PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. Request to change the award type of the Specialization in Conservation and Environmental Law Enforcement to Minor in Conservation and Environmental Law Enforcement in the Department of Fisheries and Wildlife.

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 Conservation and Environmental Law Enforcement Fall 2015 and forward will follow the requirements for the minor in accordance with the minor policy.

Effective Fall 2015.

2. Request to change the name of the Minor in Conservation and Environmental Law Enforcement to the Minor in Conservation, Recreation and Environmental Enforcement in the Department of Fisheries and Wildlife.

Students admitted to the minor prior to Fall 2015 will graduate with a Specialization in Conservation and Environmental Law Enforcement.

Students admitted to the minor Fall 2015 and forward will graduate with a Minor in Conservation, Recreation and Environmental Enforcement.

3. Request to change the requirements for the Minor in Conservation, Recreation and Environmental Enforcement in the Department of Fisheries and Wildlife.

a. Under the heading Minor in Conservation, Recreation and Environmental Enforcement replace the entire entry with the following:

The student must complete 19 to 21 credits from the following:

<table>
<thead>
<tr>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Both of the following courses (4 credits):</td>
</tr>
<tr>
<td>CJ 110 Introduction to Criminal Justice 3</td>
</tr>
<tr>
<td>CSUS 278 Introduction to Conservation, Recreation and Environmental Enforcement 1</td>
</tr>
</tbody>
</table>

Natural Resources Conservation and Management

1. One of the following courses (3 credits):

<table>
<thead>
<tr>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSUS 200 Introduction to Sustainability 3</td>
</tr>
<tr>
<td>CSUS 276 Sustaining our National Parks and Recreation Lands 3</td>
</tr>
<tr>
<td>FOR 202 Introduction to Forestry 3</td>
</tr>
<tr>
<td>FW 101 Fundamentals of Fisheries and Wildlife 3</td>
</tr>
</tbody>
</table>

2. One of the following courses (3 or 4 credits):

<table>
<thead>
<tr>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSUS 320 Environmental Planning and Management 3</td>
</tr>
<tr>
<td>CSUS 476 Natural Resource Recreation Management 4</td>
</tr>
<tr>
<td>FW 444 Conservation Biology 3</td>
</tr>
<tr>
<td>FW 481 Global Issues in Fisheries and Wildlife 3</td>
</tr>
</tbody>
</table>

Environmental Attitudes, Policy and Law

1. One of the following courses (3 or 4 credits):

<table>
<thead>
<tr>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSUS 310 History of Environmental Thought and Sustainability 3</td>
</tr>
</tbody>
</table>
Law Enforcement
1. Two of the following courses (6 credits):
   - CJ 210 Introduction to Forensic Science 3
   - CJ 220 Criminology 3
   - CJ 235 Investigation Procedures 3
   - CJ 275 Criminal Procedure 3
   - CJ 335 Policing 3
   - CJ 432 Community Policing 3

Effective Fall 2015.

4. Request to change the award type of the Specialization in Marine Ecosystem Management to Minor in Marine Ecosystem Management in the Department of Fisheries and Wildlife.

   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 Marine Ecosystem Management Fall 2015 and forward will follow the requirements for the minor in accordance with the minor policy.

   Effective Fall 2015.

5. Request to change the requirements for the Minor in Marine Ecosystem Management in the Department of Fisheries and Wildlife.

   b. Under the heading Minor in Marine Ecosystem Management make the following changes:

   (1) Under the heading Marine Ecosystem Management change ‘GLG 303’ to ‘ZOL 303’.

   (2) Under the heading Biodiversity delete the following courses:

       FW  462    Ecology and Management of Invertebrates  4
       PLB  423    Wetland Plants and Algae  4

   (3) Under the heading Experiential Learning in Marine Ecosystem Management delete the following course:

       ZOL  453    Field Studies in Marine and Estuarine Biology  2 or 3

   (4) Under the heading Experiential Learning in Marine Ecosystem Management change the credits of ‘ZOL 496’ and ‘ZOL 498’ to ‘4’.

   Effective Fall 2015.
COLLEGE OF ENGINEERING

1. Request to change the requirements for the Bachelor of Science degree in Applied Engineering Sciences in the College of Engineering.

