synthesis of complex waves, acoustics.~~

Rationale for change: Course is being inactivated because there is no plan to offer this course in the next several years.

Course Deletion #2

~~**PHYS 2302—The Physics of Sustainable Energy.** (Envt; 4 cr; A-F only; prereq 1091 or 1101; spring, odd years)~~

~~Introduction to the physics necessary to quantify aspects of energy generation, transport, and consumption. These tools are used to analyze the feasibility of meeting energy demands with renewable energy sources. Content is designed for students interested in the environmental sciences and is centered on renewable energy, consumption, and potential environmental costs.~~

Rationale for change: The faculty sponsor for this course has left UMM.

Course Deletion #3

~~**PHYS 3002—Biological and Medical Physics.** (Sci; 4 cr; prereq 1101, 1102; 2101 recommended; fall, odd years)~~

~~Selected topics in biophysics with an emphasis on modern medical imaging techniques. Biophysical topics include fluid flow in cardiovascular systems, molecular transport, and the nervous system. Physics techniques covered include electrocardiography, microscopy, x ray imaging, magnetic resonance imaging, ultrasound imaging, computer tomography, and image reconstruction.~~

Rationale for change: The faculty sponsor for this course has left UMM.

Course Deletion #4

~~**PHYS 3005—Journal Club II.** (1 cr [max 2 cr]; A-F only; prereq 1101, 1102; fall, every year)~~

~~Introduction to current physics research topics not typically found in the standard physics curriculum. Investigation into one of these topics and a short public presentation. Exposes students investigating physics as a possible major or minor to presentation and literature searching techniques and helps build skills necessary for senior seminar.~~

Rationale for change: The journal club course will be taught at the 1xxx level only.

PHYS 1801 - NEW COURSE PROPOSAL

| | |
|---------------------------------|---|
| Approvals Received: | Department on 08-31-12by Carol Ford (fordcj@umn.edu) |
| Approvals Pending: | Curriculum Committee > Campus Assembly > Catalog |
| <u>Effective Status:</u> | Active |
| <u>Effective Term:</u> | 1139 - Fall 2013 |
| <u>Course:</u> | PHYS 1801 |
| Institution: | UMNMO - Morris |
| Campus: | UMNMO - Morris |
| <u>Career:</u> | UGRD |
| <u>College:</u> | MDSM - Division of Science and Mathematics |
| <u>Department:</u> | 10565 - UMM-Sci & Math, Div of-Adm |

General

| | |
|--|--|
| <u>Course Title Short:</u> | Energy Science |
| <u>Course Title Long:</u> | Energy Science |
| <u>Max-Min Credits for Course:</u> | 2.0 to 2.0 credit(s) |
| <u>Catalog Description:</u> | A scientific and quantitative look at the production and consumption of energy. We will examine the scientific foundations of numerous sources of energy and evaluate the potential for each to satisfy the world's appetite for energy. |
| <u>Print in Catalog?:</u> | Yes |
| Additional Course Information (for catalog production): | <no text provided> |
| <u>Grading Basis:</u> | Stdnt Opt |
| <u>Honors Course:</u> | No |
| <u>Delivery Mode(s):</u> | Classroom |
| <u>Years most frequently offered:</u> | Other frequency |
| <u>Term(s) most frequently offered:</u> | Fall |
| <u>Component 1:</u> | LEC (with final exam) |
| <u>Auto-Enroll Course:</u> | No |
| <u>Graded Component:</u> | LEC |
| <u>Academic Progress Units:</u> | Not allowed to bypass limits. 2.0 credit(s) |
| <u>Financial Aid</u> | Not allowed to bypass limits. |

