Call to order: A quorum being present, the chair called the meeting to order at 3:32 p.m. in the SUB Cataldo room. The minutes of the October 21st, 2013 meeting were approved.

Other Business:

Old Business:

- Committee chair Folwell introduced the proposed change from Geography. Committee member Vierling noted that CNR has talked with Geography and has no concerns about the course and fully supports it. Hearing no questions the motion to approve the proposed changes passed unanimously.

  1. Add the following course [Effective: Summer 2014]

      **Geog 402 GIS Skills Development (1 cr, max 6)**

      Hands-on skills development in GIS and related technologies. Primary topics vary by semester, but may include topics such as GPS/GIS integration, server GIS and cartographic design. May be taken for credit multiple times.

New Business:

**UCC-14-029 College of Natural Resources**

**Conservation Social Sciences:** It was motioned and seconded to approve of the proposed changes to Conservation Social Sciences. Committee member Vierling reviewed the proposed changes. Hearing no questions the motion to approve the proposed changes passed unanimously.

  1. Add the following course [Effective: Summer 2014]

      **CSS 593 PR and Communications in Natural Resource Management (3 cr)**

      Key concepts, principles and practices of good public relations, clear communications, and proactive social marketing in the context of natural resource management; practical applications and skills development for increased effectiveness of resource management professionals through case studies and related exercises focused on communication skills, IT tools, media relations, social marketing, and public involvement.

      Recommended Short Course Title: PR/Communication in Res Mgt

  2. Change the curricular requirements of **Natural Resource Conservation** (B.S. Nat. Resc. Consv.) [Effective: Summer 2014]

      Required course work includes the university requirements (see regulation J-3) and:

      CSS 235  Society and Natural Resources (3 cr)
      CSS 287  Foundations of Conservation Leadership and Management (taken simultaneously with NR 101) (3 cr)
      CSS 383  Natural Resource and Ecosystem Service Economics (3 cr)
      CSS 387  Environmental Communication Skills (3 cr)
      Econ 202  Principles of Microeconomics (3 cr)
      For 375  Introduction to Spatial Analysis for Natural Resource Management (3 cr)
      NR 101  Exploring Natural Resources (taken simultaneously with CSS 287) (1 cr)
      Stat 251  Statistical Methods (3 cr)

      One writing course, such as Engl 207, Engl 208, Engl 313, Engl 316, Engl 317 (3 cr)

      One of the following (3 cr):
      For 221  Ecology (3 cr)
      REM 221  Ecology (3 cr)
One of the following (3-4 cr):
Math 143 Pre-calculus Algebra and Analytic Geometry (3 cr)
Math 160 Survey of Calculus (4 cr)
Math 170 Analytic Geometry and Calculus I (4 cr)

And one of the following emphases:

**A. Conservation Planning and Management Emphasis**
Students must attend one, two-week long field studies course during summer session. Special fees are required for this and a few other courses. To graduate a student must earn an average GPA 2.30 or higher in all CSS courses.

CSS 304 Conservation Social Sciences Field Studies (3 cr)
CSS 310 Social Research Methods in Conservation (4 cr)
CSS 364 Politics of the Environment (3 cr)
CSS 385 Conservation Management and Planning I (4 cr)
CSS 475 Conservation Management and Planning II (4 cr)
CSS 486 Public Involvement in Natural Resource Management (3 cr)
CSS 489 Personalities and Philosophies in Conservation (3 cr)

One of the following (4 cr):
Biol 102, Biol 102L Biology and Society and Lab (4 cr)
Biol 115 Cells and the Evolution of Life (4 cr)

One of the following (2-4 cr):
Comm 101 Fundamentals of Public Speaking (2 cr)
One semester of a foreign language course

One of the following (3 cr):
PolS 101 Intro to Political Science and American Government (3 cr)
PolS 275 American State and Local Government (3 cr)

One of the following (4 cr):
Chem 101 Introduction to Chem I (4 cr)
Chem 111 Principles of Chem I (4 cr)
Geol 101, Geol 101L Physical Geology and Lab (4 cr)

One of the following (3 cr):
For 326 Fire Ecology and Management (3 cr)
For 426 Global Fire Ecology and Management (3 cr)
REM 459, REM 460 Integrating GIS and Field Studies in Rangelands (2 cr); and Rangeland Ecology
REM 460 Integrating GIS and Field Studies in Rangelands (2 cr); and Rangeland Ecology
WLF 314 Wildlife Ecology I (3 cr)

Two of the following (6 cr):
CSS 490 Wilderness and Protected Area Management (3 cr)
CSS 493 International Land Preservation and Conservation Systems (3 cr)
LArch 480 The Emerging Landscape (3 cr)
WLF 440 Conservation Biology (3 cr)

Two of the following (6 cr):
Anth 100 Introduction to Anthropology (3 cr)
Psyc 101 Introduction to Psychology (3 cr)
Soc 101 Introduction to Sociology (3 cr)

12 credits (if not chosen above) from the following, in at least 2 disciplines with at least 2 courses in one discipline:
AgEc 477 Law, Ethics, and the Environment (3 cr)
Anth 428 Social and Political Organization (3 cr)
Bus 321 Marketing (3 cr)
Comm 410 Conflict Management (3 cr)
CSS 462 Natural Resource Policy (3 cr)
CSS 487 Environmental Education (3 cr)
CSS 490 Wilderness and Protected Area Management (3 cr)
CSS 492 Ecotourism Principles and Issues (3 cr)
CSS 493 International Land Preservation and Conservation Systems (3 cr)
CSS 496 Monitoring Impacts in Protected Areas and Wilderness (3 cr)
CSS 498 Internship (3-6 cr)
Geog 360 Population Dynamics and Distribution (3-4 cr)
Hist 423 Idaho and the Pacific Northwest (3 cr)
Hist 424  American Environmental History (3 cr)
JAMM 350  Public Relations Writing and Production (3 cr)
JAMM 444  Mass Media and Public Opinion (3 cr)
Phil 452  Environmental Philosophy (3 cr)
PoIS 451  Public Administration (3 cr)
PoIS 453  Public Management Techniques (3 cr)
PoIS 454  Public Organization Theory (3 cr)
PoIS 473  Sustainable Community Development Planning (3 cr)
PoIS 480  Politics of Development (3 cr)
Psyc 320  Introduction to Social Psychology (3 cr)
Psyc 325  Cognitive Psychology (3 cr)
Soc 313  Collective Behavior (3 cr)
Soc 343  Political Sociology (3 cr)

Courses to total 120 credits for this degree

B. Conservation Science Emphasis

To graduate a student must earn an average GPA of 2.00 or higher in all courses taught in the College of Natural Resources and complete an approved professional work experience in natural resources.

One of the following (4 cr):
Biol 115  Cells and the Evolution of Life (4 cr)
Biol 116  Organisms and Environments (4 cr)

One of the following (4 cr):
Chem 101  Introduction to Chem I (4 cr)
Chem 111  Principles of Chem I (4 cr)

One of the following (4 cr):
CSS 364  Politics of the Environment (3 cr)
CSS 462  Natural Resource Policy (3 cr)

One of the following (4 cr):
CSS 385  Conservation Management and Planning I (4 cr)
CSS 490  Wilderness and Protected Area Management (3 cr)

Natural Resource Science Restricted Electives (33 cr), at least 15 cr must be at the 400-level:

Fishery Science (6 cr):
Fish 314  Fish Ecology (3 cr)
Fish 315  Fish Ecology Lab (1 cr)
Fish 316  Principles of Population Dynamics (2 cr)
Fish 415  Limnology (4 cr)
Fish 418  Fisheries Management (4 cr)
Fish 422  Concepts in Aquaculture (3 cr)
Fish 424  Fish Health Management (4 cr)
Fish 430  Riparian Ecology and Management (3 cr)

Fire Ecology and Management (3 cr):
For 326  Fire Ecology and Management (3 cr)
For 426  Global Fire Ecology and Management (3 cr)
For 433  Fire and Fuel Modeling (2 cr)
For 450  Fire Behavior (2 cr)
For 454  Air Quality and Smoke Management (3 cr)

Forestry (6 cr):
For 320  Dendrology (4 cr)
For 324  Forest Regeneration (3 cr)
For 330  Forest Soil and Canopy Processes (4 cr)
For 373  Forestry Sampling Methods (2 cr)
For 424  Forest Dynamics and Management (4 cr)
For 425  Forest and Soil Nutrient Cycling (3 cr)
For 430  Forest Operations (3 cr)
For 431  Low Volume Forest Roads (2 cr)
For 436  Cable Systems (2 cr)
For 462  Watershed Science and Management (3 cr)
For 468  Forest and Plant Pathology (2 cr)
For 472  Remote Sensing of the Environment (4 cr)

Renewable Materials (6 cr):
RMat 321  Properties of Renewable Materials (3 cr)
RMat 365  Wood Building Technology (3 cr)
RMat 436  Biocomposites (3 cr)
RMat 438  Introduction to Lignocellulosic Chemistry (1 cr)
RMat 444  Primary Products Manufacturing (3 cr)
RMat 450  Biomaterials Deterioration and Protection (2 cr)
RMat 491  Biomaterial Product and Process Development Lab (2 cr)
RMat 495  Product Development and Brand Management (3 cr)

