The effective date for new programs subject to Statewide Academic Program review is implemented in accordance with the Statewide Academic Program Review calendar.
TO: Faculty Senate

This report is prepared and distributed for the following purposes:

1. To report new academic programs, changes in academic programs, discontinuations of academic programs, new courses, permanent changes in courses, and deletions of courses.
2. To notify the initiating colleges, schools, and departments of approval by the University Committee on Curriculum of their requests for new academic programs, changes in academic programs, discontinuations of academic programs, new courses, permanent changes in courses, and deletions of courses. Any items not approved by the Faculty Senate will be reported to the appropriate college and department or school.
3. To provide information to members of the faculty in each department about academic programs and courses in all colleges, departments, and schools of the University.

Reports of the University Committee on Curriculum to the Faculty Senate are organized as follows:

PART I - NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES:
Organized by colleges in alphabetical order. For a given college, academic units are organized in alphabetical order. For a given academic unit, degrees, majors, and specializations are organized in alphabetical order.

PART II - NEW COURSES: ¹
Organized by academic units in alphabetical order; All-University courses appear last. For a given academic unit, courses are organized according to the names associated with course subject codes, in alphabetical order. Courses with the same subject code are in numerical order.

PART III - COURSE CHANGES: ¹
Organized by academic units in alphabetical order; All-University courses appear last. For a given academic unit, courses are organized according to the names associated with course subject codes, in alphabetical order. Courses with the same subject code are in numerical order.

Not all of the above categories, and not all of the colleges and academic units, will necessarily appear in any given Senate Report.

¹One or more of the abbreviations that follow may be included in a course entry:
P: = Prerequisite monitored in SIS
C: = Corequisite
R: = Restriction
RB: = Recommended background
SA: = Semester Alias
TO: Faculty Senate
FROM: University Committee on Curriculum
SUBJECT: New Academic Programs and Program Changes: New Courses and Course Changes

PART I - NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. Change the requirements for the Bachelor of Science degree in Packaging in the School of Packaging. The University Committee on Undergraduate Education (UCUE) approved this request at its October 2, 2014 meeting.
   a. Under the heading Admission as a Junior make the following change in item 2.:
      (1) Change item b. to 'Mathematics 133'.
   b. Under the heading Requirements for the Bachelor of Science Degree in Packaging make the following changes:
      (1) In item 3. a. make the following changes:
          (a) Change the total credits from '50' to '57'.
          (b) Add the following courses:
              MTH 132 Calculus I 3
              MTH 133 Calculus II 4
      (2) Delete item 3. c.
      (3) Reletter items 3. d., 3. e., and 3. f. to items 3. c., 3. d., and 3. e. respectively.
      (4) In item 3. d. make the following changes:
          (a) Change the total credits from '9 or 10' to '9'.
          (b) Change the credits of ADV 205 from '4' to '3'.

Effective Spring 2015.
2. Establish an **Agricultural Technology Certificate** in **Applied Horse Science** in The Institute of Agricultural Technology, and in collaboration with Montcalm Community College. The University Committee on Undergraduate Education (UCUE) recommended approval of this request at its September 18, 2014 meeting.

a. **Background Information:**

   The Institute of Agricultural Technology (IAT) provides Michigan State University with a unique niche in its capacity to help educate Michigan citizens and to help diversify the Michigan economy. The acceleration of the vision of the IAT is an initiative to develop partnerships with community colleges throughout Michigan to offer IAT programs at the local level.

   Conversations began in 2009 with MSU Global, MSU Extension and My Horse University content experts, IAT and the Department of Animal Science about the opportunity to develop an online for-credit certificate in horse science that utilizes content developed for My Horse University. Industry stakeholders made up of equine professionals from northern Michigan were brought in as advisors in 2011. There is a need to provide horse science education to non-traditional students that cannot participate in a face-to-face campus-based program due to work or family obligations. Many professionals in the horse industry have no formal academic training in horse science. Their knowledge and skill base is founded on personal or work-related experience. While experience-based credentials are extremely important, many professionals or those seeking a job in the horse industry would like a stronger knowledge in horse science topics such as nutrition, reproduction and exercise physiology. An online equine science program would provide these non-traditional students with an opportunity to learn fundamental concepts that would give them the knowledge to base their management practices on scientifically proven methods. In addition, a certificate from an MSU online program would give additional credibility in their current profession or as they seek out new opportunities in the horse industry.

   An online horse science program will attract many recreational horse enthusiasts that have the desire to learn more about equine, and also desire the certificate for verification of their educational experience.

b. **Academic Programs Catalog Text:**

   The Applied Horse Science certificate, in partnership with Montcalm Community College, provides students the opportunity to study an in-depth horse science curriculum outside of the traditional classroom and provides learning experiences that improve the profitability, animal welfare, environmental stewardship and recreation by horse enthusiasts. The certificate program is available only online.

   **Requirements for Applied Horse Science**

   | CREDITS |
   |-----------------|-----|
   | 1. All of the following courses (14 credits): |
   | ANS 140 Fundamentals of Horsemanship | 2 |
   | ANS 149 Horse Management Clerkship | 2 |
   | ANS 200D Introductory Judging of Horses | 2 |
   | ANS 225 Horse Behavior and Welfare | 2 |
   | ANS 243 Horse Nutrition and Feeding | 2 |
   | ANS 244 Horse Facility Design and Management | 2 |
   | ANS 247 Horse Health | 2 |
   | 2. One of the following courses (2 credits): |
   | ANS 140 Fundamentals of Horsemanship | 2 |
   | ANS 148 Methods of Safe Horsemanship | 2 |
   | 3. Two credits from the following courses (2 credits): |
   | ANS 143 Principles of Trail Riding | 1 |
   | ANS 144 Introduction to Horse Breeding and Foal Management | 1 |
   | ANS 148 Methods of Safe Horsemanship | 2 |
   | ANS 248 Horse Reproductive Technology and Breeding Techniques | 2 |
   | Students may not use ANS 148 to fulfill both requirement 2. and 3. |
   | 4. Complete 17 credits of course work from Montcalm Community College as approved by the student’s academic advisor. |

   Effective Spring 2015.
3. Change the requirements for the **Landscape and Lawn Management Agricultural Technology Certificate** in The Institute of Agricultural Technology, in collaboration with Grand Rapids Community College.

   a. Under the heading **Landscape and Lawn Management** add the following:

   **Requirements for Landscape and Lawn Management**

<table>
<thead>
<tr>
<th>CRDITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 293 Professional Internship in Agricultural Technology</td>
</tr>
<tr>
<td>CSS 202 World of Turf</td>
</tr>
<tr>
<td>CSS 202L World of Turf Lab</td>
</tr>
<tr>
<td>CSS 210 Fundamentals of Soil Science</td>
</tr>
<tr>
<td>ENT 110 Applied Entomology of Economic Plants</td>
</tr>
<tr>
<td>HRT 211 Landscape Plants I</td>
</tr>
<tr>
<td>HRT 212 Landscape Plants II</td>
</tr>
<tr>
<td>HRT 213 Landscape Maintenance</td>
</tr>
<tr>
<td>HRT 214 Landscape and Turfgrass Business Operations</td>
</tr>
<tr>
<td>PLP 104 Applied Plant Pathology for Ornamentals and Turf</td>
</tr>
</tbody>
</table>

   2. Complete a minimum of 3 credits of course work from the Institute of Agricultural Technology as approved by the program coordinator.

   3. Complete 20 credits of course work from Grand Rapids Community College as approved by the program coordinator.

   Effective Spring 2015.

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**COLLEGE OF ARTS AND LETTERS**

1. Change the award type for the **Specialization in Museum Studies** to **Minor in Museum Studies** in the College of Arts and Letters.

   Per the May 30, 2013 memo to Deans, Directors, and Chairpersons from Linda O. Stanford, Associate Provost for Academic Services, all units offering undergraduate specializations will need to convert the award to a minor.

   Students currently enrolled in the Specialization will continue to follow the requirements for the specialization that were in effect the term they were admitted to the specialization.

   Students who do not complete the requirements for the specialization prior to Fall 2015 will be administratively moved to the minor.

   Students admitted to the Minor in Museum Studies Fall 2015 and forward will follow the requirements for the minor in accordance with the minor policy.

2. Change the requirements for the **Minor in Museum Studies** in the College of Arts and Letters.

   a. Under the heading **Requirements for the Minor in Museum Studies** make the following changes:

      (1) In item 1. b. delete the ‘Elective’.

      (2) Replace the paragraph following item 1. with the following:

      With the approval of the undergraduate advisor for Museum Studies, a course selected from a wide range of disciplines may be counted toward the requirements for the Minor in Museum Studies, including AL 271 and relevant CSUS courses.

   Effective Fall 2015.
3. Change the award type and the name for the Specialization in Russian and East European Studies to Minor in Russian and Eurasian Studies in the College of Arts and Letters.

Per the May 30, 2013 memo to Deans, Directors, and Chairpersons from Linda O. Stanford, Associate Provost for Academic Services, all units offering undergraduate specializations will need to convert the award to a minor.

Students currently enrolled in the Specialization will continue to follow the requirements for the specialization that were in effect the term they were admitted to the specialization.

Students who do not complete the requirements for the specialization prior to Fall 2015 will be administratively moved to the minor.

Students admitted to the Minor in Russian and Eurasian Studies Fall 2015 and forward will follow the requirements for the minor in accordance with the minor policy.

4. Change the requirements for the Minor in Russian and Eurasian Studies in the College of Arts and Letters.

a. Under the heading Requirements for the Minor in Russian and Eurasian replace the entire entry with the following:

The student must meet the requirements specified below:

1. **Foreign Language Proficiency**
The student must demonstrate proficiency in Russian or in a relevant Eurasian language at a level equivalent to the completion of four semesters of study at the university level. Proficiency may be demonstrated either by completing the appropriate courses or by passing a proficiency examination.

2. Completion of a minimum of 15 credits of course work which includes courses from at least three of the following areas listed below:

**Economics**
- EC 306 Comparative Economic Systems 3
- EC 406 Economic Analysis of Russia and the Commonwealth of Independent States (W) 3

**Geography**
- GEO 336 Geography of Europe 3

**History of Art**
- HA 410 Selected Topics in Medieval Art 4

**History**
- HST 342 Modern East-Central Europe 3
- HST 343 Russia from Peter the Great to Lenin 3
- HST 344 Russia in the Twentieth Century 3
- HST 483 Seminar in Modern European History (W) 3
- HST 490 Independent Study 1 to 4

**James Madison College**
- MC 321 The Cold War: Culture, Politics, and Foreign Policy 4
- MC 324E Regional Politics, Cooperation, and Conflict in Europe 4
- MC 325 State and Society in Comparative Perspective 4
- MC 328 Russian Foreign Policy 4
- MC 329 European Security: Challenges and Strategies 4
- MC 386 Women and Power in Comparative Perspective 4
- MC 492 Senior Seminar in International Relations (W) 5

**Philosophy**
- PHL 357 Philosophy of Karl Marx 3
- PHL 416 Hegel Seminar 4
- PHL 421 Topics in European and Continental Philosophy 3

**Political Science**
- PLS 358 Politics of the U.S.S.R. and Its Successor States 3

**Russian**
- LL 250D Topics in National Cinemas: Russian and Soviet Cinema 3
- RUS 231 19th-Century Russian Literature in Translation 3
- RUS 232 20th-Century Russian Literature in Translation 3
- RUS 242 Russian and Eastern European Science Fiction 3
PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

RUS 311 Advanced Russian: Oral Communication 3
RUS 341 Russian Life and Culture of the 20th Century 3
RUS 420 Russian Life and Culture Before World War I 3
RUS 421 Russian Life and Culture in the 20th Century 3
RUS 440 Contemporary Russian Life and Culture (W) 3
RUS 441 Russian Literature (W) 3
RUS 491 Special Topics in Russian Studies 1 to 6
RUS 493 Overseas Internship 1 to 12

Sociology
SOC 490 Special Topics in Sociology 3

In order for EC 306, HST 482, HST 490, MC 386, MC 492, PHL 421, or SOC 490 to be counted toward the requirements for the Minor in Russian and Eurasian Studies, the topic of the course must be specifically related to the regions of the former Soviet Union or Eastern Europe and be approved by the Director of the Center for European, Russian and Eurasian Studies or the Dean of the College of Arts and Letters. Students are encouraged to take independent study courses that may be helpful to students who are planning to study in the regions of the former Soviet Union or in the East European countries.