| | |
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| <u>Progress Units:</u> | 2.0 credit(s) |
| <u>Repetition of Course:</u> | Repetition not allowed. |
| <u>Course Prerequisites for Catalog:</u> | new college student in their first semester of enrollment at UMM |
| <u>Course Equivalency:</u> | No course equivalencies |
| <u>Consent Requirement:</u> | No required consent |
| <u>Enforced Prerequisites:</u> (course-based or non-course-based) | 003242 - new college student in their first semester of enrollment at UMM |
| <u>Editor Comments:</u> | <no text provided> |
| <u>Proposal Changes:</u> | <no text provided> |
| <u>History Information:</u> | <no text provided> |
| Assessment and Goals: | <no text provided> |
| <u>Rationale for Changes or Exceptions:</u> | AN IC COURSE ON A TOPIC OF CURRENT INTEREST. |

General Education

| | |
|---|--------------------------------|
| <u>Faculty Sponsor Name:</u> | Michael Korth |
| <u>Requirement this course fulfills:</u> | IC (IC) Intellectual Community |

| | |
|------------------------------|---------------------------|
| Provisional Approval: | Not Requested |
| Regular Approval: | Requested on May 17, 2012 |

PHYS 3151 - NEW COURSE PROPOSAL

| | |
|---------------------------------|---|
| Approvals Received: | Department on 08-31-12 by Carol Ford (fordej@umn.edu) |
| Approvals Pending: | Curriculum Committee > Campus Assembly > Catalog |
| <u>Effective Status:</u> | Active |
| <u>Effective Term:</u> | 1139 - Fall 2013 |
| <u>Course:</u> | PHYS 3151 |
| Institution: | UMNMO - Morris |
| Campus: | UMNMO - Morris |
| <u>Career:</u> | UGRD |
| <u>College:</u> | MDSM - Division of Science and Mathematics |
| <u>Department:</u> | 10565 - UMM-Sci & Math, Div of-Adm |

General

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|--|---|
| <u>Course Title Short:</u> | Solid State Physics |
| <u>Course Title Long:</u> | Solid State Physics |
| <u>Max-Min Credits for Course:</u> | 2.0 to 2.0 credit(s) |
| <u>Catalog Description:</u> | An introduction to crystal lattices, Bravais lattices, electronic band structure in metals and semi-metals, cohesive energy of solids, phonon structure, magnetic properties. |
| <u>Print in Catalog?:</u> | Yes |
| Additional Course Information (for catalog production): | <no text provided> |
| <u>Grading Basis:</u> | Stdnt Opt |
| <u>Honors Course:</u> | No |
| <u>Delivery Mode(s):</u> | Classroom |
| <u>Years most frequently offered:</u> | Odd years only |
| <u>Term(s) most frequently offered:</u> | Fall |
| <u>Component 1:</u> | LEC (with final exam) |
| <u>Auto-Enroll Course:</u> | No |
| <u>Graded Component:</u> | LEC |
| <u>Academic Progress Units:</u> | Not allowed to bypass limits. 2.0 credit(s) |

| | |
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| <u>Financial Aid Progress Units:</u> | Not allowed to bypass limits. 2.0 credit(s) |
| <u>Repetition of Course:</u> | Repetition not allowed. |
| <u>Course Prerequisites for Catalog:</u> | 2101, Math 2101 |
| <u>Course Equivalency:</u> | No course equivalencies |
| <u>Consent Requirement:</u> | No required consent |
| <u>Enforced Prerequisites:</u> (course-based or non-course-based) | No prerequisites |
| <u>Editor Comments:</u> | <no text provided> |
| <u>Proposal Changes:</u> | <no text provided> |
| <u>History Information:</u> | <no text provided> |
| Assessment and Goals: | <no text provided> |
| <u>Rationale for Changes or Exceptions:</u> | THE PHYSICS DISCIPLINE IS EXPANDING THE OFFERINGS OF ELECTIVES BY DESIGNING A SERIES OF TWO-CREDIT COURSES. SOLID STATE PHYSICS OFFERS MATERIAL THAT MANY STUDENTS DO NEED FOR THEIR SENIOR THESIS, AS WELL AS FOR ANY PROFESSIONS IN THE MATERIAL SCIENCES. |