Rangeland Ecology and Management (6 cr):
REM 341  Systematic Botany (3 cr)
REM 410  Principles of Vegetation Measurement and Assessment (2 cr)
REM 411  Rangeland Ecology Current Topics and Field Studies (1 cr)
REM 440  Wildland Restoration Ecology (3 cr)
REM 452  Western Wildland Landscapes (2 cr)
REM 456  Integrated Rangeland Management (3 cr)
REM 459  Rangeland Ecology (2 cr)
REM 460  Integrating GIS and Field Studies in Rangelands (1-2 cr)
REM 472  Remote Sensing of the Environment (3-4 cr)

Wildlife Science (6 cr):
WLF 314  Wildlife Ecology I (3 cr)
WLF 315  Wildlife Ecology I Laboratory (1 cr)
WLF 316  Wildlife Ecology II (4 cr)
WLF 440  Conservation Biology (3 cr)
WLF 448  Fish and Wildlife Population Ecology (4 cr)
WLF 482  Ornithology (4 cr)
WLF 492  Wildlife Management (4 cr)

Courses to total 120 credits for this degree

3. Change the curricular requirements of Environmental Education (GR Academic Certificate) [Effective: Summer 2014]

CSS 481  Conservation Leadership (3 cr)
CSS 559  Writing Research and Project Proposals (1 cr)
CSS 560  Community Ecology for Env. Educators (3 cr)
CSS 561  Ecological Inquiry for Environmental Educators (2 cr)
CSS 562  Field Science Teaching (2 cr)
CSS 563  Place Based Env. Education (3 cr)
CSS 566  Adv. Field Ecology Course Design (5 cr)
CSS 567  Environmental Education Teaching Practicum I (2 cr)
CSS 568  Environmental Education Teaching Practicum II (1 cr)
CSS 569  Environmental Education Teaching Practicum III (2 cr)
CSS 575  Leadership for the Environmental Educator (2 cr)

Courses to total 12-22 credits for this certificate

Fish and Wildlife Sciences: It was motioned and seconded to approve of the proposed changes to Fish and Wildlife Sciences. Committee member Vierling reviewed the proposed changes. Hearing no questions the motion to approve the proposed changes passed unanimously.

1. Change the following courses [Effective: Summer 2014]

WLF 561  Landscape Genetics (2 cr)
Landscape genetics is an interdisciplinary field of study that evaluates how landscape and environmental features influence gene flow, population structure and local adaptation by integrating landscape ecology, population genetics and spatial statistics. This course covers applications of landscape genetics that can improve our understanding of ecology, evolution, and management of wild populations. Recommended Preparation: Population genetics or conservation genetics, and multivariate or spatial statistics. Cooperative: open to WSU degree-seeking students. (Spring, alt/even yrs)

WLF 562  Landscape Genetics Lab (1-2 cr)
This optional lab course is a complement to WLF561 Landscape genetics and should be taken concurrently. Students will learn to analyze and interpret landscape genetic datasets using a variety of methods. If taken for two credits, students will do a project analyzing landscape genetic data. Recommended Preparation: Population genetics or conservation genetics, and multivariate or spatial statistics. Cooperative: open to WSU degree-seeking students. (Spring, alt/even yrs)

Coreq: WLF 561

Forest, Rangeland and Fire Sciences: It was motioned and seconded to approve of the proposed changes to Forest, Rangeland and Fire Sciences. Karen Launchbaugh reviewed the proposed changes. Committee chair Folwell asked what the differences between For 326 and For 426 are. Committee member Johnson asked is any other math courses would provide the requisite trigonometry besides Math 144. Launchbaugh indicated that would
have to be evaluated by the instructor on a case by case basis. Committee member Haagensen asked what would happen for a student who completed For 426 at a distance then choose to come to the UI and would then need For 326 as a prereq to many other Forest Resources courses. Launchbaugh indicated that is a topic currently being discussed in the college. Hearing no further questions the motion to approve the proposed changes passed unanimously.

1. Add the following courses [Effective: Summer 2014]

   **For 255 Nursery Irrigation and Fertilization (1 cr)**
   An introduction to nursery irrigation and fertilization practices commonly found in forest tree seedling and native plant nurseries. This course aims to provide some of the important theory behind the practices used every day in successful crop production. The course will be taught by faculty and staff at the UI Pitkin Forest Nursery and managed as part of the annual Position Description process. The course is developed and is presently offered online.
   
   Recommended Short Course Title: Nursery Irrigation/Fertilization

   **For 310 Indigenous Culture and Ecology (3 cr, max 9)**
   Students will explore how both endemic plant and animal species and native culture have been impacted by non-native species. A roughly 10 day field trip to remote communities requires active and effective participation, hands-on projects are conducted in those communities based on preparatory materials, and a there is a major presentation for Idaho stakeholders upon completion of the field trip.

   **REM 152 Rangeland Ecosystem Exploration (1 cr)**
   Students will explore the climates, plants, animals, and human communities of rangeland throughout North America and the globe. The grasslands, shrublands, woodlands, and deserts that are collectively called rangelands include extensive challenges and opportunities for management and conservation. Students will individually explore these ecosystems through photos, ecosystem descriptions, videos, and internet-based tools. In discussions and presentations, students will collectively share their findings about these incredible rangeland ecosystems. (Fall only)
   
   Recommended Short Course Title: Rangeland Ecosystem Explrtn

   **REM 280 Introduction to Wildland Restoration (2 cr)**
   History and overview of the ecological, social, and economic aspects of wildland restoration using case studies. Students will explore approaches and philosophies towards restoring and rehabilitating wildlands that have been damaged through natural forces and human activities such as wildfire, overgrazing, cultivation, and weed invasion.
   
   Recommended Short Course Title: Intro to Wildland Restoration

   **REM J480/J580 Ecological Restoration (3 cr)**
   Planning and implementing restoration projects in conjunction with land agencies and stakeholders. Includes service-learning projects. Field trip(s) required. Additional literature review, reports, discussion and/or a class project are required for students pursuing this as a 500-level course.
   
   Prereq: REM 440 or Permission

   **REM J495/J595 Teaching Practicum (1-3 cr, max arr)**
   Provides students with peer teaching experience and assisting an instructor. May include classroom activities, grading assignments, developing materials, and/or participating in field trips. Students who take this course as the graduate level, as REM 595, will be asked to do additional work related to developing a teaching philosophy, developing assessment, or experimenting with specific pedagogical approaches with the faculty supervisor.
   
   Prereq: Permission

2. Change the following courses [Effective: Summer 2014]

   **For 274 Forest Measurement and Inventory (3 cr)**
   Practical techniques for the design and execution of vegetation measurements for the inventory of forests, shrublands, and fire-fuels. Three one-hour lectures and one three-hour lab per week. (Fall only)
   
   Prereq or Coreq: Math 143; or SAT math score of 610 or above, or ACT math score of 27 or above.
   
   Coreq: Stat 251

   **For 426 Global Fire Ecology and Management (3 cr)**
   Credit may only be earned in For 326 or For 426, but not both. This course is only available to distance education students. Integrated fire-related ecological effects of fire on vegetation, soils, and air quality; natural and changing role of fire in forests, woodlands, shrublands and rangelands; influence of global change including climate and invasive species; fire as a management tool; application to current issues. One-day field trip. (Fall only)
   
   Prereq: For 221 or REM 221 and Instructor Permission
For 427 Prescribed Burning Lab (3 cr)
Planning, conducting and evaluating prescribed burns designed to accomplish natural resource management objectives. Sampling, models and analysis used in writing required fire use plan. 5 days of field trips; some on Saturdays. (Fall only)
Prereq: For 426, REM 244, and Senior standing; and Permission
Prereq or Coreq: For 426

For 430 Forest Operations (3 cr)
Overview of the primary equipment and harvesting systems used in modern forest operations, including field design, layout, and administration of timber sales, logging production and cost estimation, laws, and certification. A brief introduction to quantitative forest planning methods is also provided. There are 2-3 early morning trips and one Saturday field lab. (Fall only)
Prereq: Math 144, and Phys 100/100L or Phys 111/111L
Prereq or Coreq: Math 144

For 431 Low Volume Forest Roads (2 cr)
Design and field layout of access roads for forest management, through a combination of field labs and use of modern, GIS-based forest road engineering software. Field study includes design of at least one current industry or agency forest road design project. There are 2-3 early morning trips and one Saturday field lab. (Fall, Alt/yrs)
Prereq or Coreq: Math 144
Coreq: For 430 or permission

For 436 Cable Systems (2 cr)
Overview of the major cable logging systems. Trigonometry and physical mechanics of cable systems, including analysis of forces, tensions, and payload capacity. Field layout and analysis of cable corridors using small yoders on the UI Experimental Forest using integrated field planning and GIS-based cable system design software. There are 2-3 early morning trips and one Saturday field lab. (Fall, Alt/yrs)
Prereq or Coreq: Math 144
Coreq: For 430 or permission

For 450 Fire Behavior (2 cr)
Understand the physical and chemical processes controlling combustion and fire behavior. Gain in-depth knowledge of commonly-used, point-scale fire behavior models and tools, including key assumptions and limitations. Critically review and discuss scientific literature, current topics, and case studies. Lab sessions include designing and undertaking small-scale fire behavior experiments, developing simple quantitative models, and a field trip.
Prereq: For 426, and Math 144, and Phys 100/100L or Phys 111/111L
Coreq: For 433