Effective Fall 2015.


Per the May 30, 2013 memo to Deans, Directors, and Chairpersons from Linda O. Stanford, Associate Provost for Academic Services, all units offering undergraduate specializations will need to convert the award to a minor.

Students currently enrolled in the Specialization will continue to follow the requirements for the specialization that were in effect the term they were admitted to the specialization.

Students who do not complete the requirements for the specialization prior to Fall 2015 will be administratively moved to the minor.

Students admitted to the Minor in Cognitive Science Fall 2015 and forward will follow the requirements for the minor in accordance with the minor policy.


a. Under the heading Requirements for the Minor in Cognitive Science replace the entire entry with the following:

Students must complete a minimum of 18 credits from the courses listed below. Independent study and special topics courses must be approved in advance by the advisor for the minor, to ensure that the content of the course is specifically related to cognitive science. Students are encouraged to take advantage of research opportunities with specific faculty members through independent study. The students program of study must be approved by the advisor for the minor.

<table>
<thead>
<tr>
<th>C R E D I T S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Complete the following course (3 credits): LIN 463 Introduction to Cognitive Science 3</td>
</tr>
<tr>
<td>2. Complete at least 6 credits from one of the following disciplinary areas. Additional courses in the focus area may be approved by the advisor.</td>
</tr>
<tr>
<td>Communicative Sciences and Disorders CSE 203 Introduction to Communication Sciences and Disorders 3</td>
</tr>
<tr>
<td>CSE 213 Anatomy and Physiology of Speech and Hearing Mechanisms 3</td>
</tr>
<tr>
<td>CSE 333 Oral Language Development 3</td>
</tr>
<tr>
<td>Computer Science and Engineering CSE 440 Introduction to Artificial Intelligence 3</td>
</tr>
<tr>
<td>Sociology SOC 490 Special Topics in Sociology 3</td>
</tr>
</tbody>
</table>
## PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

### New Academic Programs

<table>
<thead>
<tr>
<th>Department</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE</td>
<td>460</td>
<td>Computability and Formal Language Theory</td>
<td>3</td>
</tr>
<tr>
<td>CSE</td>
<td>484</td>
<td>Information Retrieval</td>
<td>3</td>
</tr>
<tr>
<td>Kinesiology</td>
<td>KIN 365</td>
<td>Sensorimotor Control</td>
<td>3</td>
</tr>
<tr>
<td>Kinesiology</td>
<td>KIN 443</td>
<td>Psychophysiological Aspects of Kinesiology</td>
<td>3</td>
</tr>
<tr>
<td>Linguistics</td>
<td>LIN 401</td>
<td>Introduction to Linguistics</td>
<td>4</td>
</tr>
<tr>
<td>Linguistics</td>
<td>LIN 424</td>
<td>Introduction to Phonetics and Phonology</td>
<td>3</td>
</tr>
<tr>
<td>Linguistics</td>
<td>LIN 431</td>
<td>Introduction to Morphology</td>
<td>3</td>
</tr>
<tr>
<td>Linguistics</td>
<td>LIN 434</td>
<td>Introduction to Syntax</td>
<td>3</td>
</tr>
<tr>
<td>Linguistics</td>
<td>LIN 437</td>
<td>Semantics and Pragmatics</td>
<td>3</td>
</tr>
<tr>
<td>Linguistics</td>
<td>LIN 450</td>
<td>Child Language Acquisition</td>
<td>3</td>
</tr>
<tr>
<td>Linguistics</td>
<td>LIN 455</td>
<td>Neurolinguistics</td>
<td>3</td>
</tr>
<tr>
<td>Linguistics</td>
<td>LIN 471</td>
<td>Sociolinguistics</td>
<td>3</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>NEU 301</td>
<td>Introduction to Neuroscience I</td>
<td>3</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>NEU 302</td>
<td>Introduction to Neuroscience II</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy</td>
<td>PHL 330</td>
<td>Formal Reasoning</td>
<td>4</td>
</tr>
<tr>
<td>Philosophy</td>
<td>PHL 360</td>
<td>Philosophy of Language</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy</td>
<td>PHL 431</td>
<td>Topics in Philosophy of Logic and Language</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy</td>
<td>PHL 462</td>
<td>Philosophy of Mind</td>
<td>3</td>
</tr>
<tr>
<td>Psychology</td>
<td>PSY 200</td>
<td>Cognitive Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Psychology</td>
<td>PSY 301</td>
<td>Cognitive Neuroscience</td>
<td>3</td>
</tr>
<tr>
<td>Psychology</td>
<td>PSY 401</td>
<td>Expertise and Skill (W)</td>
<td>3</td>
</tr>
<tr>
<td>Psychology</td>
<td>PSY 402</td>
<td>Sensation and Perception (W)</td>
<td>3</td>
</tr>
<tr>
<td>Psychology</td>
<td>PSY 410</td>
<td>Neurobiology of Learning and Memory (W)</td>
<td>3</td>
</tr>
<tr>
<td>Zoology</td>
<td>ZOL 313</td>
<td>Animal Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Zoology</td>
<td>ZOL 402</td>
<td>Neurobiology</td>
<td>3</td>
</tr>
<tr>
<td>Zoology</td>
<td>ZOL 415</td>
<td>Ecological Aspects of Animal Behavior (W)</td>
<td>3</td>
</tr>
</tbody>
</table>

3. Complete at least 9 additional credits in course work as approved by the advisor for the minor. Additional courses may be chosen from courses above except from the focus area chosen.

Effective Fall 2015.

7. Change the requirements for the Minor in Women's and Gender Studies in the Program in Women, Gender and Social Justice.

a. Under the heading Requirements for the Minor in Women's and Gender Studies make the following changes:

1. In item 2. under Gender, Race, Ethnicity, and History delete the following courses:
   - AMS 320 Gender and Popular Culture 3
   - ANP 435 Issues in Latino Health: Theory and Method in Minority Health Research 3
   - ENG 349 African-American Literature I 3
   - HST 313 Women in the United States to 1869 4
   - HST 314 Women in the United States since 1869 4

Add the following courses:
   - ANP 425 Issues in Medical Anthropology 3
   - HST 313 Women in the United States to 1869 3
   - HST 314 Women in the United States since 1869 3

2. In item 2. under Sexuality and Conflict/Violence delete the following courses:
PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCE 145</td>
<td>The Individual, Marriage and the Family</td>
<td>3</td>
</tr>
<tr>
<td>FCE 445</td>
<td>Human Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>PSY 239</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
<tr>
<td>PSY 310</td>
<td>Psychology and Biology of Human Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>WS 204</td>
<td>Lesbian, Bisexual, and Gay Studies: Psychological and Cultural Issues</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 145</td>
<td>The Individual, Marriage and the Family</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 445</td>
<td>Human Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>NEU 310</td>
<td>Psychology and Biology of Human Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>PSY 339</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
<tr>
<td>WS 304</td>
<td>Lesbian, Gay, Bisexual, Transgender, Queer (LGBTQ): and Sexuality Studies</td>
<td>3</td>
</tr>
</tbody>
</table>

Add the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HST 313</td>
<td>Women in the United States to 1869</td>
<td>4</td>
</tr>
<tr>
<td>HST 314</td>
<td>Women in the United States since 1869</td>
<td>4</td>
</tr>
<tr>
<td>REL 315</td>
<td>Religion and Gender</td>
<td>3</td>
</tr>
<tr>
<td>ENG 130</td>
<td>Film and Society</td>
<td>3</td>
</tr>
<tr>
<td>ENG 153</td>
<td>Introduction to Women Authors</td>
<td>3</td>
</tr>
<tr>
<td>ENG 349</td>
<td>African American Literature (I)</td>
<td>3</td>
</tr>
<tr>
<td>ENG 379</td>
<td>American Women Writers</td>
<td>3</td>
</tr>
<tr>
<td>ENG 483</td>
<td>Literature and Medicine</td>
<td>3</td>
</tr>
<tr>
<td>AMS 320</td>
<td>Gender and Popular Culture</td>
<td>3</td>
</tr>
<tr>
<td>CJ 421</td>
<td>Minorities, Crime and Social Policy</td>
<td>3</td>
</tr>
<tr>
<td>ENG 483</td>
<td>Literature and Medicine</td>
<td>3</td>
</tr>
<tr>
<td>FCE 405</td>
<td>Work and Family</td>
<td>3</td>
</tr>
<tr>
<td>FCE 448</td>
<td>Child and Family Policy</td>
<td>3</td>
</tr>
<tr>
<td>PSY 239</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
<tr>
<td>PSY 310</td>
<td>Psychology and Biology of Human Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>SOC 476</td>
<td>Social Psychology of Health</td>
<td>3</td>
</tr>
<tr>
<td>UP 343</td>
<td>Planning Theory: Ethnics and Politics (W)</td>
<td>3</td>
</tr>
<tr>
<td>PSY 339</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
</tbody>
</table>

In item 2. under **Gender and the Arts and Humanities** delete the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS 320</td>
<td>Gender and Popular Culture</td>
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<tr>
<td>ENG 130</td>
<td>Film and Society</td>
<td>3</td>
</tr>
<tr>
<td>ENG 153</td>
<td>Introduction to Women Authors</td>
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<td>ENG 349</td>
<td>African American Literature (I)</td>
<td>3</td>
</tr>
<tr>
<td>ENG 379</td>
<td>American Women Writers</td>
<td>3</td>
</tr>
<tr>
<td>ENG 483</td>
<td>Literature and Medicine</td>
<td>3</td>
</tr>
<tr>
<td>HST 313</td>
<td>Women in the United States to 1869</td>
<td>4</td>
</tr>
<tr>
<td>HST 314</td>
<td>Women in the United States since 1869</td>
<td>4</td>
</tr>
<tr>
<td>REL 315</td>
<td>Religion and Gender</td>
<td>3</td>
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<tr>
<td>ENG 130</td>
<td>Film and Society</td>
<td>4</td>
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<tr>
<td>ENG 153</td>
<td>Introduction to Women Authors</td>
<td>4</td>
</tr>
<tr>
<td>HST 313</td>
<td>Women in the United States to 1869</td>
<td>3</td>
</tr>
<tr>
<td>HST 314</td>
<td>Women in the United States since 1869</td>
<td>3</td>
</tr>
</tbody>
</table>

In item 2. under **Gender Applied: Health, Urban, and Public Policy** delete the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANP 442</td>
<td>Genes and Diversity</td>
<td>3</td>
</tr>
<tr>
<td>CJ 421</td>
<td>Minorities, Crime and Social Policy</td>
<td>3</td>
</tr>
<tr>
<td>ENG 483</td>
<td>Literature and Medicine</td>
<td>3</td>
</tr>
<tr>
<td>FCE 405</td>
<td>Work and Family</td>
<td>3</td>
</tr>
<tr>
<td>FCE 448</td>
<td>Child and Family Policy</td>
<td>3</td>
</tr>
<tr>
<td>PSY 239</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
<tr>
<td>PSY 310</td>
<td>Psychology and Biology of Human Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>SOC 476</td>
<td>Social Psychology of Health</td>
<td>3</td>
</tr>
<tr>
<td>UP 343</td>
<td>Planning Theory: Ethnics and Politics (W)</td>
<td>3</td>
</tr>
<tr>
<td>PSY 339</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
<tr>
<td>PSY 339</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
</tbody>
</table>

Add the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDFS 405</td>
<td>Work Family</td>
<td>3</td>
</tr>
<tr>
<td>HDFS 448</td>
<td>Child and Family Policy</td>
<td>3</td>
</tr>
<tr>
<td>NEU 310</td>
<td>Psychology and Biology of Human Sexuality</td>
<td>3</td>
</tr>
<tr>
<td>PSY 339</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
</tbody>
</table>

Effective Spring 2015.
PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF COMMUNICATION ARTS AND SCIENCES

1. Change the award type for the Specialization in Public Relations to Minor in Public Relations in the Department of Advertising and Public Relations.