General Education

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|---|---------------------------|
| <u>Faculty Sponsor Name:</u> | Sylke Boyd |
| <u>Requirement this course fulfills:</u> | |
| Provisional Approval: | Not Requested |
| Regular Approval: | Requested on May 17, 2012 |

PHYS 3152 - NEW COURSE PROPOSAL

| | |
|----------------------------|---|
| Approvals Received: | Department on 08-31-12 by Carol Ford (fordcj@umn.edu) |
| Approvals Pending: | Curriculum Committee > Campus Assembly > Catalog |
| Effective Status: | Active |
| Effective Term: | 1139 - Fall 2013 |
| Course: | PHYS 3152 |
| Institution: | UMNMO - Morris |
| Campus: | UMNMO - Morris |
| Career: | UGRD |
| College: | MDSM - Division of Science and Mathematics |
| Department: | 10565 - UMM-Sci & Math, Div of-Adm |

General

| | |
|--|---|
| Course Title Short: | Particle and Nuclear Physics |
| Course Title Long: | Particle and Nuclear Physics |
| Max-Min Credits for Course: | 2.0 to 2.0 credit(s) |
| Catalog Description: | Leptons, baryons, quarks, the weak interaction, the strong interaction, the Standard Model, Feynman diagrams, nuclear stability, the shell model, decay modes, nuclear reactions. |
| Print in Catalog?: | Yes |
| Additional Course Information (for catalog production): | <no text provided> |
| Grading Basis: | Stdnt Opt |
| Honors Course: | No |
| Delivery Mode(s): | Classroom |
| Years most frequently offered: | Odd years only |
| Term(s) most frequently offered: | Spring |

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| <u>Component 1:</u> | LEC (with final exam) |
| <u>Auto-Enroll Course:</u> | No |
| <u>Graded component:</u> | LEC |
| <u>Academic Progress Units:</u> | Not allowed to bypass limits. 2.0 credit(s) |
| <u>Financial Aid Progress Units:</u> | Not allowed to bypass limits. 2.0 credit(s) |
| <u>Repetition of Course:</u> | Repetition not allowed. |
| <u>Course Prerequisites for Catalog:</u> | 2101, Math 2101 |
| <u>Course Equivalency:</u> | No course equivalencies |
| <u>Consent Requirement:</u> | No required consent |
| <u>Enforced Prerequisites:</u> (course-based or non-course-based) | No prerequisites |
| <u>Editor Comments:</u> | <no text provided> |
| <u>Proposal Changes:</u> | <no text provided> |
| <u>History Information:</u> | <no text provided> |
| <u>Assessment and Goals:</u> | <no text provided> |
| <u>Rationale for Changes or Exceptions:</u> | THE PHYSICS DISCIPLINE IS RESTRUCTURING ITS ELECTIVES TO OFFER MORE CHOICES TO STUDENTS WHILE STILL MANAGING INCREASING ENROLLMENTS IN 1XXX-LEVEL COURSES. ELEMENTARY PARTICLES AND NUCLEAR PHYSICS ARE IMPORTANT TOPICS IN PHYSICS THAT HAVE NOT BEEN PART OF OUR CURRICULUM IN THE PAST. |

General Education

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|---|---------------------------|
| <u>Faculty Sponsor Name:</u> | Michael Korth |
| <u>Requirement this course fulfills:</u> | |
| <u>Provisional Approval:</u> | Not Requested |
| <u>Regular Approval:</u> | Requested on May 17, 2012 |

PHYS 3153 - NEW COURSE PROPOSAL

| | |
|----------------------------|---|
| Approvals Received: | Department on 08-31-12 by Carol Ford (fordcj@umn.edu) |
| Approvals Pending: | Curriculum Committee > Campus Assembly > Catalog |
| Effective Status: | Active |
| Effective Term: | 1139 - Fall 2013 |
| Course: | PHYS 3153 |
| Institution: | UMNMO - Morris |
| Campus: | UMNMO - Morris |
| Career: | UGRD |
| College: | MDSM - Division of Science and Mathematics |
| Department: | 10565 - UMM-Sci & Math, Div of-Adm |