For 451 Fuels Inventory and Management (3 cr)
Tools, quantitative analysis, and approaches for inventory and management of fuels for wildland fires over large, diverse areas in forests, woodlands, shrublands, and grasslands. Critically review and synthesize relevant scientific literature. Field trips.
Prereq: For 375, REM 244 and For 274 or REM 411
Coreq: For 450

For J454/J554 Air Quality and Smoke Management (3 cr)
Assessment of the controls and drivers of emission processes and impacts on air quality from agricultural, prescribed, and wildfires. Overview of the combustion and emission process, how these emissions impact the ‘quality of air’, and what models exist to monitor the emission. Other topics to include: recent EPA and other guidelines for smoke management planning, attainment issues, collaborative process for implementing smoke management plans. Additional work required for graduate credit.
Prereq: For 426

REM 460 Rangeland Ecology Current Topics Integrating GIS and Field Studies in Rangelands (1-2 cr)
Discussion of topics related to changing knowledge and technology to GIS and spatial analysis relevant to ecology of grasslands, shrublands and woodlands. Min. five-six integrated GIS labs and discussion classes; one five-day field trip. Required for REM majors. (Fall only)
Coreq: REM 459

Recommended Short Course Title: Rangeland GIS & Field Studies

RMat 438 Introduction to Lignocellulosic Chemistry (1 cr)
The chemistry of lignocellulosic fiber (natural fiber and wood) formation and structure. Two lectures a week for the first half of the semester. This course meets concurrently with RMat 538. (Spring only)
Prereq: Chem 101 or Chem 111; and Chem 275 or Chem 277

RMat J436/J536 Biocomposites (3 cr)
Raw material, processes, properties, and their applications for a number of natural fiber and wood composites made of veneers, particles and fibers. Additional projects and assignments reqd for grad cr. Two half day field trips. Two lectures and one 3-hr lab a week. Recommended Preparation: RMat 321. REM 536 only; Cooperative: open to WSU degree-seeking students. (Fall only)
Prereq: Chem 101 and RMat 321; and Chem 275 or Chem 277

RMat 538 Lignocellulosic Biomass Chemistry (3 cr)
The chemistry of lignocellulosic fiber (natural fiber and wood) formation, agricultural/natural fiber and wood structure and reactions of lignocellulosic compounds. Two lec and one 3-hr lab a wk. Recommended Preparation: Chem 101, Chem 275, and RMat 321. Cooperative: open to WSU degree-seeking students. (Spring only)
Prereq: Chem 101 and RMat 321; and Chem 275 or Chem 277

3. Change the curricular requirements of Forest Resources (B.S.For.Res.) [Effective: Summer 2014]

Students pursuing a B.S. degree in forest resources must receive a grade of C or better in the following indicator courses to register for upper-division courses in forest resources and to graduate with a B.S.For.Res.: Math 143, Stat 251, For 221, and For 274. Students must also have a minimum cumulative grade-point average of 2.00 in forest resource (For) courses to qualify for the B.S. degree in forest resources.

Required course work includes the university requirements (see regulation J-3) and:

- Biol 115 Cells and the Evolution of Life (4 cr)
- CSS 383 Natural Resource and Ecosystem Service Economics (3 cr)
- Econ 202 Principles of Microeconomics (3 cr)
- For 102 Introduction to Forest Management (1 cr)
- For 235 or CSS 235 Society and Natural Resources (3 cr)
- Ent 469 Introduction to Forest Insects (2 cr)
- For 274 Forest Measurement and Inventory (3 cr)
- For 320 Dendrology (4 cr)
- For 324 Forest Regeneration (3 cr)
- For 330 Forest Soil and Canopy Processes (4 cr)
- For 373 Forestry Sampling Methods (2 cr)
- For 375 Introduction to Spatial Analysis for Natural Resource Management (3 cr)
- For 424 Forest Dynamics and Management (4 cr)
- For 430 Forest Operations (3 cr)
- For 462 Watershed Science and Management (3 cr)
- For 430 Forest Operations (3 cr)
- For 468 Forest and Plant Pathology (2 cr)
- For 484 Forest Policy and Administration (2 cr)
- Math 143 Pre-calculus Algebra and Analytic Geometry (3 cr)*
- Math 144 Analytic Trigonometry (1 cr)
- NR 101 Exploring Natural Resources (1 cr)
- Soil 205, 206 The Soil Ecosystem and Lab (4 cr)
- Stat 251 Statistical Methods (3 cr)

One of the following (4 cr):
- Biol 116 Organisms and Environments (4 cr)
- PItSc 205 General Botany (4 cr)

One of the following (4 cr):
- Chem 101 Introduction to Chem I (4 cr)
- Chem 111 Principles of Chem I (4 cr)

One of the following (3 cr):
- Engl 313 Business Writing (3 cr)
- Engl 317 Technical Writing (3 cr)

One of the following (3 cr):
- For 221 Ecology (3 cr)
- REM 221 Ecology (3 cr)

One of the following (4 cr):
- Phys 100, Phys 100L Fundamentals of Physics and Lab (4 cr)
- Phys 111, Phys 111L General Physics I and Lab (4 cr)

Restricted Electives (11 cr):
- AgEc 477 Law, Ethics, and the Environment (3 cr)
- Biol 212 Principles of Biological Structure and Function (4 cr)
- Biol 421 Advanced Evolutionary Biology (3 cr)
- CSS 486 Public Involvement in Natural Resource Management (3 cr)
- CSS 490 Wilderness and Protected Area Management (3 cr)
- Fish 314 Fish Ecology (3 cr)
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>Fish 415</td>
<td>Limnology (4 cr)</td>
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<td>Fish 430</td>
<td>Riparian Ecology and Management (3 cr)</td>
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<td>For 426</td>
<td>Global Fire Ecology and Management (3 cr)</td>
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<tr>
<td>For 427</td>
<td>Prescribed Burning Lab (3 cr)</td>
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<td>For 430</td>
<td>Forest Operations (3 cr)</td>
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<td>For 431</td>
<td>Low Volume Forest Roads (2 cr)</td>
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<tr>
<td>For 436</td>
<td>Cable Systems (2 cr)</td>
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<td>For 472</td>
<td>Remote Sensing of the Environment (4 cr)</td>
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<td>For 497</td>
<td>Senior Thesis (2-4 cr)</td>
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<td>Geog 301</td>
<td>Meteorology (3 cr)</td>
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<td>Geog 385</td>
<td>GIS Primer (3 cr)</td>
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<td>Geol 111,</td>
<td>Physical Geology for Science Majors (4 cr)</td>
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<td>Geol 111L</td>
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<tr>
<td>Math 160</td>
<td>Survey of Calculus (4 cr)**</td>
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<tr>
<td>Math 170</td>
<td>Analytic Geometry and Calculus I (4 cr)**</td>
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<td>PolS 364 or</td>
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<td>CSS 364</td>
<td>Politics of the Environment (3 cr)</td>
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<td>REM 407</td>
<td>GIS Applications in Fire Ecology and Management (2 cr)</td>
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<td>REM 410</td>
<td>Principles of Vegetation Measurement and Assessment (2 cr)</td>
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<td>Ecological Monitoring and Analysis (2 cr)</td>
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<td>Landscape Ecology (3 cr)</td>
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<td>Integrating GIS and Field Studies in Rangelands (2 cr)</td>
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<td>RMat 321</td>
<td>Renewable Materials Anatomy and Properties (3 cr)</td>
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<td>RMat 444</td>
<td>Primary Products Manufacturing (3 cr)</td>
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<td>Soil 446</td>
<td>Soil Fertility (1-3 cr)</td>
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<td>Soil 454</td>
<td>Soil Development and Classification (3 cr)</td>
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<td>Stat 431</td>
<td>Statistical Analysis (3 cr)</td>
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<td>WLF 314</td>
<td>Wildlife Ecology I (3 cr)</td>
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<td>WLF 316</td>
<td>Wildlife Ecology II (3 cr)</td>
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<td>WLF 440</td>
<td>Conservation Biology (3 cr)</td>
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</table>

Courses to total 120 credits for this degree

*Note: A SAT math score of 610 or above, or ACT math score of 27 or above can be used to satisfy the Math 143 and Math 144 requirements.