   Per the May 30, 2013 memo to Deans, Directors, and Chairpersons from Linda O. Stanford, Associate Provost for Academic Services, all units offering undergraduate specializations will need to convert the award to a minor.

   Students currently enrolled in the Specialization will continue to follow the requirements for the specialization that were in effect the term they were admitted to the specialization.

   Students who do not complete the requirements for the specialization prior to Fall 2015 will be administratively moved to the minor.

   Students admitted to the Minor in Public Relations Fall 2015 and forward will follow the requirements for the minor in accordance with the minor policy.

   Effective Fall 2015.

COLLEGE OF ENGINEERING

1. Change the requirements in the Master of Science degree in Computer Science in the Department of Computer Science and Engineering. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

   a. Under the heading Requirements for the Master of Science Degree in Computer Science replace the entire entry with the following:

      The student must complete a total of 30 credits for the degree under either Plan A (with thesis) or Plan B (without thesis) and meet the requirements specified below:

      Requirements for Both Plan A and Plan B:
      The student must complete:
      1. The breadth requirement as described in the Graduate Handbook which is available on the Department’s Web site at http://www.cse.msu.edu.
      2. At least 18 credits in courses eligible to satisfy the breadth requirement as approved the student’s academic advisor.

      Additional Requirements for Plan A:
      The student must complete:
      1. A minimum of 21 credits in 800-900 level course courses excluding Computer Science and Engineering 801, 890, and 899.
      2. At least 6, but not more than 8, credits of CSE 899 Master’s Thesis Research.

      Additional Requirements for Plan B:
      Complete a minimum of 24 credits in 800-900 level courses excluding Computer Science 801, 890, and 899.

   Effective Spring 2015.
2. Change the requirements in the Doctor of Philosophy degree in Computer Science in the Department of Computer Science and Engineering. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

   a. Under the heading Requirements for the Doctor of Philosophy Degree in Computer Science replace the entire entry with the following:

   In addition to meeting the requirements of the university and of the College of Engineering, students must meet the requirements specified by the department in the Graduate Handbook available at http://cse.msu.edu as well as requirements specified by their guidance committees. All courses that are used to satisfy the requirements for the degree must have been completed under the numerical grading system.

   Effective Spring 2015.

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**COLLEGE OF LAW**

1. Change the requirements for the Master of Laws (LL.M.) and Master of Jurisprudence (M.J.) degrees in Global Food Law in the College of Law. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

   a. Under the heading L.L.M. and M.J. in Global Food Law replace the Academic Requirements with the following:

   **Academic Requirements**

   All students must complete 24 credits within five academic years with a 2.0 minimum cumulative grade-point average. Students who are pursuing the M.J. degree must complete an additional 2 credits in item 3. below.

   1. All of the following courses (9 credits):
      
      LAW 810A  Food Regulation in the United States  3
      LAW 810D  International Food Laws and Regulations  3
      LAW 810K  Administrative Law: Focus on Food Safety and Labeling  3
   
   2. At least 15 credits from the following courses:
      
      LAW 512B  International Business Transactions  3
      LAW 512K  International Commercial Arbitration  3
      LAW 624  Directed Study  3
      LAW 810B  Food Regulation in the European Union  3
      LAW 810C  Food Regulation in Canada  3
      LAW 810E  Animal Health, World Trade, and Food Safety  3
      LAW 810F  Codex Alimentarius: The World Food Code  3
      LAW 810G  Food Regulation in Latin America  3
      LAW 810J  Food Regulation in Asia  3
      LAW 810M  Regulation of Agricultural Production and Marketing  3
      LAW 810N  Survey of Intellectual Property in Agriculture  3
      LAW 810P  Biotechnology Law and Food Products  3
      LAW 810Q  Global Risk Regulation – Food Focus  3
      LAW 810R  United States Food Imports: Process, Regulations, and Food Safety  3

   Additional courses may be approved by the Associate Dean for Graduate and International Programs and Director of the Global Food Law Program.

   3. Students who are pursuing the M.J. degree must complete an additional 2 credits in the following course:
      
      LAW 807A  Foundations of Law and Legal Research  2

   Effective Spring 2015.
COLLEGE OF NURSING

1. Change the requirements for the Master of Science in Nursing degree in Nursing. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

   a. Under the heading Admission make the following changes:

      (1) Replace item 6. with the following:
      
      One year of clinical practice as a registered nurse prior to the clinical sequence of courses for the Nurse Practitioner concentration. No clinical practice experience is required prior to acceptance for the Adult-Gerontology Clinical Nurse Specialist with Education concentration. One year of full-time clinical experience or equivalent as a Registered Nurse in an intensive care unit within the last five years is required for the Nurse Anesthesia concentration.

      (2) Replace item 7. with the following:
      
      Completed a three (3) credit undergraduate or graduate statistics course with a grade of 3.0 (4.0 scale) or better within the last five years.

      (3) Replace item 8. with the following:
      
      Submitted a written essay that addresses the applicant’s career goals and motivations for graduate study in the selected area of specialty nursing practice: nurse practitioner, adult-gerontology clinical nurse specialist with education, or nurse anesthetist.

      (4) Replace item 9. with the following:
      
      Submit three letters of recommendations. The reference letters must be from a source that has direct knowledge of the applicant’s work and educational experience specifying the applicant’s ability to do graduate work.

   b. Under the heading Requirements for the Master of Science in Nursing Degree in Nursing make the following changes:

      (1) In item 2. under the heading NURSE PRACTITIONER replace item c. with the following:
      
      Complete a scholarly project.

      (2) In item 2. change the name of the CLINICAL NURSE SPECIALIST-NURSE EDUCATION concentration to ADULT-GERONTOLOGY CLINICAL NURSE SPECIALIST WITH EDUCATION and replace item c. with the following:
      
      Complete a scholarly project.

      (3) In item 2. under the heading NURSE ANESTHESIA replace item c. with the following:
      
      Complete a scholarly project.

Effective Spring 2015
2. Change the requirements for the Doctor of Nursing Practice degree in Nursing Practice. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

   a. Under the heading Admission make the following changes:

      (1) Replace the first paragraph with the following:

      Admission to the Doctor of Nursing Practice degree is limited to (1) Master’s Prepared Registered Nurses graduated from an accredited master’s program in nursing or (2) hold a B.S.N. from an accredited nursing program and a master’s degree that qualified them to sit for national certification as a Certified Registered Nurse Anesthetist (CRNA). In addition to meeting the requirements of the College of Nursing, students must meet the requirements specified below.

      (2) Replace item 2. with the following:

      An essay is required as part of the application which addresses the following:

      (3) Replace item 2. a. with the following:

      A concise academic statement of your goals for doctoral study, your professional experiences and career goals, and how the MSU College of Nursing Doctor of Nursing Practice program will support you in meeting your career and educational objectives.

   b. Under the heading Requirements for the Doctor of Nursing Practice in Nursing Practice Degree make the following changes:

      (1) In item 1. make the following changes:

      (a) Change the total credits from ‘35’ to ‘36’.

      (b) Delete the following course:

      EPI 810 Introductory Epidemiology    2

      Add the following course:

      EPI 840 Introductory Epidemiology    3

      Effective Spring 2015

3. Change the name of the Graduate Certificate in Clinical Nurse Specialist to the Graduate Certificate in Adult-Gerontology Clinical Nurse Specialist in the College of Nursing. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

Students admitted to the certificate prior to Spring 2015 will graduate with a Graduate Certificate in Clinical Nurse Specialist.

Students admitted to the certificate Spring 2015 and forward will graduate with a Graduate Certificate in Adult-Gerontology Clinical Nurse Specialist.

Effective Spring 2015.
4. Change the requirements for the Graduate Certificate in Adult-Gerontology Clinical Nurse Specialist in the College of Nursing. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

   a. Under the heading Admission replace item 1. with the following:

   Completion of a master’s degree in nursing from the Commission on Collegiate Nursing Education (CCNE) or Accreditation Commission for Education in Nursing (ACEN) accredited program. A clinical focus is preferred.

   Effective Spring 2015.

5. Change the requirements for the Graduate Certificate in Nurse Practitioner in the College of Nursing. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

   a. Under the heading Admission replace item 1. with the following:

   Completion of a master’s degree in nursing from the Commission on Collegiate Nursing Education (CCNE) or Accreditation Commission for Education in Nursing (ACEN) accredited program. A clinical focus is preferred.

   Effective Spring 2015.

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COLLEGE OF SOCIAL SCIENCE

1. Establish a Graduate Certificate in Environmental and Social System Modeling in the College of Social Science. The University Committee on Graduate Studies (UCGS) approved this request at its October 6, 2014 meeting.

   The Graduate Certificate in Environmental and Social System Modeling is a Type 2 graduate certificate and will appear on the transcript as “Graduate Certificate Program in Environmental and Social System Modeling”.

   a. Background Information:

   Understanding and responding to complex global environmental changes is one of the major challenges facing policy makers in this century. Modeling has emerged as a useful tool to effectively study coupled human and natural systems, addressing a variety of problems including climate change, water shortages, soil erosion, and deforestation at various spatial and temporal scales. Existing curricular structures emphasize disciplinary approaches resulting in a tendency to view analytical and computational modeling techniques as domain-specific. Oftentimes, students are unaware of the diversity of modeling tools that exist to address environmental problems and how they might be used most effectively, thus limiting their ability to apply the most appropriate methodology to a given problem.

   To address these challenges, a new graduate certificate is being proposed to offer an educational cluster around modeling techniques for addressing socio-environmental issues in complex systems. This module of courses expose student to cutting-edge modeling methodologies, including agent-based modeling, system dynamics modeling, participatory model-building, hierarchical linear modeling, and structural equation modeling.

   This program is unique to MSU as no other program offers interdisciplinary training in multiple modeling techniques for pressing environmental problems. A thorough review of other graduate programs at peer institutions revealed a similar absence of professional training.
b. **Academic Programs Catalog Text:**

The Graduate Certificate in Environmental and Social System Modeling is designed for students who desire to understand a variety of modeling techniques used to address environmental problems that span human and natural systems. The certificate program exposes students to a range of state-of-the-art techniques including agent-based modeling, systems dynamics modeling, multilevel modeling, and structural equation modeling.