General

| | |
|--|--|
| Course Title Short: | Cosmology |
| Course Title Long: | Cosmology |
| Max-Min Credits for Course: | 2.0 to 2.0 credit(s) |
| Catalog Description: | The geometry of the universe, cosmological models, observational parameters, the age of the universe, dark matter, the cosmic microwave background, nucleosynthesis, inflation, dark energy. |
| Print in Catalog?: | Yes |
| Additional Course Information (for catalog production): | <no text provided> |
| Grading Basis: | Stdnt Opt |
| Honors Course: | No |
| Delivery Mode(s): | Classroom |
| Years most frequently offered: | Odd years only |
| Term(s) most frequently offered: | Spring |
| Component 1: | LEC (with final exam) |
| Auto-Enroll Course: | No |

| | |
|--|--|
| <u>Graded Component:</u> | LEC |
| <u>Academic Progress Units:</u> | Not allowed to bypass limits. 2.0 credit(s) |
| <u>Financial Aid Progress Units:</u> | Not allowed to bypass limits. 2.0 credit(s) |
| <u>Repetition of Course:</u> | Repetition not allowed. |
| <u>Course Prerequisites for Catalog:</u> | 2101 |
| <u>Course Equivalency:</u> | No course equivalencies |
| <u>Consent Requirement:</u> | No required consent |
| <u>Enforced Prerequisites:</u> (course-based or non-course-based) | No prerequisites |
| <u>Editor Comments:</u> | <no text provided> |
| <u>Proposal Changes:</u> | <no text provided> |
| <u>History Information:</u> | <no text provided> |
| Assessment and Goals: | <no text provided> |
| <u>Rationale for Changes or Exceptions:</u> | THE PHYSICS DISCIPLINE IS EXPANDING THE OFFERINGS OF ELECTIVES BY DESIGNING A SERIES OF TWO-CREDIT COURSES. COSMOLOGY IS AN AREA OF ACTIVE RESEARCH AND INTEREST TO MANY STUDENTS. |

General Education

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|---|-----------------|
| <u>Faculty Sponsor Name:</u> | Gordon McIntosh |
| <u>Requirement this course fulfills:</u> | |

| | |
|------------------------------|---------------------------|
| Provisional Approval: | Not Requested |
| Regular Approval: | Requested on May 17, 2012 |

PHYS 4902 - NEW COURSE PROPOSAL

| | |
|----------------------------|---|
| Approvals Received: | Department on 08-31-12 by Carol Ford (fordcj@umn.edu) |
| Approvals Pending: | Curriculum Committee > Campus Assembly > Catalog |
| Effective Status: | Active |
| Effective Term: | 1139 - Fall 2013 |
| Course: | PHYS 4902 |
| Institution: | UMNMO - Morris |
| Campus: | UMNMO - Morris |
| Career: | UGRD |
| College: | MDSM - Division of Science and Mathematics |
| Department: | 10565 - UMM-Sci & Math, Div of-Adm |

General

| | |
|--|--|
| Course Title Short: | Senior Thesis II |
| Course Title Long: | Senior Thesis II |
| Max-Min Credits for Course: | 1.0 to 1.0 credit(s) |
| Catalog Description: | Students will develop and present their senior theses orally and in writing. |
| Print in Catalog?: | Yes |
| Additional Course Information (for catalog production): | <no text provided> |
| Grading Basis: | Stdnt Opt |
| Honors Course: | No |
| Delivery Mode(s): | Classroom |
| Years most frequently offered: | Every academic year |
| Term(s) most frequently offered: | Spring |
| Component 1: | SEM (no final exam) |