**Note: Either Math 160 or Math 170 may be used as a restricted elective, but not both.

4. Change the curricular requirements of **Rangeland Ecology and Management** (B.S.Rangeland Ecol.-Mgt.)
[Effective: Summer 2014]

Required course work includes the university requirements (see regulation J-3) and:

**First and Second Years**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>Biol 115</td>
<td>Cells and the Evolution of Life (4 cr)</td>
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<tr>
<td>Chem 275</td>
<td>Carbon Compounds (3 cr)</td>
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<tr>
<td>Comm 101</td>
<td>Fundamentals of Public Speaking (2 cr)</td>
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<tr>
<td>Econ 202</td>
<td>Principles of Microeconomics (3 cr)</td>
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<tr>
<td>For 235 or</td>
<td>Society and Natural Resources (3 cr)</td>
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<td>CSS 235</td>
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<tr>
<td>NR 101</td>
<td>Exploring Natural Resources (1 cr)</td>
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<tr>
<td>REM 151</td>
<td>Rangeland Principles (2 cr)</td>
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<td>REM 152</td>
<td>Rangeland Ecosystem Exploration (1 cr)</td>
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<td>Soil 205</td>
<td>The Soil Ecosystem (3 cr)</td>
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<td>Soil 206</td>
<td>The Soil Ecosystem Lab (1 cr)</td>
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<td>One of the following (3-4 cr):</td>
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</tr>
<tr>
<td>Math 143</td>
<td>Pre-calculus Algebra and Analytic Geometry (3 cr)</td>
</tr>
</tbody>
</table>
Math 160 Survey of Calculus (3-4 cr)

One of the following (3 cr):
For 221 Ecology (3 cr)
REM 221 Ecology (3 cr)

Third and Fourth Years
CSS 383 Natural Resource and Ecosystem Service Economics (3 cr)
For 375 Introduction to Spatial Analysis for Natural Resource Management (2-3 cr)
Fish 430 Riparian Ecology and Management (3 cr)
REM 252 Wildland Plant Identification Field Studies (3 cr)
REM 341 Systematic Botany (3 cr)
REM 410 Principles of Vegetation Measurement and Assessment (2 cr)
REM 411 Ecological Monitoring and Analysis (4-2 cr)
REM 440 Wildland Restoration Ecology (3 cr)
REM 456 Integrated Rangeland Management (3 cr)
REM 459 Rangeland Ecology (2 cr)
REM 460 Integrating GIS and Field Studies in Rangelands (2 cr)
Soil 454 Pedology (3 cr) Soil Development and Classification (3 cr)

One of the following (3 cr):
AVS 474 Beef Cattle Science (3 cr)
AVS 476 Sheep Science (3 cr)

One of the following (3 cr):
Engl 313 Business Writing (3 cr)
Engl 317 Technical Writing (3 cr)

One of the following (3 cr):
Fish 430 Riparian Ecology and Management (3 cr)
For 462 Watershed Science and Management (3 cr)

One of the following (2-3 cr):
REM 429 Landscape Ecology (3 cr)
REM 452 Western Wildland Landscapes (2 cr)

Students must also complete 12 credits of advisor approved electives in emphasis areas that include: Restoration Ecology, Field Botany, Spatial Ecology, Watershed Science, Wildland Fire Management, Invasive Plant Management, Wildlife Habitat Management, Tribal Land Management, Rangeland Economics, Natural Resource Communication, and Environmental Consulting.

Courses to total 122 credits for this degree

5. Change the curricular requirements of Renewable Materials (B.S.Renew.Mat.) [Effective: Summer 2014]

Required course work includes the university requirements (see regulation J-3) and one of the following options:
Act 201 Introduction to Financial Accounting (3 cr)
Act 202 Introduction to Managerial Accounting (3 cr)
Biol 102, Biol 102L Biology and Society and Lab (4 cr)
BLaw 265 Legal Environment of Business (3 cr)
Comm 101 Fundamentals of Public Speaking (2 cr)
CSS 383 Natural Resource and Ecosystem Service Economics (3 cr)
Econ 202 Principles of Microeconomics (3 cr)
For 235 or Society and Natural Resources (3 cr)
CSS 235
For 375 Introduction to Spatial Analysis for Natural Resource Management (3 cr)
NR 101 Exploring Natural Resources (1 cr)
Phys 111 General Physics I (3 cr)
Stat 261 Statistical Methods (3 cr)
RMat 100 Introduction to Renewable Materials (2 cr)
RMat 321 Properties of Renewable Materials (3 cr)
RMat 436 Biocomposites (3 cr)
RMat 438 Introduction to Lignocellulosic Chemistry (1 cr)
RMat 444 Primary Products Manufacturing (3 cr)
RMat 450 Biomaterials Deterioration and Protection (2 cr)
RMat 491 Biomaterial Product and Process Development Lab (2 cr)
RMat 495  Product Development and Brand Management (3 cr)
RMat 498  Renewable Natural Resources Internship (1 cr)
Stat 251  Statistical Methods (3 cr)
One of the following (4 cr):
Chem 101  Introduction to Chemistry I (4 cr)
Chem 111  Principles of Chemistry I (4 cr)
One of the following (3 cr):
Chem 275  Carbon Compounds (3 cr)
Chem 277  Organic Chemistry I (3 cr)
One of the following (3-4 cr):
Engl 313  Business Writing (3 cr)
Engl 317  Technical Writing (3 cr)
One of the following (3 cr):
For 221  Ecology (3 cr)
REM 221  Ecology (3 cr)
One of the following (3-4 cr):
Math 143  Pre-calculus Algebra and Analytic Geometry (3 cr)
Math 160  Survey of Calculus (3-4 cr)
Math 170  Analytic Geometry and Calculus I (4 cr)
Restricted Electives (24-21 cr):
Acct 482  Enterprise Accounting (3 cr)
Arch 154  Introduction to Architectural Graphics (3 cr)
Arch 266  Materials and Methods (3 cr)
Arch 462  Building Technology II - Concrete (2 cr)
Arch 463  Environmental Control Systems I (3 cr)
Arch 464  Environmental Control Systems II (3 cr)
BAE 485  Fundamentals of Bioenergy and Bioproducts (3 cr)
BAE 492  Biofuels (3 cr)
BAE 494  Thermochemical Technologies for Biomass Conversion (3 cr)
Bus 101  Introduction to Business Enterprises (3 cr)
Bus 190  Integrated Business and Value Creation (3 cr)
Bus 301  Financial Resources Management (3 cr)
Financial Management (3 cr)
Bus 311  Introduction to Management (3 cr)
Bus 321  Marketing (3 cr)
Bus 340  Team Building and Group Dynamics (2 cr)
Bus 341  Business Systems (4 cr)
Bus 342  Product and Process Planning (3 cr)
Bus 343  Planning and Decision Making in Organizations (2 cr)
Bus 344  Managing the Firm's Resources (3 cr)
Bus 345  Business Operating Decisions (3 cr)
Bus 350  Managing Information and Information Systems (3 cr)
Bus 351  Introduction to Electronic Commerce (3 cr)
Bus 370  Process Management (3 cr)
Bus 378  Project Management (3 cr)
Bus 414  Entrepreneurship (3 cr)
Bus 415  New Venture Creation (3 cr)
Bus 424  Pricing Strategy and Tactics (3 cr)
Bus 456 or  Quality Management (3 cr)
Chem 275  Carbon Compounds (3 cr)
Chem 277  Organic Chemistry I (3 cr)
Chem 278  Organic Chemistry I - Lab (1 cr)
Econ 272  Foundations of Economic Analysis (4 cr)
For 430  Forest Operations (3 cr)
For 431  Low Volume Forest Roads (2 cr)
For 436  Cable Systems (2 cr)
LArc 251  Introduction to Principles of Site Design (3 cr)
MSE 434  Fundamentals of Polymeric Materials (3 cr)
RMat 365  Wood Building Technology (3 cr)
RMat 538  Lignocellulosic Biomass Chemistry (3 cr)
Stat 301  Probability and Statistics (3 cr)
Courses to total 120 credits for this degree

6. Change the curricular requirements of Fire Ecology and Management (Minor) [Effective: Summer 2014]
Fire Core (8-5 cr):
For 326 Fire Ecology and Management (3 cr)
For 426 Global Fire Ecology and Management (3 cr)
REM 244 Wildland Fire Management (2 cr)
One of the following (2-3 cr):
For 427 Prescribed Burning Laboratory (3 cr)
For 433 Fire and Fuel Modeling (2 cr)
For 450 Fire Behavior (2 cr)

Ecology (2-3.4 cr):
For 330 Forest Soil and Canopy Processes (4 cr)
REM 429 Landscape Ecology (3 cr)
REM 440 Wildland Restoration Ecology (3 cr)
REM 459 Rangeland Ecology (2 cr)
REM 460 Integrating GIS and Field Studies in Rangelands (1-2 cr)
REM 459 Rangeland Ecology Current Topics and Field Studies (1 cr)

WLF 314 Wildlife Ecology I (3 cr)

Applied Tools and Technology (3 cr):
For 435 Remote Sensing of Fire (3 cr)
Geog 301 Meteorology (3 cr)
Geog 385 GIS Primer (3 cr)
Geog 401 Climatology (3 cr)
Geog 475 Intermediate GIS (3 cr)

Management, Planning, & Policy (6 cr):
CSS 490 Wilderness and Protected Area Management (3 cr)
For 324 Forest Regeneration (3 cr)
For 424 Forest Dynamics and Management (4 cr)
For 430 Forest Operations (3 cr)
For 462 Watershed Science and Management (3 cr)
For 484 Forest Policy and Administration (2 cr)
REM 456 Integrated Rangeland Management (3 cr)

Courses to total 20 credits for this minor, with at least 12 credits in courses numbered 400 or above.