**Requirements for the Graduate Certificate in Environmental and Social System Modeling**

<table>
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<tr>
<th>CREDITS</th>
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Students must complete 9 credits from the following:

1. Both of the following courses (3 credits):
   - ESP 850 Introduction to Environmental and Social System Modeling
   - ESP 890 Modeling Environmental and Social Systems

2. Two of the following courses (6 credits):
   - CSUS 851 Modeling Natural Resource Systems
   - GEO 869 Geosimulation
   - SOC 883 Multi-Equation Quantitative Models

Effective Spring 2015.
PART II - NEW COURSES

DEPARTMENT OF ANIMAL SCIENCE

ANS 143  Principles of Trail Riding
Summer of every year. 1(1-0) R: Open to agricultural technology students.
   Selection, nutrition and conditioning of horses for recreational or competitive trail riding.
   Effective Summer 2014

ANS 144  Introduction to Horse Breeding and Foal Management
Spring of every year. 1(1-0) R: Open to agricultural technology students.
   Strategic development for horse breeding based on conformation and genetics, breeding
   the mare, prenatal and postpartum care.
   Effective Spring 2014

ANS 244  Horse Facility Design and Management
Spring of every year. 2(2-0)
   Equine facility design and management. Manure, pasture, and biosecurity management.
   Effective Spring 2014

ANS 247  Horse Health
Spring of every year. 2(2-0) R: Open to agricultural technology students.
   Health risks for horses, emergency care, preventive health care.
   Effective Spring 2014

ANS 248  Horse Reproductive Technology and Breeding Techniques
Spring of every year. 2(2-0) RB: Biology R: Open to agricultural technology students.
   Horse reproductive anatomy, physiology, breeding and foaling management.
   Effective Spring 2014

DEPARTMENT OF GEOGRAPHY

GEO 429  Geoprocessing
Spring of every year. 3(3-0) P: GEO 325 or GEO 802 or approval of department
   Applications of computer programming to address geographic information problems.
   Integration of digital spatial data, geographic information systems, spatial analysis, and
   expert systems.
   Effective Spring 2015

DEPARTMENT OF KINESIOLOGY

KIN 101N  Introduction to Aquatic Paddle Sports
Fall of every year. Summer of every year. 1(0-2) RB: (KIN 101A) or Equivalent Skills R: A student
   may earn a maximum of 8 credits in all enrollments for this course if different activities or the same
   activities at higher levels are involved. Students are limited to a combined total of 8 credits in KIN
   101-108 and KIN 111-118.
   Learning to kayak, stand-up paddle board and canoe.
   Request the use of the Pass-No Grade (P-N) system.
   Effective Summer 2015

KIN 102N  Introduction to Wing Chun
Fall of every year. Spring of every year. Summer of every year. 1(0-2) RB: Previous experience
   with the martial arts R: A student may earn a maximum of 8 credits in all enrollments for this course
   if different activities or the same activities at higher levels are involved. Students are limited to a
   combined total of 8 credits in KIN 101-108 and KIN 111-118.
   Learning to balance, focus, and self-defense techniques of Wing Chun.
   Request the use of the Pass-No Grade (P-N) system.
   Effective Summer 2015
PART II – NEW COURSES

KIN 106S  Archery
Fall of every year. Spring of every year. Summer of every year. 1(0-2) RB: Previous experience with shooting a bow and arrow. R: A student may earn a maximum of 8 credits in all enrollments for this course if different activities or the same activities at higher levels are involved. Students are limited to a combined total of 8 credits in KIN 101-108 and KIN 111-118.
Beginning and intermediate level hands-on learning of archery.
Request the use of the Pass-No Grade (P-N) system.
Effective Summer 2015

KIN 495  Undergraduate Experiences in Research
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department.
Supervised experiences in research in various fields of emphasis in kinesiology.
Effective Fall 2015

DEPARTMENT OF LINGUISTICS AND GERMANIC, SLAVIC, ASIAN AND AFRICAN LANGUAGES

LLT 855  Language Identity and Ideology in Multilingual Settings
Spring of every year. 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course. R: Open to graduate students in the Department of Linguistics and Germanic, Slavic, Asian and African Languages or in the Second Language Studies Major or in the Teaching English to Speakers of Other Languages Major.
Current debates on the relationship between language, identity, and ideology. Theories of identity and ideology related to a variety of educational settings. Negotiation of identity and ideology with respect to social relationships between writer and reader, teacher and student, classroom and community.
Effective Fall 2015

COLLEGE OF SOCIAL SCIENCE

ESP 850  Introduction to Environmental and Social Systems Modeling
Fall of every year. 1(1-0)
Theoretical background of diverse modeling problems in complex environmental systems. Diverse modeling approaches to most appropriate modeling tools in a variety of contexts.
Effective Fall 2014

ESP 890  Modeling Environmental and Social Systems
Fall of every year. 2(2-0)
Modeling project of real-world environmental problems. Theories and methodologies from previous modeling courses to practical policy problems. Applied project with a variety of modeling tools and a trans-disciplinary synthesis. Model development, implementation, and evaluation in student groups.
Effective Fall 2014
PART III – COURSE CHANGES

DEPARTMENT OF ANIMAL SCIENCE

ANS 212  Merchandising Purebred Livestock
Spring of odd years. 2(1-2) RB: ANS 110
Purebred livestock industry. Private treaty and auction sales. Advertising, animal selection and budgeting of purebred livestock sales.
DELETE COURSE
Effective Spring 2015

DEPARTMENT OF COUNSELING, EDUCATIONAL PSYCHOLOGY, AND SPECIAL EDUCATION

CEP 432  Language Assessment and Intervention in Deaf Education
Spring of every year. 3(3-1)
Language assessment and intervention with deaf/hard of hearing students. Designing and assessing studies of language development for students who are deaf or hard-of-hearing, ages 5 through 21.
DELETE COURSE
Effective Spring 2015

CEP 434  Structure of English and American Sign Language
Fall of every year. 3(3-1)
Linguistic structures of English and American Sign Language in preparation for teaching them in a parallel manner to deaf/hard-of-hearing students at various levels.
DELETE COURSE
Effective Spring 2015

CEP 802C  Bilingual Instruction in Deaf Education
Spring of every year. 3(3-0) P: CEP 432 RB: Admission to the teacher certification program in deaf education. R: Open to undergraduate students in the Special Education-Deaf Education major and open to masters students in the Special Education major. Not open to students with credit in CEP 802A. C: CEP 801A concurrently and TE 501 concurrently.
Preparation to teach language (literacy, oracy, and signacy) to students who are deaf/hard of hearing via a bilingual approach, American Sign Language and English.
DELETE COURSE
Effective Spring 2015

CEP 813  Electronic Portfolios for Teaching and Learning
Electronic Assessment for Teaching and Learning
Fall of every year. 3(3-0)
Web-based professional teaching and student portfolios. Authentic assessment, evaluation rubrics, alternative assessment. Portfolios for teaching writing, science, social studies, and art. Foundational theories of assessment. Critical examination of methods (e.g., portfolios, rubrics, surveys, tests, self-evaluations), and digital tools that allow educators to gather information, analyze it, and make informed pedagogical choices. Design of assessments for learning, as learning and of learning, especially in digital contexts.
Effective Spring 2014 Effective Summer 2015

CEP 893J  Special Education Internship: Teaching Children with Autism Spectrum Disorders
Fall of every year. Summer of every year. 3 to 6 credits. R: Open to graduate students in the Special Education major.
Supervised internship at the elementary or secondary levels, working with students who are identified as having Autism Spectrum Disorder.
Effective Summer 2010 Effective Spring 2015
CEP 894J Special Education Practicum: Children and Youth with Autism Spectrum Disorders
Fall of every year, Summer of every year. 3 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to graduate students in the Special Education major.
Supervised practicum, at the elementary or secondary levels, working with students who are identified as having Autism Spectrum Disorder.
Effective Summer 2011 Effective Spring 2015

CEP 919 Current Research and Issues in School Psychology
Fall of every year. Spring of even years. 3(3-0) R: Open only to Ed.S. or Ph.D. students in the School Psychology major. R: Open to educational specialist or doctoral students in the School Psychology Major.
Rotating topics include role function, diagnosis and eligibility concerns, innovative educational and behavioral interventions.
Effective Summer 1999 Effective Spring 2015

CEP 941 Academic Issues in Special Education for At-Risk Students
Fall of odd years. Fall of even years. 3(3-0) R: Open only to doctoral students in the Special Education major. R: Open to doctoral students in the Special Education Major.
Academic assessment and instructional research in special education. Inquiry in special education related to the design and evaluation of academic programs for learning disabled, mentally retarded, emotionally impaired, and other low achieving students.
Effective Summer 1997 Effective Spring 2015

CEP 944C Clinical Practice Practicum in Rehabilitation Counseling
Fall of even years. Fall of every year. Spring of every year. Summer of every year. 3(0-9) R: Open only to Ph.D. students in Rehabilitation Counselor Education. R: Open to doctoral students in the Rehabilitation Counselor Education Major.
Supervised counseling experience in human services, rehabilitation or educational settings to further develop skills, knowledge, and behaviors appropriate for professional counseling practice.
Effective Fall 2005 Effective Spring 2015

CEP 953 Teachers and Technology
Fall of every years. Spring of even years. 3(3-0) R: Open to doctoral students.
Impact of new technologies on teacher knowledge and practices of teaching. Teachers’ use of technology, teacher knowledge, teacher education, and changing roles of teachers.
Effective Fall 2006 Effective Spring 2015

CEP 956 Mind, Media, and Learning
Fall of odd years. Fall of even years. 3(3-0) R: Open to doctoral students.
Philosophy, psychology, and sociology of new media. Media effects and learning with media. Issues of gender, identity, culture in technologically mediated environments, including Internet, virtual reality, computer games, simulations, artificial intelligence (AI) systems, and pedagogical agents.
Effective Fall 2006 Effective Spring 2015

CEP 957 Learning in Complex Domains
Fall of every year. Spring of every year. 3(3-0) R: Open to doctoral students.
Effective Fall 2006 Effective Spring 2015

CEP 972 Neurobiological Bases of Learning and Behavior
Fall of every year. Spring of odd years. 3(3-0) R: Course in child development R: Open to graduate students.
Development of neural systems related to learning and behavior in children who are typically developing and children who have developmental or acquired disorders. Learning neuroanatomy, brain development, and the typical and non-typical outcomes associated with how children experience academic, social and behavioral outcomes. Influence and interplay among neurodevelopmental, genetic, and environmental factors.
Effective Spring 2011 Effective Spring 2015
DEPARTMENT OF EDUCATIONAL ADMINISTRATION

EAD 921  Educational Leadership and Transformation  
Fall of every year. 3(3-0)  R: Approval of department,  R: Open to graduate students in the Educational Leadership Major.  
Creating organizational value through leadership. Leading through conflict. Personal and collective leadership development. Connecting schools with civic life. Convening community groups for democratic deliberation.  
Request the use of ET-Extension to postpone grading.  
The work for the course must be completed and the final grade reported within 1 semester after the end of the semester of enrollment. 
Effective Fall 2014  Effective Spring 2015

EAD 924  Data and Decisions  
Fall of every year. 3(3-0)  R: Approval of department,  R: Open to graduate students in the Educational Leadership Major.  
Data collection and analysis for school improvement. Decision making criteria.  
Assessment of resource use and instructional learning outcomes. Data management.
Legal and ethical use of data. Communication strategies.  
Request the use of ET-Extension to postpone grading.  
The work for the course must be completed and the final grade reported within 1 semester after the end of the semester of enrollment. 
Effective Fall 2013  Effective Spring 2015