| | |
|---|---|
| Auto-Enroll Course: | No |
| Graded Component: | SEM |
| Academic Progress Units: | Not allowed to bypass limits. 1.0 credit(s) |
| Financial Aid Progress Units: | Not allowed to bypass limits. 1.0 credit(s) |
| Repetition of Course: | Repetition not allowed. |
| Course Prerequisites for Catalog: | 4901 |
| Course Equivalency: | No course equivalencies |
| Consent Requirement: | No required consent |
| Enforced Prerequisites (course-based or non-course-based) | No prerequisites |
| Editor Comments: | <no text provided> |
| Proposal Changes: | <no text provided> |
| History Information: | <no text provided> |
| Assessment and Goals: | <no text provided> |
| Rationale for Changes or Exceptions: | PHYS 2101 MODERN PHYSICS IS BEING REDUCED FROM 5 CR TO 4 CR AND THAT CREDIT IS BEING ADDED TO SENIOR THESIS. THE EXTRA CREDIT WILL ALLOW THE SENIOR THESIS COURSE TO BE SPLIT INTO TWO ONE-CREDIT COURSES. THE SECOND COURSE INCLUDES THE ACTUAL THESIS WRITING AND PRESENTATION. |

General Education

| | |
|---|---------------------------|
| Faculty Sponsor Name: | Michael Korth |
| Requirement this course fulfills: | |
| Provisional Approval: | Not Requested |
| Regular Approval: | Requested on Aug 20, 2012 |

Multiple Course Revisions

USE FOR CATALOG YEAR CHANGES ONLY

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 Department and Discipline approval has been received.

Date: September 10, 2012

Discipline: **Statistics (STAT)**

Curriculum Committee Approval Date: 9/13/12

Course Revision #1

STAT 3501–Survey Sampling. (M/SR; 4 cr; prereq 1601 or 2601 or #; fall, ~~summer~~, even years)

Introduction to basic concepts and theory of designing surveys. Topics include sample survey designs including simple random sampling, stratified random sampling, cluster sampling, systemic sampling, multistage and two-phase sampling including ratio and regression estimation, Horvitz-Thomson estimation, questionnaire design, non-sampling errors, missing value-imputation method, sample size estimation, and other topics related to practical conduct of surveys.

Rationale for change: Change reflects that this course is no longer offered during summer session.

Course Revision #2

STAT 4681–Introduction to Time Series Analysis. (~~M/SR~~; 4 cr; prereq 3601 or #; fall, ~~summer~~, odd years)

Introduction to the analysis of time series including those with a connection to environment such as spatial and spatio-temporal statistics. Randomness test, ARMA, ARIMA, spectral analysis, models for stationary and non-stationary time series, seasonal time series models, conditional heteroscedastic models, spatial random processes, covariance functions and variograms, interpolation and kriging.

Rationale for change: Change reflects that this course is no longer offered in summer. GER requirement removed because prereq fulfills it.

Course Revisions #3-8

STAT 4601–Biostatistics. (~~M/SR~~; 4 cr; prereq 1601 or #; spring, offered periodically)

STAT 4611–Statistical Consulting. (~~M/SR~~; 4 cr; prereq 3601, 3611; fall, spring, offered periodically)

STAT 4631–Design and Analysis and Experiments. (~~M/SR~~; 4 cr; prereq 3601 or #; fall, spring, offered periodically)

STAT 4651–Applied Nonparametric Statistics. (~~M/SR~~; 4 cr; prereq 1601 or 2601 or 2611 or #; fall, spring, offered periodically)

STAT 4671–Statistical Computing. (~~M/SR~~; 4 cr; prereq 1601 or 2601 or 2611 or #; summer, offered periodically)

STAT 4901–Senior Seminar. (~~M/SR~~; 1 cr; prereq sr; fall, every year)

Rationale for changes 3-8: GER requirement removed because the prereq fulfills it.