7. Change the curricular requirements of Rangeland Ecology and Management (Minor) [Effective: Summer 2014]

Note: At least 12 credits in courses numbered 300 or higher are required to satisfy the requirements of this minor.
REM 151 Rangeland Principles (2 cr)
REM 252 Wildland Plant Identification Field Studies (3 cr)
REM 459 Rangeland Ecology (2 cr)
REM 460 Integrating GIS and Field Studies in Rangelands (1-2 cr)
REM 459 Rangeland Ecology Current Topics and Field Studies (1 cr)

One of the following (3 cr):
For 221 Ecology (3 cr)
REM 221 Ecology (3 cr)

Two of the following courses (6 cr):
REM 410 Principles of Vegetation Measurement and Assessment (2 cr)
REM 411 Ecological Monitoring and Analysis (2 cr)
REM 429 Landscape Ecology (3 cr)
REM 440 Wildland Restoration Ecology (3 cr)
REM 452 Western Wildland Landscapes (2 cr)
REM 456 Integrated Rangeland Management (3 cr)

One of the following courses (or a course not chosen above) (2-3 cr):
AVS 474 Beef Cattle Science (3 cr)
AVS 476 Sheep Science (3 cr)
Fish 430 Riparian Ecology and Management (3 cr)
For 326 Fire Ecology and Management (3 cr)
For 426 Global Fire Ecology and Management (3 cr)
For 462 Watershed Management (3 cr)
PlSc 338 Weed Control (3 cr)
PlSc 410 Invasive Plant Biology (3 cr)
REM 244 Wildland Fire Management (2 cr)
Soil 454 Pedology (3 cr) Soil Development and Classification (3 cr)
8. Change the curricular requirements of **Fire Ecology, Management and Technology Academic Certificate** (UG Academic Certificate) **[Effective: Summer 2014]**

*Note: A grade of ‘B’ or higher is required in all coursework for this academic certificate.*

**Fire Ecology Course Group (3 cr):**
- For 326 Fire Ecology and Management (3 cr)
- For 426 Global Fire Ecology and Management (3 cr)
- For 526 Fire Ecology (3 cr)

**Ecology Course Group (2-3 cr):**
- For 330 Forest Soils and Canopy Processes (4 cr)
- For 531 Invasion Biology (3 cr)
- REM 429 Landscape Ecology (3 cr)
- REM 440 Wildland Restoration Ecology (3 cr)
- REM 459 Rangeland Ecology (2 cr)
- REM 460 Integrating GIS and Field Studies in Rangelands (3-2 cr)
  or Rangeland Ecology Current Topics and Field Studies (1 cr)

**Fuels and Fuels Management Course Group (2-3 cr):**
- For 427 Prescribed Burning Lab (3 cr)
- For 433 Fire and Fuel Modeling (2 cr)
- For 450 Fire Behavior (2 cr)
- For 451 Fuels Inventory and Management (3 cr)

**Applied Tools and Analysis Course Group (2-3 cr):**
- For 375 Introduction to Spatial Analysis for Natural Resource Management (3 cr)
- For 435 or For 535 Remote Sensing of Fire (3 cr)
- For 472 or REM 472 Remote Sensing of the Environment (4 cr)
- For 570 Advanced Remote Sensing Measurement Methods (3 cr)
- Geog 475 Intermediate GIS (3 cr)
- REM 407 GIS Application in Fire Ecology and Management (2 cr)

**Management, Planning and Policy Course Group (2-3 cr):**
- CSS 490 Wilderness and Protected Area Management (3 cr)
- CSS 573 Planning & Decision Making for Watershed Management (3 cr)
- For 424 Forest Dynamics and Management (4 cr)
- For 430 Forest Operations (3 cr)
- For 454 Air Quality and Smoke Management (3 cr)
- For 462 Watershed Science and Management (3 cr)
- For 484 Forest Policy and Administration (2 cr)
- For 529 Forest Ecosystem Analysis (3 cr)
- For 585 Natural Resources Policy Analysis (2 cr)
- REM 456 Integrated Rangeland Management (3 cr)
- WLF 492 Wildlife Management (4 cr)

**Electives to total 15 for the certificate**

**Natural Resources:** It was motioned and seconded to approve of the proposed changes to Natural Resources. Karen Launchbaugh reviewed the proposed changes. Hearing no questions the motion to approve the proposed changes **passed unanimously**.

1. Add the following course **[Effective: Summer 2014]**

**NR 511 Preparing Scientific Manuscripts (1 cr)**
Details the preparation of manuscripts for thesis chapters and submission to peer-reviewed journals. Exercises include identifying scope, unique requirements for manuscript parts, use of graphing and reference database tools, editing and peer reviewing. Two 75 min classes per week, first half of semester. Second half of semester involves weekly writing workshops to finalize projects. Entry into class requires possession of analyzed dataset.
*Prereq:* Instructor Permission

**Recommended Short Course Title: Preparing Science Manuscripts**

Required course work includes the university requirements (see regulation J-3) and:

- Biol 115 Cells and the Evolution of Life (4 cr)
- Biol 116 Organisms and Environments (4 cr)
- Biol 213 Principles of Biological Structure and Function (4 cr)
- Comm 101 Fundamentals of Public Speaking (2 cr)
- CSS 383 Natural Resource and Ecosystem Service Economics (3 cr)
- Engl 317 Technical Writing (3 cr)
- For 235 or Society and Natural Resources (3 cr)
- CSS 235
- For 375 Introduction to Spatial Analysis for Natural Resource Management (3 cr)
- NR 101 Exploring Natural Resources (1 cr)
- NR 200 (s) Seminar (1 cr)
- Stat 251 Statistical Methods (3 cr)

One of the following (4 cr):
- Chem 101 Introduction to Chemistry I (4 cr)
- Chem 111 Principles of Chemistry I (4 cr)

One of the following (3-4 cr):
- Econ 202 Principles of Microeconomics (3 cr)
- Econ 272 Foundations of Economic Analysis (3-4 cr)

One of the following (3-4 cr):
- For 221 Ecology (3 cr)
- REM 221 Ecology (3 cr)
- Biol 314 Ecology and Population Biology (4 cr)

One of the following (4 cr):
- Math 160 Survey of Calculus (4 cr)
- Math 170 Analytic Geometry and Calculus I (4 cr)

One of the following (3-4 cr):
- For 320 Dendrology (4 cr)
- REM 341 Systematic Botany (3 cr)

Choose one of the following (1 cr):
- CSS 483 Senior Project Presentation (1 cr)
- Fish 483 Senior Project Presentation (1 cr)
- For 483 Senior Project Presentation (1 cr)
- REM 483 Senior Project Presentation (1 cr)
- WLF 483 Senior Project Presentation (1 cr)

Choose one of the following (3 cr):
- CSS 485 Ecology and Conservation Biology Internship (3 cr)
- Fish 485 Ecology and Conservation Biology Internship (3 cr)
- Fish 497 Senior Thesis (3 cr)
- For 485 Ecology and Conservation Biology Internship (3 cr)
- For 497 Senior Thesis (3 cr)
- NR 497 Senior Thesis (3 cr)
- REM 485 Ecology and Conservation Biology Internship (3 cr)
- REM 497 Senior Thesis (3 cr)
- WLF 485 Ecology and Conservation Biology Internship (3 cr)
- WLF 497 Senior Thesis (3 cr)

And one of the following options:

A. Natural Resources Ecology Option

The natural resources ecology option combines ecological theory, field experience, and quantitative tools to gain an interdisciplinary understanding of the structure and function of ecosystems. This field covers ecological topics from local, regional, and landscape scales while integrating the social and biophysical worlds.

To graduate in this option, students must achieve a "C" or better in the following six core courses: NR 200, For 330, REM 429, Soil 205/206, and WLF 316 or Fish 316.

- For 330 Forest Soil and Canopy Processes (4 cr)
- REM 429 Landscape Ecology (3 cr)
- Soil 205 The Soil Ecosystem (3 cr)
- Soil 206 The Soil Ecosystem Lab (1 cr)

One of the following (3 cr):
Phys 100, Fundamentals of Physics and Lab (4 cr)
Phys 100L
Phys 111, General Physics I and Lab (4 cr)
Phys 111L

One of the following (2-4 cr):
WLF 316 Wildlife Ecology II (4 cr)
Fish 316 Principles of Population Dynamics (2 cr)

Quantitative Resource Analysis Restricted Electives (one course from the following):
CSS 310 Social Research Methods in Conservation (4 cr)
For 472 or Remote Sensing of Environment (4 cr)
REM 472

Geog 385 GIS Primer (3 cr)
REM 410 Principles of Vegetation Measurement and Assessment (2 cr)*
REM 411 Ecological Monitoring and Analysis (2 cr)*
Stat 431 Statistical Analysis (3 cr)
Stat 422 Sample Survey Methods (2 cr)
WLF 448 Fish & Wildlife Population Ecology (4 cr)

Resource Management Restricted Electives (one course from the following):
CSS 385 Conservation Management and Planning I (4 cr)
CSS 490 Wilderness and Protected Area Management (3 cr)
CSS 496 Monitoring Impacts in Protected Areas and Wilderness (3 cr)
Fish 418 Fisheries Management (4 cr)
For 424 Forest Dynamics and Management (4 cr)
For 462 Watershed Science and Management (3 cr)
REM 456 Integrated Rangeland Management (3 cr)
WLF 492 Wildlife Management (4 cr)