DEPARTMENT OF ENTOMOLOGY

ENT 410  Apiculture and Pollination  
Fall of every year. Spring of every year. 2(1-2)  P: BS 162 or PLB 105 or LB 144  
Biology of bees and their relationship to flowers, pollination and crop production. Offered first ten weeks of semester. Laboratory sessions at MSU apiary required. Biology of bees and their relationship to flowers, pollination and crop production. Offered first ten weeks of semester. Laboratory sessions at MSU apiary.  
Effective Fall 2013  Effective Spring 2015

ENT 477  Pesticides in Pest Management  
Fall of even years. 3(3-0) Interdepartmental with Crop and Soil Sciences and Horticulture. P: PLP 405 or CSS 302 or ENT 404 or ENT 470 RB: CEM 143 or CEM 261 RB: General chemistry, entomology, plant pathology, weed science, R: Open to juniors or seniors or graduate students.  
Chemistry, modes of action, product development and regulation of pesticides.  
Environmental and social aspects of pesticide use.  
Effective Fall 2013  Effective Spring 2015

ENT 478  Integrated Pest Management (W)  
Spring of odd years. 3(3-0) Interdepartmental with Crop and Soil Sciences and Forestry and Horticulture. P: (ENT 404 or ENT 470 or PLP 405 or CSS 302) and completion of Tier I writing requirement P: (ENT 404 or ENT 470 or PLP 405) and completion of Tier I writing requirement  
Theory, philosophy and application of pest management focusing on agricultural and natural systems.  
Effective Fall 2013  Effective Spring 2015
DEPARTMENT OF EPIDEMIOLOGY AND BIOSTATISTICS

EPI 808B Advanced Biostatistics
Fall of every year. 3(3-0) P: EPI 810 or concurrently or approval of department RB: Preparation in mathematics and statistics as reflected by previous degree program transcript and a designated score on the quantitative section of the GRE test. RB: Linear algebra, calculus. R: Open to graduate students in the Department of Epidemiology and Biostatistics. Approval of department. R: Open to graduate students in the Biostatistics Major or in the Epidemiology Major or approval of department.

Fundamental theory of probability and statistical inference related to the practice of public health. Discrete and continuous random variables, sampling distributions, parametric point and interval estimation, hypothesis testing, maximum likelihood estimates, methods of constructing test and estimation procedures. Sample size, power, and efficiency. Effective Fall 2012 Effective Fall 2014

EPI 826B Categorical Data Analysis
Spring of every year. 3(3-0) P: EPI 808B and EPI 810 RB: Knowledge of research design and quantitative background. R: Approval of department. R: Open to graduate students in the Biostatistics Major or in the Epidemiology Major or approval of department.

Applications to real data from clinical and epidemiologic studies of categorical outcomes, distributions for categorical responses and contingency tables, logistic regression and related logit models for binary and multicategory response variables, repeated and clustered categorical data, generalized linear mixed models. Effective Fall 2012 Effective Fall 2014

EPI 853B Statistical Computing
Fall of every year. 3(3-0) P: EPI 808B and EPI 826B R: Approval of department. R: Open to graduate students in the Biostatistics Major or in the Epidemiology Major or approval of department.

Statistical computation and algorithms using programming languages, SAS/IML, R and/or Stata, Newton-Raphson method, Monte Carlo simulation of probability distributions, bootstrap, statistical graphics. Effective Fall 2012 Effective Fall 2014

EPI 858 Clinical Trials
Spring of every year. Spring of even years. 3(3-0) P: EPI 808B or EPI 808 or EPI 809 or LCS 829 R: Approval of department. R: Open to graduate students in the Biostatistics Major or in the Epidemiology Major or approval of department.


EPI 950 Advanced Biostatistical Methods in Epidemiology
Fall of even years. 3(3-0) P: EPI 808 or EPI 809 P: EPI 808 or EPI 809 or EPI 808B or EPI 826B RB: Calculus, linear algebra, regression, experimental designs. R: Open to students in the Department of Epidemiology and Biostatistics or approval of department.

Study of specific biostatistical methods and epidemiology applications. Effective Fall 2014

DEPARTMENT OF FINANCE

GBL 451 Law of Commercial Transactions
Fall of every year. Spring of every year. 1(1-0) P: (GBL 295 or concurrently) or (GBL 295H or concurrently) R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management.

Law of contracts and sales, commercial paper, secured transactions, consumer credit, and debtor-creditor relationships. Effective Fall 2014 Effective Spring 2015
DEPARTMENT OF GEOLOGICAL SCIENCES

GLG 201  The Dynamic Earth
Fall of every year. Spring of every year. 4(3-2) Not open to students with credit in GLG 301.
PCR  Physical and chemical processes related to the past, present and future behavior of the
earth system, and the energy systems that drive these processes. A study of the earth's
materials, the earth's surface and the earth's interior.
Effective Fall 1999  Effective Fall 2014

GLG 202  Geology of Michigan
Fall of every year. 3(2-2) P: Completion of Tier I Writing Requirement R: Not open to students in
the Department of Geological Sciences or in the Lyman Briggs Earth Science Major or in the
Lyman Briggs Earth Science-Interdepartmental Coordinate Major or in the Lyman Briggs
Environmental Geosciences Coordinate Major or in the Lyman Briggs Geological Sciences
Coordinate Major. Not open to students with credit in GLG 304 or GLG 201.
PCR  Integration of the geological evolution of Michigan with its social and economic
development. Field trips are required.
SA: GLG 302
Effective Summer 2008  Effective Summer 2015

GLG 301  Geology of the Great Lakes Region
Geology of Continents and Oceans
Spring of every year. 3(3-0) P: MTH 132 or LB 118 or MTH 152H RB: Physical science,
environmental engineering, civil engineering R: Open to undergraduate students in the Department
of Civil and Environmental Engineering. Not open to students with credit in GLG 201.
PCR  Physical and chemical processes related to origin and evolution of the Great Lakes
environment. Soils, hydrology, Earth materials, geologic risks. Geological, physical and
chemical processes related to the origin and evolution of the Earth, North American
continent, and the Great Lakes environment. Soils, hydrology, Earth materials, geologic
risks.
Effective Summer 2012  Effective Summer 2015

GLG 304  Physical and Biological History of the Earth
Spring of every year. 4(3-2) P: GLG 201 or ISP 203A
PCR  Origin of the Earth. Differentiation of the Earth's core, mantle, and crust. Lithospheric
tectons over geologic time. Origin and evolution of the Earth's hydrosphere, atmosphere
and climate. Origin and evolutionary history of biological life. Interactions of life with the
Earth's endogenic and exogenic systems.
SA: GLG 202
Effective Fall 2007  Effective Fall 2014

GLG 321  Mineralogy and Geochemistry
Fall of every year. 4(3-2) P: (GLG 201 or concurrently) and (CEM 142 or CEM 152 or CEM 182H or
LB 172) and (MTH 132 or LB 118) P: GLG 201 and (CEM 142 or CEM 152 or CEM 182H or LB
172) and (MTH 132 or MTH 152H or LB 118)
PCR  Earth materials and their origin, modification, structure, dynamics and history.
Crystallography and crystal chemistry, and geochemical properties and processes in
mineral crystallization and recrystallization. Analytical identification and characterization of
minerals in their lithologic context.
Effective Fall 2008  Effective Fall 2014

GLG 361  Petrology
Igneous and Metamorphic Geochemistry and Petrology
Spring of every year. 4(3-2) P: GLG 321
PCR  Evolution, origin, occurrence and tectonic setting of igneous and metamorphic rocks.
Phase relations of igneous and metamorphic systems. Studies of rocks in thin sections.
Evolution, origin, occurrence and tectonic setting of igneous and metamorphic rocks.
Phase relations of igneous and metamorphic systems. Studies of rocks in thin sections.
Field trip required.
SA: GLG 481
Effective Summer 2012  Effective Summer 2015
GLG 401  Global Tectonics and Earth Structure (W)
Fall of every year. 4(3-2) P: ((GLG 304) and completion of Tier I writing requirement) and (MTH 114 or MTH 116 or MTH 124 or MTH 126 or MTH 132 or MTH 133 or LB 118 or LB 119) and (PHY 183 or PHY 183B or PHY 231 or PHY 231C or LB 273) P: ((GLG 304) and completion of Tier I writing requirement) and (MTH 114 or MTH 116 or MTH 124 or MTH 132 or MTH 152H or LB 118) and (PHY 183 or PHY 183B or PHY 231 or PHY 231C or LB 273 or PHY 193H) R: Open to seniors or graduate students.
PCR Structural geology, geological and geophysical methods of studying the structure and dynamics of the earth and planets. Plate kinematics and global geodynamic processes, plate margin processes and evolution, marine geology. Field trip required.
SA: GLG 371
Effective Fall 2012 Effective Fall 2014

GLG 411  Hydrogeology
Fall of every year. 3(3-0) RB: MTH 114 or MTH 116 or MTH 124 or MTH 126 or MTH 132 or MTH 133 or LB 118 or LB 119 RB: MTH 114 or MTH 116 or MTH 124 or MTH 126 or MTH 132 or MTH 133 or LB 118 or LB 119 or MTH 152H or MTH 153H R: Not open to freshmen or sophomores.
PCR Source, occurrence, and movement of groundwater emphasizing geologic factors and controls.
Effective Summer 2009 Effective Fall 2014

GLG 412  Glacial Geology and the Record of Climate Change
Spring of every year. 3(3-0) Interdepartmental with Geography. RB: GLG 201 or GEO 306 or GEO 408 or GLG 301 R: Not open to freshmen or sophomores.
PCR In-depth analysis of glacial geology and the record of climate change, with emphasis on North America and Europe. One weekend field trip required. In-depth analysis of glacial geology and the record of climate change, with emphasis on North America and Europe. Field trip required.
Effective Fall 2013 Effective Fall 2014

GLG 421  Environmental Geochemistry
Spring of every year. 4(3-2) RB: GLG 201 and (CEM 141 or CEM 151 or CEM 181H or LB 171)
PCR Natural and anthropogenic processes affecting environmental chemistry with emphasis on the water cycle. Chemical equilibria, kinetics, geochemical cycling, acid rain, carbon dioxide, heavy metals, toxic organics, global change and the greenhouse effect. Natural and anthropogenic processes affecting the chemistry of the environment with an emphasis on the water cycle. Equilibria and kinetic balances, biogeochemical cycling, contaminant chemicals, chemical origins, environmental health.
Effective Summer 2009 Effective Fall 2014

GLG 431  Sedimentology and Stratigraphy
Spring of every year. 4(3-2) P: GLG 321
Effective Summer 2012 Effective Fall 2014

GLG 433  Vertebrate Paleontology
Fall of even years. 4(3-2) Interdepartmental with Zoology. P: ZOL 328 or GLG 304 P: ZOL 328 or GLG 304 or ZOL 360 or ZOL 365 or ZOL 384 or ZOL 445 or GLG 434 or PW 471
PCR Fossil vertebrates with emphasis on evolution and interrelationships of major groups. Modern techniques of identification and interpretation of fossils.
Effective Summer 2008 Effective Fall 2014

GLG 434  Evolutionary Paleobiology
Fall of every year. Fall of odd years. 4(3-2) Interdepartmental with Zoology. RB: BS 162 or GLG 304 or LB 144 or BS 182H
PCR Patterns and processes of evolution known from the fossil record including speciation, phylogeny, extinction, heterochrony and biogeography. Patterns and processes of evolution known from the fossil record
Effective Fall 2013 Effective Fall 2014
### GLG 440  Planetary Geology

- **Spring of every year.** 3(2-2) P: GLG 201 and GLG 304 and GLG 321 or approval of department
- **RB:** PHY 232 and MTH 132
- **RB:** (PHY 232 or PHY 184 or PHY 294H or LB 274) and (MTH 132 or MTH 152H or LB 118)

**PCR**
- Surficial and internal properties and processes of planets and their natural satellites, asteroids, comets, and meteorites. Origin, composition, structure, tectonics, volcanism, impact phenomena, atmospheric evolution, atmosphere-surface interactions, and history of solar system bodies. Results of recent space exploration programs, projects and missions.