Ecology Restricted Electives (at least 2 credits from Fish 315, Fish 415, Fish 430, REM 460, and/or WLF 315) (10 cr):
Biol 421 Advanced Evolutionary Biology (3 cr)
Biol 478 Animal Behavior (3 cr)
Ent 469 Introduction to Forest Insects (2 cr)
Ent 472 Aquatic Entomology (3 cr)
Fish 314 Fish Ecology (3 cr)
Fish 415 Limnology (4 cr)
Fish 430 Riparian Ecology and Management (3 cr)
For 426 Global Fire Ecology and Management (3 cr)
For 468 Forest and Plant Pathology (2 cr)
Geog 410 Biogeography (3 cr)
Geog 450 or Global Environmental Change (3 cr)
REM 450
MMBB 425 Microbial Ecology (3 cr)
PSc 410 Invasive Plant Biology (3 cr)
REM 440 Wildland Restoration Ecology (3 cr)
REM 459 Rangeland Ecology (2 cr)
REM 460 Integrating GIS and Field Studies in Rangelands (4-2 cr) or Rangeland Ecology Current Topics and Field Studies (1 cr)
WLF 314 Wildlife Ecology I (3 cr)
WLF 315 Wildlife Ecology I Lab (1 cr)
WLF 440 Conservation Biology (3 cr)

Social/Political Restricted Electives (one course from the following):
Comm 410 Conflict Management (3 cr)
CSS 387 Environmental Communication Skills (3 cr)
CSS 481 Conservation Leadership (3 cr)
CSS 486 Public Involvement in Natural Resource Management (3 cr)
CSS 489 Personalities and Philosophies in Conservation (3 cr)
CSS 492 Ecotourism Principles and Issues (3 cr)
CSS 493 International Land Preservation and Conservation Systems (3 cr)
For 484 Forest Policy and Administration (2 cr)
Geog 420 Land, Resources, and Environment (3 cr)
Hist 424 American Environmental History (3 cr)
Phil 452 Environmental Philosophy (3 cr)
PolS 364 or Politics of the Environment (3 cr)
CSS 364
Courses to total 120 credits for this degree

*Note: Both REM 410 and REM 411 must be completed to satisfy Quantitative Resource Analysis Restricted Elective requirement.

B. Conservation Biology Option

The conservation biology option is centered around a multidisciplinary curriculum that provides students with training to work in jobs aimed at conserving the earth’s biodiversity. This option provides a broad-based education that covers biological diversity from the genetic level to the landscape level, and provides additional training in social sciences and management. In the words of Hunter (1996), “Conservation biology is cross-disciplinary, reaching far beyond biology into subjects such as philosophy, economics, and sociology; disciplines that are concerned with the social environment in which we practice conservation—as well as into subjects such as law and education that determine the ways we implement conservation.”

To graduate in this option, students must achieve a “C” or better in the following seven core courses: Biol 421, NR 200, REM 429, Phil 452, CSS 492 or CSS 493, Fish or WLF 316, and WLF 440.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Biol 421</td>
<td>Advanced Evolutionary Biology</td>
<td>3 cr</td>
</tr>
<tr>
<td>Gene 314</td>
<td>General Genetics</td>
<td>3 cr</td>
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<tr>
<td>Phil 452</td>
<td>Environmental Philosophy</td>
<td>3 cr</td>
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<tr>
<td>REM 429</td>
<td>Landscape Ecology</td>
<td>3 cr</td>
</tr>
<tr>
<td>WLF 440</td>
<td>Conservation Biology</td>
<td>3 cr</td>
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<td>One of the following (3-4 cr):</td>
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<tr>
<td>Biol 310</td>
<td>Genetics</td>
<td>4 cr</td>
</tr>
<tr>
<td>Gene 314</td>
<td>General Genetics</td>
<td>3 cr</td>
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<tr>
<td>One of the following (3 cr):</td>
<td></td>
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<tr>
<td>CSS 492</td>
<td>Ecotourism Principles and Issues</td>
<td>3 cr</td>
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<tr>
<td>CSS 493</td>
<td>International Land Preservation and Conservation Systems</td>
<td>3 cr</td>
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<td>One of the following (2-4 cr):</td>
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<tr>
<td>WLF 316</td>
<td>Wildlife Ecology II</td>
<td>4 cr</td>
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<tr>
<td>Fish 316</td>
<td>Principles of Population Dynamics</td>
<td>2 cr</td>
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<tr>
<td>Quantitative Resource Analysis Restricted Electives (one course from the following):</td>
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<tr>
<td>CSS 310</td>
<td>Social Research Methods in Conservation</td>
<td>4 cr</td>
</tr>
<tr>
<td>For 472</td>
<td>Remote Sensing of Environment</td>
<td>4 cr</td>
</tr>
<tr>
<td>REM 472</td>
<td>GIS Primer</td>
<td>3 cr</td>
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<td>Geog 385</td>
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<tr>
<td>REM 410</td>
<td>Principles of Vegetation Measurement and Assessment</td>
<td>(2 cr)*</td>
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<tr>
<td>REM 411</td>
<td>Ecological Monitoring and Analysis</td>
<td>2 cr</td>
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<tr>
<td>Stat 422</td>
<td>Sample Survey Methods</td>
<td>(2-3 cr)</td>
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<td>Stat 431</td>
<td>Statistical Analysis</td>
<td>3 cr</td>
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<td>WLF 448</td>
<td>Fish &amp; Wildlife Population Ecology</td>
<td>4 cr</td>
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<td>Resource Management Restricted Electives (one course from the following):</td>
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<tr>
<td>CSS 385</td>
<td>Conservation Management and Planning I</td>
<td>4 cr</td>
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<td>CSS 490</td>
<td>Wilderness and Protected Area Management</td>
<td>3 cr</td>
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<td>CSS 496</td>
<td>Monitoring Impacts in Protected Areas and Wilderness</td>
<td>3 cr</td>
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<tr>
<td>Fish 418</td>
<td>Fisheries Management</td>
<td>4 cr</td>
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<tr>
<td>For 424</td>
<td>Forest Dynamics and Management</td>
<td>4 cr</td>
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<tr>
<td>For 462</td>
<td>Watershed Science and Management</td>
<td>3 cr</td>
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<td>REM 456</td>
<td>Integrated Rangeland Management</td>
<td>3 cr</td>
</tr>
<tr>
<td>WLF 492</td>
<td>Wildlife Management</td>
<td>4 cr</td>
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<tr>
<td>Ecology Restricted Electives (at least 2 credits from Fish 315, Fish 415, Fish 430, REM 460, and/or WLF 315) (6 cr):</td>
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<tr>
<td>Biol 478</td>
<td>Animal Behavior</td>
<td>3 cr</td>
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<tr>
<td>Ent 469</td>
<td>Introduction to Forest Insects</td>
<td>2 cr</td>
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<tr>
<td>Ent 472</td>
<td>Aquatic Entomology</td>
<td>3 cr</td>
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<tr>
<td>Fish 314</td>
<td>Fish Ecology</td>
<td>3 cr</td>
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<tr>
<td>Fish 315</td>
<td>Fish Ecology Lab</td>
<td>1 cr</td>
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<td>Fish 415</td>
<td>Limnology</td>
<td>4 cr</td>
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<tr>
<td>Fish 430</td>
<td>Riparian Ecology and Management</td>
<td>3 cr</td>
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<tr>
<td>For 330</td>
<td>Forest Soil and Canopy Processes</td>
<td>4 cr</td>
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<tr>
<td>For 326</td>
<td>Fire Ecology and Management</td>
<td>3 cr</td>
</tr>
<tr>
<td>For 426</td>
<td>Global Fire Ecology and Management</td>
<td>3 cr</td>
</tr>
<tr>
<td>For 468</td>
<td>Forest and Plant Pathology</td>
<td>2 cr</td>
</tr>
<tr>
<td>Geog 410</td>
<td>Biogeography</td>
<td>3 cr</td>
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<tr>
<td>Geog 450</td>
<td>Global Environmental Change</td>
<td>3 cr</td>
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<tr>
<td>REM 450</td>
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<tr>
<td>MMBB 425</td>
<td>Microbial Ecology</td>
<td>3 cr</td>
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<tr>
<td>PiSc 410</td>
<td>Invasive Plant Biology</td>
<td>3 cr</td>
</tr>
<tr>
<td>REM 440</td>
<td>Wildland Restoration Ecology</td>
<td>3 cr</td>
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<tr>
<td>REM 459</td>
<td>Rangeland Ecology</td>
<td>2 cr</td>
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</tbody>
</table>
REM 460 Integrating GIS and Field Studies in Rangelands (2 cr)
Rangeland Ecology Current Topics and Field Studies (1 cr)
WLF 314 Wildlife Ecology I (3 cr)
WLF 315 Wildlife Ecology I Lab (1 cr)
Organismal Biology Restricted Elective (one course from the following):
Biol 481 Ichthyology (4 cr)
Biol 483 Mammalogy (3 cr)
Biol 489 Herpetology (4 cr)
WLF 482 Ornithology (4 cr)
Social/Political Restricted Electives (one course from the following):
Comm 410 Conflict Management (3 cr)
CSS 387 Environmental Communication Skills (3 cr)
CSS 486 Public Involvement in Natural Resource Management (3 cr)
CSS 489 Personalities and Philosophies in Conservation (3 cr)
For 484 Forest Policy and Administration (2 cr)
Geog 420 Land, Resources, and Environment (3 cr)
Hist 424 American Environmental History (3 cr)
PoIs 364 or CSS 364 Politics of the Environment (3 cr)
Courses to total 120 credits for this degree

*Note: Both REM 410 and REM 411 must be completed to satisfy Quantitative Resource Analysis Restricted Elective requirement.

UCC-14-030 College of Engineering

Biological and Agricultural Engineering: It was motioned and seconded to approve of the proposed changes to Biological and Agricultural Engineering. Committee member Law reviewed the proposed changes. Hearing no questions the motion to approve the proposed changes passed unanimously.

1. Change the curricular requirements of Biological and Agricultural Engineering (B.S.B.A.E.) [Effective: Summer 2014]

E. Eco-Hydrological Engineering Option
BAE 355 Fundamentals of Hydrologic Engineering (3 cr)
BAE 450 Environmental Hydrology (3 cr)
BAE 451 Engineering Hydrology (3 cr)
BAE 452 Environmental Water Quality (3 cr)
BAE 458 Open Channel Hydraulics (3 cr)
CE 211 Engineering Surveying (3 cr)
CE 322 Hydraulics (3 cr)
Engr 220 Engineering Dynamics (3 cr)
Soil 205 The Soil Ecosystem (3 cr)
Technical Electives (8-11 cr)
One of the following (3 cr):
CS 112 Introduction to Problem Solving and Programming (3 cr)
CS 130 Programming with Visual Basic (3 cr)
Courses to total 128 credits for this degree

Chemical and Materials Engineering: It was motioned and seconded to approve of the proposed changes to Chemical and Materials Engineering. David Drown reviewed the proposed changes. Max Cowan asked for clarification on the statement regarding courses taken to remove deficiencies. Hearing no further questions the motion to approve the proposed changes passed unanimously.

1. Change the curricular requirements of Chemical Engineering (B.S.Ch.E.) [Effective: Summer 2014]

... Chemical engineering or Material Science and Engineering numbered 390 or greater technical electives (3 cr)
Chemical/bioscience elective course (3 cr)
Chemical/bioscience elective lab (1 cr)
Computer science elective in a programming language (3 cr)
Economics elective (3 cr)
Humanities and Social Sciences electives (9 cr)
Communication electives (2 cr)
Mathematics electives numbered 300 or greater (excluding any 398, 498, or 598 Internship) (6 cr)
Technical electives in math, science, or engineering numbered 300 or greater (excluding any 398, 498, or 598 Internship) (6 cr)
Courses to total 128 credits for this degree, not counting Engl 101, any 398 (Internship), any 498 (Internship), any 598 (Internship), or Math mathematics courses numbered lower than Math 170, and other courses that might be required to remove deficiencies.

2. Change the curricular requirements of Materials Science and Engineering (B.S.M.S.E.) [Effective: Summer 2014]

Civil Engineering: It was motioned and seconded to approve of the proposed changes to Civil Engineering. Committee member Law reviewed the proposed changes. Hearing no questions the motion to approve the proposed changes passed unanimously.

1. Add the following courses [Effective: Summer 2014]

   CE 512 Advanced Topics in Waste Management and Treatment (3 cr)
   Modeling, analysis, and design of advanced and emerging engineering technologies and processes for waste management/treatment and resource recovery.
   Prereq: Instructor Permission
   Recommended Short Course Title: Adv Topic Waste Management

   CE 516 River Restoration (3 cr)
   This course focuses on the principles, assumptions and practices used in river restoration. The use of channel form, channel classification, reference reaches, sediment transport equations, hydraulic structures, 1-D and 2-D flow models, and aquatic habitat modeling to design restoration projects are discussed. The course also includes topics such as adaptive management, restoration evaluation and monitoring, basic ecological design goals, and a number of local case studies. The course has a mandatory field trip to a local restored site. Recommended classes to take prior to this include at least one of the following: CE 535, CE 322, CE 428, or CE 520.
   Prereq: Engr 335 or Instructor Permission

2. Change the following course [Effective: Summer 2014]

   CE 460 Geotechnical Engineering Design (3 cr)
   Applications of soil mechanics in design of shallow and deep foundations, earth retaining structures, embankments, slopes, excavations, and soil exploration programs.
   Prereq: CE 360; and CE 441 or CE 444; or Permission

3. Change the following courses from Dormant Status to Active Status [Effective: Summer 2014]

   CE 473 Highway Design (3 cr)
   Theory and practice in highway design, highway functional classification concepts, design controls and criteria, geometric design of highways and streets, cross section and roadside design, and highway safety manual applications. Planning, horizontal and vertical alignments, field data collection, location and design of highway systems. Demonstrated competence in the operation of electronic total stations and land development software required for permission. Two lec and one 3-hr lab a wk.
   Prereq: CE 211 and Permission.
   Coreq: CE 372

   CE 484 Engineering Law and Contracts (2-3 cr)
   Project engineering techniques for planning, scheduling, and controlling typical engineering and construction projects. Contract law and application to engineering services agreements and construction contracts; preparing technical specifications, agency-torts, professional liability, and alternate dispute resolution.
   Prereq: Senior standing in engineering

Computer Science: It was motioned and seconded to approve of the proposed changes to Computer Science. Committee member Law reviewed the proposed changes. Committee member Haagansen expressed concern about overlapping course material with Virtual Technology and Design. Hearing no further questions the motion to approve the proposed changes passed unanimously.
1. Add the following course [Effective: Summer 2014]

**CS 328 Introduction to Computer Game Development (3 cr)**
An introduction to data structures, algorithms, and programming techniques useful in the development of computer games. Topics including 2D graphics, sound programming, user interfaces, game genres, computerization of classic board games and simulation games.

*Prereq: CS 210 and CS 240*

Recommended Short Course Title: Game Development

2. Change the following courses [Effective: Summer 2014]

**CS J428/J528 Multi-User Games and Virtual Environments (3 cr)**
Software design and programming issues involved in constructing multi-user computer games and multi-user virtual environments, incorporating networking and 3D graphics. Additional projects and assignments are required for graduate credit.

*Prereq: CS 210, and CS 324, and CS 328*

Recommended Short Course Title: Games and Virtual Environments

**Electrical and Computer Engineering:** It was motioned and seconded to approve of the proposed changes to Electrical and Computer Engineering. Fred Barlow reviewed the proposed changes. Hearing no questions the motion to approve the proposed changes passed unanimously.

1. Change the following courses [Effective: Summer 2014]

**ECE 310 Fundamentals of Electronics Microelectronics I (3 cr)**
Operational amplifier fundamentals and applications, introduction to electronic devices such as diodes, bipolar junction transistor (BJT) and metal oxide semiconductor field effect transistors (MOSFET), large and small-signal modeling of non-linear electronic devices, DC and small-signal analysis of circuits with non-linear electronic devices, biasing of electronic circuits using passive and active elements such as current mirrors, frequency response of electronic circuits, introduction to the analysis, design, and applications of electronic circuits such as rectifiers, power supplies, and low-frequency single-stage amplifiers. Practical limitations of amplifiers of electronic circuits.

*Prereq: ECE 212 and ECE 213*

*Coreq: ECE 311*

**ECE 311 Fundamentals of Electronics Microelectronics I Lab (1 cr)**
Lab to accompany ECE 310.

*Coreq: ECE 310*

**ECE 410 Advanced Electronics Microelectronics II (3 cr)**
Introduction to analog integrated circuit (IC) implementation and design, differential and common-mode signal concepts, differential amplifiers, multistage amplifiers, operational amplifier design, frequency response of electronic circuits, feedback in electronic circuits, large-signal/power amplifiers, advanced current sources and mirrors, and fundamentals of analog filters.

*Prereq: ECE 310 and 311; or Permission*

**ECE 411 Advanced Electronics Laboratory Microelectronics II Lab (1 cr)**
Lab to accompany or follow ECE 410.

*Prereq or Coreq: ECE 410*

**ECE J413/J513 Communication Circuits Radio-Frequency IC Design (3 cr)**
Radio frequency (RF) communications concepts, integrated circuit (IC) transceiver architectures, low-noise amplifier, mixers, passive devices and matching networks, oscillators, power amplifiers, phase-locked loops, and frequency synthesizers. Additional projects/assignments are required for graduate students. Additional projects/assignments are required for graduate students. Impedance transforms and matching networks, small-signal high frequency amplifiers, distortion in amplifiers, noise calculations and considerations, sine-wave oscillators, mixers and frequency translators, phase-locked loops, and power amplifiers. Additional projects/assignments reqd for grad cr.

*Prereq: ECE 410 or Permission*

**ECE J415/J515 Analog Integrated Circuit Design (3 cr)**
Analog integrated circuit (IC) analysis, design, simulation, and layout, advanced biasing techniques, voltage references and regulators, operational amplifiers, frequency compensation techniques, noise analysis in analog circuits, and comparators: continuous-time integrated circuit filter design. Additional projects/assignments required for graduate credit.

*Prereq: ECE 410 or Permission*
2. Change the curricular requirements of Electrical Engineering (B.S.E.E.)  