**Effective Fall 2007  Effective Fall 2014**

### GLG 470  Principles of Modern Geophysics

- **Solid Earth Geophysics and Geodynamics**
- **Spring of odd years.** 3(3-0) P: GLG 201 and (MTH 133 or LB 119) and (PHY 183 or PHY 183B or PHY 193H or PHY 233B or LB 273) P: GLG 201 and (MTH 133 or LB 119 or MTH 153H) and (PHY 183 or PHY 183B or PHY 193H or PHY 233B or LB 273) RB: (MTH 234 or concurrently) or (LB 220 or concurrently) or (MTH 254H or concurrently)

**PCR**
- Theory and applications of solid-earth geophysics including geochronology, geothermics, geomagnetism and paleomagnetism, geodesy and gravity, rheology, and seismology.

**SA:** GLG 472

**Effective Spring 2013  Effective Summer 2015**

### GLG 471  Applied Geophysics

- **Spring of every year.** 4(3-2) P: ((MTH 133 or concurrently) or (LB 119 or concurrently)) and ((PHY 184 or concurrently) or (PHY 184B or concurrently) or (PHY 232 or concurrently) or (PHY 232C or concurrently) or (PHY 294H or concurrently) or (LB 272 or concurrently)) P: ((MTH 133 or concurrently) or (LB 119 or concurrently) or (MTH 153H or concurrently)) and ((PHY 184 or concurrently) or (PHY 184B or concurrently) or (PHY 232 or concurrently) or (PHY 232C or concurrently) or (PHY 294H or concurrently) or (LB 274 or concurrently)) R: Not open to freshmen or sophomores.

**PCR**
- Application of seismic, gravity, magnetic, resistivity, and electromagnetic methods to problems related to engineering studies, mineral and oil exploration, groundwater, subsurface mapping, pollution, and hazardous waste.

**Effective Summer 2009  Effective Fall 2014**

### GLG 481  Reservoirs and Aquifers

- **Spring of odd years.** 3(3-0) 3(2-2) P: GLG 431 or concurrently

**PCR**

**Effective Fall 2004  Effective Fall 2014**

### GLG 491  Field Geology - Summer Camp (W)

- **Summer of every year.** 6 credits. P: (GLG 431 and completion of Tier I writing requirement) P: (GLG 431 and GLG 361) or (GLG 431 and GLG 401) or (GLG 361 and GLG 401) and completion of Tier I writing requirement R: Open only to students in the Department of Geological Sciences. Approval of department: R: Open to students in the Department of Geological Sciences or in the Lyman Briggs Geological Sciences Coordinate Major or in the Lyman Briggs Environmental Geosciences Coordinate Major. Approval of department.

**PCR**

**Effective Fall 1999  Effective Fall 2014**
GLG 499  Independent Study in Geological Sciences
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.  R: Open only to juniors or seniors in the Department of Geological Sciences. Approval of department; application required.  R: Open to seniors or juniors in the Department of Geological Sciences or in the Lyman Briggs Earth Science-Interdepartmental Coordinate Major or in the Lyman Briggs Environmental Geosciences Coordinate Major or in the Lyman Briggs Geological Sciences Coordinate Major. Approval of department; application required.
PCR  Advanced individual study of special topics in the geological sciences.  Effective Fall 1999 Effective Fall 2014

DEPARTMENT OF HUMAN DEVELOPMENT AND FAMILY STUDIES

HDFS 345  Principles of Family Studies (W)
Fall of every year. Spring of every year. 3(3-0)  R: Completion of Tier I Writing Requirement  P: Completion of Tier I Writing Requirement and HDFS 270  R: Open to juniors or seniors in the Department of Human Development and Family Studies.
Historical, social, cultural, and economic perspectives on contemporary families. Approaches to studying families. Role of communication, resources, and decision-making in family systems.
SA: FCE 345  Effective Summer 2014 Effective Fall 2015

DEPARTMENT OF LINGUISTICS AND GERMANIC, SLAVIC, ASIAN AND AFRICAN LANGUAGES

LIN 871  Advanced Studies in Sociolinguistics
Spring of every year. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course.  R: LIN 471 or approval of department
Linguistic and societal bases for language choice. Topics exemplifying modern sociolinguistics, including concerns of power, ethnicity, gender, quantitative microsociolinguistics, field techniques, and data analysis.  Effective Fall 2002 Effective Fall 2014

LLT 841  Topics in Second/Foreign Language Learning and Teaching
Fall of every year. Spring of every year. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. A student may earn a maximum of 9 credits in all enrollments for this course.  R: Open to graduate students in the Second Language Studies Major or in the Teaching English to Speakers of Other Languages Major.
Selected topics and issues in second/foreign language learning and teaching.  Effective Summer 2008 Effective Summer 2015

DEPARTMENT OF MECHANICAL ENGINEERING

ME 802  Advanced Classical Thermodynamics
Fall of every year. 3(3-0) P: ME 391  RB: ME 307 and ME 411  RB: (ME 391) and ME 391  R: Open to graduate-professional students in the College of Engineering.
SA: ME 802  Effective Fall 1995 Effective Fall 2015

ME 810  Micro-Scale Fluid Mechanics and Heat Transfer
Spring of odd years. 3(3-0) RB: ME 332 and ME 440  RB: (ME 332) and ME 332
PART III – COURSE CHANGES

**ME 822** Combustion
- Spring of even years.
- Spring of every year.
- 3(3-1) RB: ME 490 and ME 802
- RB: (ME 490 and ME 802) and ME 490 and ME 802


Effective Summer 2004 Effective Fall 2015

**PROGRAM IN NEUROSCIENCE**

**NEU 310** Psychology and Biology of Human Sexuality
- Spring of even years.
- 3(3-0) Interdepartmental with Psychology and Zoology.
- P: (PSY 101 or concurrently) and (BS 161 or concurrently) or (BS 162 or concurrently) or (LB 144 or concurrently) or (LB 145 or concurrently) or (BS 181H or concurrently) or (BS 182H or concurrently)) Not open to students with credit in HDFS 445.


Effective Summer 2014 Effective Fall 2014

**SCHOOL OF PACKAGING**

**PKG 315** Packaging Decision Systems (W)
- Fall of every year.
- Spring of every year.
- 3(2-2) P: (MTH 116 or MTH 114 or MTH 124 or MTH 132 or MTH 152H or LB 118) and completion of Tier I writing requirement
- P: MTH 132 or MTH 152H or LB 118) and completion of Tier I writing requirement
- R: Open to sophomores or juniors or seniors in the School of Packaging.

Application of computers to communicate, analyze and solve problems in the management, specification, production, and testing of packaging systems.

SA: PKG 415
Effective Fall 2014

**PKG 322** Packaging with Paper and Paperboard
- Fall of every year.
- Spring of every year.
- 4(3-2) P: ((PKG 221 or concurrently) and PKG 101) and (MTH 124 or MTH 132 or MTH 152H or LB 118) and (CEM 143 or CEM 251 or CEM 351) and (STT 200 or STT 201 or STT 315 or STT 351) P: ((PKG 221 or concurrently) and PKG 101) and (MTH 133 or MTH 153H or LB 119) and (CEM 143 or CEM 251 or CEM 351) and (STT 200 or STT 201 or STT 315 or STT 351) R: Open to sophomores or juniors or seniors or graduate students in the School of Packaging.

Physical and chemical properties, manufacture, conversion, and use of wood, paper, paperboard, and related components in packaging. Design, use, and evaluation of packages.

SA: PKG 325
Effective Fall 2014

**PKG 323** Packaging with Plastics
- Fall of every year.
- Spring of every year.
- 4(3-2) P: ((PKG 221 or concurrently) and PKG 101) and (CEM 143 or CEM 251 or CEM 351) and (STT 200 or STT 201 or STT 315 or STT 351) and (MTH 124 or MTH 132 or MTH 152H or LB 118) P: ((PKG 221 or concurrently) and PKG 101) and (MTH 133 or MTH 153H or LB 119) and (CEM 143 or CEM 251 or CEM 351) and (STT 200 or STT 201 or STT 315 or STT 351) R: Open to sophomores or juniors or seniors or graduate students in the School of Packaging.

Physical and chemical properties of plastics and their relationship to selection, design, manufacture, performance, and evaluation of packages.

SA: PKG 320
Effective Fall 2014
DEPARTMENT OF PHYSIOLOGY

PSL 250  Introductory Physiology
Fall of every year. Spring of every year. Summer of every year. 4(4-0) R: Not open to students in the Physiology major. Not open to students with credit in PSL 310.
PCR  Function, regulation and integration of organs and organ systems of higher animals emphasizing human physiology.
Effective Summer 2010 Effective Spring 2014

PSL 310  Physiology for Pre-Health Professionals
Fall of every year. Spring of every year. Summer of every year. 4(4-0) P: BS 161 or BS 181H or LB 145 or ANTR 350 Not open to students with credit in PSL 250 or PSL 431 or PSL 432.
PCR  Fundamental concepts of human physiology with an emphasis on physiology related to health careers. Fundamental concepts of human organ system physiology with clinical examples for students entering health care fields.
Effective Fall 2011 Effective Spring 2014

PSL 420  Membrane Biophysics: An Introduction (W)
Summer of every year. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: CEM 252 and PHY 231 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major or approval of department.
PCR  Biophysical and chemical aspects of biomembranes. Experimental model membrane systems including planar lipid bilayers and liposomes. Biotechnological applications of lipid bilayer sensors.
DELETE COURSE
Effective Spring 2014

PSL 421  Adult and Embryonic Stem Cells (W)
Spring of even years. Spring of every year. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.
PCR  Topics in the physiology, cell biology, genetics, and developmental potential of adult and embryonic stems cells.
Effective Fall 2010 Effective Spring 2014

PSL 425  Physiological Biophysics
Fall of every year. 3(3-0) P: (CEM 142 or CEM 152 or CEM 182H or LB 172) and (PHY 184 or PHY 184B or PHY 232 or PHY 294H or LB 274) RB: A course in physiology or gross anatomy.
PCR  The quantitative physical phenomena underlying kinetics and equilibria of physiological processes.
Effective Spring 2014 Effective Spring 2015

PSL 429  Biomedical Imaging Methods
Fall of even years. 3(3-0) P: (CEM 142 or CEM 152 or CEM 182H or LB 172) and (PHY 184 or PHY 184B or PHY 232 or PHY 294H or LB 274) RB: First semester calculus.
PCR  Overview of biomedical imaging techniques from theory to application, with emphasis on health care and research.
Effective Spring 2013 Effective Spring 2014

PSL 431  Human Physiology I
Fall of every year. 4(4-0) P: (BS 161 or BS 181H or LB 145) and (CEM 142 or CEM 152 or CEM 182H or LB 172) RB: BS 162 or BS 182H or LB 144 R: Open to juniors or seniors.
PCR  Molecular basis of physiological control systems, physiology of excitable cells, autonomic nervous system, function and regulation of cardiovascular and respiratory systems.
Effective Fall 2013 Effective Spring 2015