Upper-division engineering science elective chosen from Engr 320, Engr 335, Engr 350, Engr 428, Math 428, or Phys 428 (3 cr)

Technical electives taken from upper-division Engineering, Math, Physics, Statistics, and Computer Science courses. Students may request, after approval by their academic advisor and the Petition Committee, to use other upper division technical courses in the College of Science or in Engineering Management (EM) in partial fulfillment of this requirement. Of these eighteen credits a minimum of twelve credits must be selected from electrical engineering courses including at least nine credits from the following courses: ECE 410 or ECE 416, ECE 420, ECE 430, ECE 431, ECE 440, ECE 445, ECE 452, ECE 455.

Courses to total 128 credits for this degree, not counting Engl 101, Math 143, and other courses that might be required to remove deficiencies.

Students majoring in electrical engineering must earn a grade of P in ECE 292 and a grade of C or better in each of the following courses for graduation and before registration is permitted in upper-division electrical and computer engineering courses: Chem 111, CS 120, ECE 210, ECE 211, ECE 212, ECE 213, ECE 240 and ECE 241; Engr 210, and Engr 220; Math 170, Math 175, Math 275, and Math 310; and Phys 211, Phys 212. Students majoring in electrical engineering or computer engineering must meet the college requirements for admission to classes (see “Admission to Classes” under College of Engineering, part four).

Any student majoring in electrical engineering may accumulate no more than five (5) letter grades of D’s and F’s in lower-division mathematics, science, or engineering courses that are used to satisfy graduation requirements. Included in this number are multiple repeats of a single class or single repeats in multiple classes and courses transferred from other institutions. Specifically excluded are D or F grades from laboratory sections associated with courses.

Within the constraints on choice of technical electives noted above, students may choose sets of electives to develop proficiencies in certain areas of emphasis. Three such areas are currently available, one in communications, one in integrated circuit design, and one in power. The course requirements for each of these areas are described below.

The Communications emphasis prepares students for a variety of careers in the communications industry. Students should take a total of 18 credits from the following: (a) core courses: 9 credits from ECE 410, ECE 430, ECE 450, and (b) technical electives: 9 credits from ECE 413, ECE 432, ECE 445, ECE 452, ECE 455.
The **Microelectronics** emphasis prepares students for variety careers in the semiconductor industry. It includes courses in analog/RF and mixed-signal integrated circuit (IC) design, semiconductors, and IC packaging. Students should take a total of 18 credits from the following: (a) 6 required credits: ECE 410, ECE 460, and (b) 3 core credits: ECE 413, ECE 415, ECE 418, and (c) 3 credits of ECE 440, ECE 430, ECE 450 and ECE 465, and (d) 6 additional credits of technical electives from ECE 413, ECE 415, ECE 417, ECE 418, ECE 419, ECE 445, ECE 462, ECE 465. The **Integrated Circuit Design** emphasis prepares students for careers in the field of integrated circuit design. It includes courses in analog and digital integrated circuit at both the system and transistor level. Students should take a total of 18 credits from the following: (a) core courses: 13 credits from ECE 410, ECE 411, ECE 415, ECE 445, ECE 460 and (b) technical electives: 3 credits from ECE 412, ECE 413, ECE 416, ECE 417, ECE 440, ECE 452, ECE 470, ECE 476.

The **Power** emphasis prepares students for a variety of careers with electric utilities, consulting firms, and with manufacturing and design firms. Students should take a total of 18 credits from the following: (a) 12 credits: ECE 420, ECE 422, ECE 427 and ECE 450, and (b) 3 core credits from: ECE 410, ECE 430, ECE 440, and (c) 3 additional credits of technical electives.

**Engineering:** It was motioned and seconded to approve of the proposed changes to Engineering. Committee member Law reviewed the proposed changes. Hearing no questions the motion to approve the proposed changes passed unanimously.

1. **Drop the following courses** [Effective: Summer 2014]

   **EM J484/J584 Writing Winning Proposals (3 cr)**
   Practical course to define the process for developing and submitting proposals. Topics include RFP identification, budgeting, scheduling, proposal writing, proposal reviews, and other topics in the proposal writing process. Guest lecturers will discuss their successful experiences. Students will produce one submission-ready proposal for review of technical writing skills. Additional projects reqd for grad cr.

   **EM 511 Legal Process for Engineers (3 cr)**
   Designed to acquaint engineering management students with the legal process in general and the role of the judiciary in issues encountered by engineering managers. The course is intended to prepare professionals and managers for legal problems and potential liabilities they may encounter in their work as managers. Course employs the Socratic process to explore business organizations, employment law, contract law and other related topics.

   **TM 527 Occupational Health Hazards (3 cr)**
   In-depth examination and implementation of the field of industrial hygiene practice; focus on recognition, evaluation, and control of occupational health hazards.

   Recommended Equivalent Course: TM 533

2. **Add the following courses** [Effective: Summer 2014]

   **EM 515 (s) Advanced Topics in Engineering Management (2-9 cr, max 9)**
   Same as TM 515. Advanced topics in Engineering Management and Technology Management.
   **Prereq:** Instructor Permission

   Recommended Short Course Title: Adv Topics in EM

   **EM 560 Project Risk Management (3 cr)**
   Application of project risk assessment tools and techniques that help increase the probability of project success. Discover different approaches used by commercial and federal agencies to identify, assess, and quantify risks and their impacts on projects.
   **Prereq:** EM 510 or TM 510; or Instructor Permission

   **TM 515 (s) Advanced Topics in Engineering Management (2-9 cr, max 9)**
   See EM 515.

**Mechanical Engineering:** It was motioned and seconded to approve of the proposed changes to Mechanical Engineering. Committee member Law reviewed the proposed changes. Committee member Miller asked if ME 490 would be submitted as a Senior Experience course. Law said he did not believe it would. The committee discussed the inclusion of the “subtitisable” feature on ME 421 without the ability to retake the course for credit multiple times. Committee member Thorsteinson suggested that the instructor of ME 423/523 visit with Psychology faculty who specialize in Human Factors. Hearing no further questions the motion to approve the proposed changes passed unanimously.

1. **Add the following courses** [Effective: Summer 2014]

   **ME J423/J523 Human Factors and Ergonomics in Product Design (3 cr)**
   Introduction to and application of Human Factors & Ergonomics Engineering principles in product design. Engineers design systems (e.g., work environments or products) where the human is an integral component. Human Factors & Ergonomics Engineering puts emphasis on how products should be designed so that they are safe, comfortable, and efficient for the human user. This course will
focus on how body characteristics, physical and cognitive abilities, and the environment affect how products should be designed to accommodate the intended user(s). Additional projects/assignments are required for graduate credit.

**Prereq:** Senior standing in the College of Engineering; or Permission

**Recommended Short Course Title:** Human Factors & Ergonomics

**ME 490  Solid Modeling, Simulation and Manufacturing Capstone (3 cr)**
Use of solid modeling software focused on preparation for certification examinations, introduction to multi-physics numerical simulation, and computer aided manufacturing (CAM). A major final project is required. (Fall only)

**Prereq:** Permission

**Recommended Short Course Title:** Solid Model, Sim & Manuf Caps

2. **Change the following courses [Effective: Summer 2014]**

**ME J421/J521 (s) Advanced Computer Aided Design (3 cr)**
Use of solid modeling software for advanced component design, creation of complex multi-component assemblies, animation studies, and rendering. Course concludes with one month-long final project.

**Prereq:** ME 301 and ME 341

**Coreq:** ME 341

**ME 521  Advanced Computer Aided Design Design Synthesis with Solid Modeling (3 cr)**
Use of solid modeling in the design synthesis process that focuses on optimized designs, reverse engineering to understand design intent, and aesthetics. Course concludes with one month-long final project. See ME J421/J521.

**Prereq:** Graduate Standing or ME 421

**Recommended Short Course Title:** Design Synth w/ Solid Model

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**UCC-14-031 College of Science**

It was motioned and seconded to approve the proposed change to rename the Bi-State Department of Statistical Science to the Department of Statistical Science. Committee member Johnson reviewed the proposal. Hearing no questions the motion to approve the proposed change **passed unanimously** and will be forwarded to Faculty Senate for review.

**UCC-14-031 College of Science**

**Statistical Science:** It was motioned and seconded to approve of the proposed change to Statistical Science. Committee member Johnson reviewed the proposed change. Hearing no further questions the motion to approve the proposed change **passed unanimously**.

1. **Change the following courses [Effective: Summer 2014]**

**Stat 251  Statistical Methods (3 cr)**
May be used as general education credit in J-3-c. Credit awarded for only one of Stat 251, Stat 301, and Stat 416. Intro to statistical methods including design of statistical studies, basic sampling methods, descriptive statistics, probability and sampling distributions; inference in surveys and experiments, regression, and analysis of variance.

**Prereq:** One of the following: Math 108, Math 137, Math 143, Math 160, Math 170, or Sufficient score on SAT, ACT, or COMPASS Math Test to qualify for registration in Math 143.130

Editor’s Note: The original intent of Statistical Science was to require the test scores necessary to register in Math 130.

The next UCC meeting will be November 4th, 2013. This meeting was adjourned at 4:52pm.

Charles Tibbals, UCC Secretary