PSL 432  Human Physiology II
Spring of every year. 4(4-0) P: (BS 161 or BS 181H or LB 145) and (CEM 142 or CEM 152 or CEM 182H or LB 172) and PSL 431 RB: BS 162 or BS 182H or LB 144 R: Open to juniors or seniors.
PCR  Continuation of PSL 431. Function and regulation of the digestive, endocrine, renal, and reproductive systems. Integration of physiological responses.
Effective Spring 2014 Effective Spring 2015
PART III – COURSE CHANGES

PSL 438  
Topics in the Biology and Cellular Physiology of Cancer (W)  
Fall of every year. Spring of every year. 2(2-0) P: (BS 161 or BS 181H or LB 145) and (PSL 431 and completion of Tier I writing requirement) RB: BMB 461 and BMB 462 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.  
PCR  
Topics in the biology and physiology of cancer, selected from areas such as regulation of the cell cycle, oncogenes and tumor suppressors, cancer cell signal transduction, tumor progression and metastasis, and cancer genetics and genomics.  
Effective Spring 2013  Effective Spring 2014

PSL 439  
Special Topics in Physiology (W)  
Fall of every year. Spring of every year. 2(2-0) A student may earn a maximum of 4 credits in all enrollments for this course. P: (PSL 431 and completion of Tier I writing requirement) P: Completion of Tier I Writing Requirement RB: PSL 432 RB: PSL 431 and PSL 432 R: Open to seniors in the Lyman Briggs Physiology Coordinate Major or in the Physiology major.  
PCR  
Special topics in physiology, focusing on the process of biomedical discovery, alternative medicine, autoimmunity, or other selected topics of interest related to careers in health care or biomedical research.  
Effective Fall 2010  Effective Spring 2014

PSL 440  
Topics in Cell Physiology (W)  
Spring of every year. 2(2-0) A student may earn a maximum of 4 credits in all enrollments for this course. P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.  
PCR  
Selected topics in mammalian cell physiology related to cell energetics and metabolism, molecular and cellular biology, cell growth and differentiation, or molecular physiology and functional genomics.  
Effective Summer 2011  Effective Spring 2014

PSL 441  
Topics in Endocrinology (W)  
Fall of every year. 2(2-0) P: (PSL 431 and PSL 432) and completion of Tier I writing requirement R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.  
PCR  
Selected topics on the role of hormones in the regulation of growth, metabolism, differentiation, and physiological homeostasis.  
Effective Summer 2011  Effective Spring 2014

PSL 442  
Topics in Cardiovascular Physiology (W)  
Spring of every year. 2(2-0) P: (PSL 431 and PSL 432) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.  
PCR  
Selected topics in the physiology of the heart and cardiovascular system.  
Effective Summer 2011  Effective Spring 2014

PSL 443  
Topics in Respiratory Physiology (W)  
Spring of odd years. 2(2-0) P: (PSL 431 and PSL 432) and completion of Tier I writing requirement RB: PSL 432 and BMB 461 RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.  
PCR  
Contemporary topics in lung airway, alveolar, and general respiratory physiology.  
Effective Summer 2011  Effective Spring 2014

PSL 444  
Topics in Reproductive Physiology (W)  
Spring of odd years. Spring of every year. 2(2-0) P: (PSL 431 and PSL 432) and completion of Tier I writing requirement R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.  
PCR  
Selected topics in the physiology of the reproductive system.  
Effective Fall 2010  Effective Spring 2014

PSL 445  
Topics in Environmental Physiology (W)  
Spring of odd years. On Demand. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.  
PCR  
Selected topic in environmental physiology with an emphasis on thermoregulation.  
Effective Summer 2011  Effective Spring 2014
PART III – COURSE CHANGES

PSL 446  Topics in Sensory Physiology (W)
Spring of even years. On Demand. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement
RB: PSL 432 R: Open to seniors in the Physiology Major or in the Lyman Briggs Physiology Coordinate Major.

PCR  Selected topic in the functioning of the visual system, auditory system, or other sensory systems in health and disease.
Effective Summer 2011 Effective Spring 2014

PSL 447  Topics in Brain Function (W)
Summer of every year. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

PCR  Selected topics on structure and function of the mammalian brain.
Effective Summer 2011 Effective Spring 2014

PSL 448  Topics in Gastrointestinal Physiology (W)
Fall of every year. Spring of odd years. 2(2-0) P: (PSL 431 and PSL 432) and completion of Tier I writing requirement R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

PCR  Selected topics in the physiology of the digestive system.
Effective Summer 2011 Effective Spring 2014

PSL 449  Topics in Neurophysiology and Neural Development (W)
Fall of every year. 2(2-0) P: (PSL 431) or completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

PCR  Selected topics in neurophysiology, including development of the nervous system in invertebrate and vertebrate animals. Selected topics in neurophysiology, including development of the nervous system.
Effective Summer 2011 Effective Spring 2014

PSL 450  Physiology in Health and Disease
Fall of every year. 3(3-0) P: (PSL 431 and PSL 432) and completion of Tier I Writing Requirement R: Open to juniors or seniors in the Lyman Briggs Physiology Coordinate Major or in the Physiology major.

PCR  Advanced topics in normal and abnormal physiology. Chronic diseases, disease progression, and animal models of disease.
Effective Fall 2010 Effective Spring 2014

PSL 475L  Capstone Laboratory in Physiology
Fall of every year. Spring of every year. Summer of every year. 2(1-3) P: PSL 431 P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 RB: (PSL 432) and anatomy and statistics R: Open to juniors or seniors in the Physiology Major or in the Lyman Briggs Physiology Coordinate Major.

PCR  Laboratory exercises in animal and human physiology, including cardiovascular and respiratory function, nerve and muscle function, osmoregulation receptor-mediated regulation, neural and hormonal control. Laboratory exercises in human and animal physiology, including cardiovascular, respiratory, neural, muscle, sensory, and hormonal function, as well as systems physiology studies in exercise and systemic reflexes.
Effective Summer 2011 Effective Spring 2014

PSL 480  Special Problems in Physiology
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits, 1 to 2 credits. A student may earn a maximum of 8 credits in all enrollments for this course. RB: (PSL 431 and PSL 432) and completion of Tier I Writing Requirement R: Open to undergraduate students in the Physiology Major. Approval of department.

PCR  Independent study under the supervision of a faculty member.
Effective Fall 2010 Effective Summer 2015

PSL 490  Independent Research in Physiology
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits, 1 to 2 credits. A student may earn a maximum of 8 credits in all enrollments for this course. RB: PSL 431 and PSL 432 R: Open to undergraduate students in the Physiology Major. Approval of department.

PCR  Supervised laboratory research in physiology under the direction of a faculty member.
Effective Summer 2009 Effective Summer 2015
DEPARTMENT OF RADIOLOGY

ANTR 685 Directed Study in Clinical Prosection
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 15 credits in all enrollments for this course. **P:** ANTR 551 **P:** ANTR 510 or ANTR 551
**R:** Open to Clerkship Students in the College of Human Medicine and College of Osteopathic Medicine. **R:** Open to medical students in the College of Human Medicine and open to osteopathic medicine students in the College of Osteopathic Medicine. Approval of department; application required. **R:** Open to human medicine students in the College of Human Medicine and open to osteopathic medicine students in the College of Osteopathic Medicine. Approval of department.

- Study of anatomical prosection and body-region specific pathologies.
- Request the use of the Pass-No Grade (P-N) system.
- Request the use of ET-Extension to postpone grading.
- The work for the course must be completed and the final grade reported within 1 semester after the end of the semester of enrollment.

**Effective Spring 2011 Effective Summer 2014**

COLLEGE OF SOCIAL SCIENCE

SSC 999 Doctoral Dissertation Research
Fall of every year. Spring of every year. Summer of every year. 1 to 12 credits. A student may earn a maximum of 99 credits in all enrollments for this course.

- Doctoral dissertation research.
- Request the use of the Pass-No Grade (P-N) system.
- **DELETE COURSE**

**Effective Summer 2014**

SCHOOL OF SOCIAL WORK

SW 491 Special Topics in Social Work
Fall of every year. Spring of every year. Summer of every year. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. A student may earn a maximum of 12 credits in all enrollments for this course. **R:** Open to juniors or seniors in the Social Work Major and open to graduate students in the School of Social Work or approval of school.

- Selected topics in social work. Topics include community dynamics or practice issues.

**Effective Spring 2014 Effective Summer 2015**

DEPARTMENT OF WRITING, RHETORIC AND AMERICAN CULTURES

WRA 891 Special Topics in Rhetoric and Writing
Fall of every year. Spring of every year. Summer of every year. 3(3-0) A student may earn a maximum of 24 credits in all enrollments for this course. **R:** Open to graduate students in the Department of Writing, Rhetoric and American Cultures or approval of department.

- Special topics supplementing regular course offerings, proposed by faculty on a group study basis.

**Effective Spring 2014 Effective Summer 2015**

DEPARTMENT OF ZOOLOGY

ZOL 101 Preview of Zoology
Fall of every year. Spring of every year. 1(1-0) **R:** Open only to freshmen in the Zoology major. **R:** Open to freshmen in the Zoology Major.

- Zoology as a discipline. Availability of diverse career options. Integration of human and technical skills in scientific problem solving.

**Effective Spring 2003 Effective Spring 2014**
ZOL 141  Introductory Human Genetics
Fall of every year. Spring of every year. 3(3-0) P: Not open to students in the Biochemistry and Molecular Biology major or Plant Biology major or Entomology major or Medical Technology major or Clinical Laboratory Sciences major or Physiology major or Zoology major or Microbiology major or Molecular Genetics major or Biological Science-Interdepartmental major or Human Biology major. Not open to students in the corresponding Lyman Briggs School coordinate majors or to students in the Lyman Briggs School Biology field of concentration. R: Not open to students in the Biochemistry and Molecular Biology major or in the Biological Science Major or in the Clinical Laboratory Sciences Major or in the Genetics Major or in the Microbiology Major or in the Physiology Major or in the Plant Biology Major or in the Zoology Major or in the Entomology Major and not open to students. Not open to students with credit in ZOL 341 or ZOL 344. Not open to students with credit in ZOL 341.


ZOL 303  Oceanography
Fall of every year. 4(4-0) Interdepartmental with Geological Sciences. P: (CEM 141 or CEM 181H or LB 171) and (PHY 231 or PHY 183 or PHY 193H or LB 273) P: (CEM 141 or CEM 181H or LB 171 or CEM 151) and (PHY 231 or PHY 183 or PHY 193H or LB 273 or PHY 183B or PHY 231C)

PCR  Physical, chemical, biological, and geological aspects of oceanography: ocean circulation, waves, tides, air-sea interactions, chemical properties of ocean water, ocean productivity, shoreline processes, and sediments. Effective Summer 2012 Effective Spring 2014

ZOL 306  Invertebrate Biology
Fall of every year. 4(3-3) P: BS 162 or LB 144 or BS 182H

PCR  Systematics, morphology, and natural history of invertebrate animals. Identification of live and preserved specimens. Recognition of selected groups. Effective Fall 2011 Effective Spring 2014

ZOL 313  Animal Behavior
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: BS 162 or LB 144 or BS 182H R: Not open to freshmen.

PCR  Development, physiological mediation, adaptive significance and evolution of behavior. SA: ZOL 213 Effective Fall 2011 Effective Spring 2014

ZOL 316  General Parasitology
Spring of every year. 3(3-0) P: LB 144 or BS 162 or BS 182H

PCR  Identification, life history, host-parasite relationships, and epidemiology of protozoan, helminth, acanthocephalan, copepod, and arthropod parasites of animals and humans. Effective Fall 2011 Effective Spring 2014

ZOL 320  Developmental Biology
Fall of every year. 4(3-3) P: (BS 161 or LB 145 or BS 181H) and (BS 162 or LB 144 or BS 182H) P: (CEM 141 or CEM 181H or LB 171 or CEM 151) and (PHY 231 or PHY 183 or PHY 193H or LB 273 or PHY 183B or PHY 231C)

PCR  Principles of development, emphasizing vertebrates. Illustrations from morphological and experimental investigations. SA: ZOL 220 Effective Fall 2011 Effective Spring 2014

ZOL 328  Comparative Anatomy and Biology of Vertebrates (W)
Spring of every year. 4(3-3) P: (BS 162 or LB 144 or BS 182H) and completion of Tier I writing requirement

PCR  Comparative morphology and natural history of vertebrates. Dissection of representatives of most vertebrate classes. SA: ZOL 228 Effective Fall 2011 Effective Spring 2014
PART III – COURSE CHANGES

ZOL 341  Fundamental Genetics
Fall of every year. Spring of every year. Summer of every year. 4(4-0) Interdepartmental with Plant Biology. P: BS 161 or LB 145 or BS 181H

PCR  Principles of heredity in animals, plants and microorganisms. Classical and molecular methods in the study of gene structure, transmission, expression and evolution.

Effective Fall 2011  Effective Fall 2012

ZOL 343  Genetics Laboratory
Spring of every year. 3(0-6) P: (ZOL 341 or concurrently) and completion of Tier I writing requirement

PCR  Experiments involving genetics of Drosophila and other eucaryotic organisms.

Effective Summer 2008  Effective Spring 2014

ZOL 353  Marine Biology (W)
Fall of every year. 4(4-0) P: (BS 162 or LB 144 or BS 182H) and completion of Tier I writing requirement


Effective Fall 2011  Effective Spring 2014

ZOL 355  Ecology
Fall of every year. Spring of every year. Summer of every year. 3(3-0) Interdepartmental with Plant Biology. P: BS 162 or LB 144 or BS 182H

PCR  Plant and animal ecology. Interrelationships of plants and animals with the environment. Principles of population, community, and ecosystem ecology. Application of ecological principles to global sustainability. Interrelationships of plants and animals with each other and the environment. Principles of individual, population, community, and ecosystem ecology. Application of ecological principles to global change and other anthropogenic stressors. SA: ZOL 250

Effective Fall 2011  Effective Spring 2014

ZOL 355L  Ecology Laboratory (W)
Fall of every year. Spring of every year. Summer of every year. 1(0-3) Interdepartmental with Plant Biology. P: (ZOL 355 or concurrently) or completion of Tier I writing requirement P: (ZOL 355 or concurrently) and completion of Tier I writing requirement

PCR  Population, community, and ecosystem ecology, utilizing plant and animal examples to demonstrate general field principles.

Effective Summer 2009  Effective Spring 2014

ZOL 360  Biology of Birds
Fall of every year. 4(3-3) P: BS 162 or LB 144 or BS 182H

PCR  Behavior, ecology, evolution, and systematics of birds; biodiversity. Laboratories emphasize diversity of form and function, life history patterns, and identification.

Effective Fall 2011  Effective Spring 2014

ZOL 365  Biology of Mammals
Spring of every year. 4(3-3) P: BS 162 or LB 144 or BS 182H

PCR  Analysis of the behavior, ecology, evolution, and systematics of mammals. Laboratories emphasize diversity of form and function, life history patterns, and identification.

Effective Fall 2011  Effective Spring 2014

ZOL 369  Introduction to Zoo and Aquarium Science
Spring of every year. 3(3-0) Interdepartmental with Fisheries and Wildlife and Landscape Architecture and Veterinary Medicine. P: BS 162 or LB 144 or BS 182H

PCR  Fundamentals of zoo and aquarium operations including research, interpretation, design, nutrition, captive breeding, conservation, ethics and management.

Effective Fall 2011  Effective Fall 2014
ZOL 370  Introduction to Zoogeography  
Fall of every year. 3(3-0) Interdepartmental with Fisheries and Wildlife and Geography. **P**: ZOL 355  
PCR  Patterns of geographical distribution of animals and the ecological and historical processes leading to these patterns.  
**Effective Fall 2003 Effective Fall 2014**

ZOL 384  Biology of Amphibians and Reptiles (W)  
Fall of every year. 4(3-3) P: (BS 162 or LB 144 or BS 182H) and completion of Tier I writing requirement  
PCR  The evolution, systematics, ecology, and behavior of amphibians and reptiles. Laboratory emphasizes diversity and identification of families and Great Lakes species. Field trips may be required.  
**Effective Fall 2011 Effective Spring 2014**

ZOL 390  Practicum in Zoo/Aquarium Careers  
Summer of every year. 4 credits.  
PCR  Practical application of science, business and education methods through typical workdays with zoo professionals.  
**Effective Summer 2010 Effective Spring 2014**

ZOL 400H  Honors Work  
Fall of every year. Spring of every year. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course. R: Not open to freshmen or sophomores. Approval of department. R: Not open to freshmen or sophomores.  
PCR  Honors work on a topic in zoology.  
Request the use of ET-Extension to postpone grading.  
The work for the course must be completed and the final grade reported within 1 semester after the end of the semester of enrollment.  
**Effective Spring 1999 Effective Spring 2014**

ZOL 402  Neurobiology  
Fall of every year. Spring of every year. 3(3-0) P: (BS 162 or LB 144 or BS 182H) and (BS 161 or LB 145 or BS 181H) R: Not open to freshmen or sophomores. R: Not open to freshmen or sophomores and not open to students in the Program in Neuroscience and not open to students in the Lyman Briggs Neuroscience Major.  
PCR  Structure and function of nerve cells and nervous systems.  
**Effective Fall 2011 Effective Spring 2014**

ZOL 403  Integrative Neurobiology  
Spring of odd years. 3(3-0) P: ZOL 402 or PSY 209 RB: Junior or Senior level  
PCR  How the nervous system has evolved mechanisms to determine the location and significance of physical and social sensory information. Epigenetic factors that guide nervous system development.  
**Effective Spring 2009 Effective Spring 2014**

ZOL 408  Histology  
Fall of every year. 4(3-3) P: BS 161 or LB 145 or BS 181H  
PCR  Structure of cells and their interactions to form tissues. SA: ZOL 350  
**Effective Fall 2011 Effective Spring 2014**

ZOL 415  Ecological Aspects of Animal Behavior (W)  
Fall of every year. Spring of every year. 3(3-0) P: (ZOL 313) and completion of Tier I writing requirement  
PCR  Advanced topics in the ecology and evolution of animal behavior.  
**Effective Summer 2008 Effective Spring 2014**
PART III – COURSE CHANGES

ZOL 425  Cells and Development (W)
Spring of every year. 4(3-3) P: (BS 161 and BS 171) or LB 145 or ((BS 181H and BS 191H) and completion of Tier I writing requirement)

PCR  The role of cells in growth, differentiation and development of animals from protozoa to mammals.
SA: ZOL 221
Effective Fall 2014 Effective Spring 2014

ZOL 440  Field Ecology and Evolution
Summer of every year. 4 credits. Interdepartmental with Plant Biology. P: ZOL 355

PCR  Solving conceptual and practical research problems in ecology and evolution under field conditions.
Effective Fall 2003 Effective Spring 2014

ZOL 445  Evolution (W)
Fall of every year. Spring of every year. Summer of every year. 3(3-0) Interdepartmental with Crop and Soil Sciences and Plant Biology. P: (ZOL 341 or CSS 350) and completion of Tier I writing requirement R: Not open to freshmen.

SA: ZOL 345
Effective Summer 2010 Effective Spring 2014

ZOL 446  Environmental Issues and Public Policy
Fall of every year. 3(3-0) Interdepartmental with Environmental Studies and Applications. R: Not open to freshmen or sophomores.

PCR  Interrelationship of science and public policy in resolving environmental issues. Technical, social, economic, and legal influences. Case study approach.
Effective Fall 2010 Effective Spring 2014

ZOL 450  Cancer Biology (W)
Spring of every year. 3(3-0) P: (BMB 200 or BMB 401 or ZOL 425) or (BMB 461 and BMB 462) and completion of Tier I writing requirement.

Effective Summer 2008 Effective Spring 2014

ZOL 483  Environmental Physiology (W)
Spring of every year. 4(4-0) Interdepartmental with Physiology P: ((BS 161 or LB 145 or BS 181H) and completion of Tier I writing requirement) and (BS 162 or LB 144 or BS 182H) and (CEM 141 or CEM 151 or CEM 181H or LB 171)

PCR  Aspects of physiology important to the environmental relations of vertebrates and invertebrates: energetics, thermal relations, osmotic-ionic relations, and exercise physiology.
Effective Fall 2011 Effective Spring 2014

ZOL 485  Tropical Biology
Fall of every year. Spring of every year. 3(3-0) Interdepartmental with Entomology and Plant Biology. Interdepartmental with Plant Biology P: ZOL 355 R: Open only to juniors or seniors. R: Open to juniors or seniors.

PCR  Tropical biota emphasizing evolutionary and ecological principles compared across tropical ecosystems.
Effective Fall 2003 Effective Summer 2015

ZOL 489  Seminar in Zoo and Aquarium Science
Fall of every year. Spring of every year. 1(1-0) Interdepartmental with Fisheries and Wildlife and Landscape Architecture and Park, Recreation and Tourism Resources. A student may earn a maximum of 3 credits in all enrollments for this course. R: Approval of department.

PCR  Scientific writing and oral presentations related to zoo and aquarium studies.
Effective Spring 1999 Effective Spring 2014
PART III – COURSE CHANGES

ZOL 490  Overseas Study in Zoology
Fall of every year. Spring of every year. Summer of every year. 3 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: (BS 162 or LB 144 or BS 182H) and (BS 161 or LB 145 or BS 181H) RB: (BS 162 or LB 144 or BS 182H) and (BS 161 or LB 145 or BS 181H) R: Open to seniors or graduate students. Approval of department.
PCR  Topical problems course in Zoology or coordinated by Zoology faculty in foreign countries.
Effective Fall 2011 Effective Spring 2014

ZOL 494  Independent Study
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department.
PCR  Supervised research on a topic not normally covered in the classroom.
Request the use of ET-Extension to postpone grading.
The work for the course must be completed and the final grade reported within 1 semester after the end of the semester of enrollment.
Effective Summer 2002 Effective Spring 2014

ZOL 495  Undergraduate Seminar
Fall of every year. Spring of every year. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course. R: Open only to senior Zoology majors. R: Open to seniors in the Zoology Major.
PCR  Economic, social and environmental impact of current developments in Zoology.
Effective Spring 1999 Effective Spring 2014

ZOL 496  Internship in Zoology
Fall of every year. Spring of every year. Summer of every year. 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open to seniors. Approval of department.
PCR  Practical experience applying zoology training in a setting outside the University.
Effective Fall 2008 Effective Spring 2014

ZOL 497  International Internship in Zoo and Aquarium Science
Fall of every year. Spring of every year. Summer of every year. 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. RB: Biological Sciences R: Open to juniors or seniors or graduate students. Approval of department; application required. A student may earn a maximum of 8 credits ZOL 496, ZOL 497, ZOL 498
PCR  Application of zoological experience in a zoo or aquarium setting outside the United States.
Effective Fall 2010 Effective Spring 2014

ZOL 498  Internship in Zoo and Aquarium Science
Fall of every year. Spring of every year. Summer of every year. 4 credits. Interdepartmental with Fisheries and Wildlife and Landscape Architecture. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open to juniors or seniors. Approval of department.
PCR  Application of zoological experience in a zoo or aquarium setting outside the university.
Effective Summer 2008 Effective Spring 2014