The concentrations in the Bachelor of Science degree in Applied Engineering Sciences are noted on the student’s academic record when the requirements for the degree have been completed.

a. Under the heading Requirements for the Bachelor of Science Degree in Applied Engineering Sciences make the following changes:

(1) In item 3. c. make the following changes:

(a) Change the name of the Telecommunications concentration to Media and Information.

(b) Under the Media and Information concentration change all ‘TC’ prefixed courses to ‘MI’.

Effective Fall 2015.

COLLEGE OF HUMAN MEDICINE

1. Request to change the requirements for the Professional Program in Human Medicine leading to the Doctor of Medicine (M.D.) degree. The University Committee on Graduate Studies (UCGS) will consider this request at its March 9, 2015 meeting.

a. Under the heading PROGRAM IN HUMAN MEDICINE make the following changes:

(1) Under the heading CURRICULUM add the following statement as the first sentence:

The professional program leading to the Doctor of Medicine degree offers two pathways: the Legacy Pathway and the Shared Discovery Pathway. Once a student is admitted to a pathway, the pathways are not interchangeable.

(2) Under the heading CURRICULUM, following the first paragraph (noted above), add the following heading to the existent curriculum:

LEGACY PATHWAY

(a) Under the heading ELECTIVES change ’20 weeks’ to ‘24 weeks’.

(3) Prior to the heading ADMISSION TO THE PROGRAM IN HUMAN MEDICINE add the following:

SHARED DISCOVERY PATHWAY

The College of Human Medicine’s Shared Discovery Pathway is designed to be responsive to the health care needs of Michigan and the country, and in the educational best interests of diverse learners. This pathway emphasizes usefulness and experience as the motivating framework for adult medical education. It features the blending of pedagogy and action harkening back more than a century to the pragmatism of Jane Addams and in explicit distinction to the traditional medical education of the last 80 years.

The design of this pathway is based on principles listed below. The core set of principles are the foundation to all learning within the pathway. The critical additional principles align with the college’s vision and mission, and should be reflected in the experiences graduates of the program.

Core Principles
Adult learning/student centered
Competence and excellence
Rational instructional design
Humanism
Integration
Patient-centered
Faculty development link to the pathway

**Critical Additional Principles**
Community medicine
Chronic disease
Compassion and empathy
Innovative use of technology
Problem-based
Cultural competence
Healthcare disparities
Future oriented
Liaison Committee on Medical Education (LCME) accreditation standards
Multidisciplinary programming
Safety science
Continuous quality improvement model
Teamwork
Leadership

**Learning Societies**
Students and faculty are organized in the pathway through four learning societies spanning the geographic campuses and medical student years in the curriculum. The learning societies are the site of academic coordination of student learning plans as well as the home of post clinic groups that integrate and contextualize students’ experiences in clinic with the programmed content of the pathway. The learning societies provide student mentorship, exploration of the social context of medicine and medical humanities, and peer-to-peer and near-peer support.

The college’s curriculum is organized around a core group of competencies based on residency competencies adopted by the Accreditation Council for Graduate Medical Education (ACGME). Additional competencies were added and others were reorganized to better align with the college’s mission. This competency structure will be used within the shared discovery pathway.

**Major Pathway Experiences**
The pathway will be organized around three major clinical experiences: an Early Clinical Experience, a Middle Clinical Experience, and a Late Clinical Experience. Between the clinical experiences there will be a series of intersessions which will provide an opportunity for students to focus on particular areas of strength, weakness, and interest.

**Early Clinical Experience**
The 24-week Early Clinical Experience begins with an 8-week lead-in Preparation for the Early Clinical Experience which emphasizes student and patient safety in clinical settings, communication and clinical skills, the social context of clinical decisions, medical humanities, and a survey of the necessary sciences underpinning common ambulatory clinical exam procedures, diagnostics tests, and clinical findings. At the outset of the Preparation for the Early Clinical Experience, students take the Progress Suite and develop a personal learning plan with their learning community faculty. During the Preparation for the Early Clinical Experience students begin orientation in their ambulatory clinic site and learning the clinic’s processes. As the Early Clinical Experience proper begins, students sequentially function as a medical assistant and then participate in care management activities before beginning to do focused histories and examinations on patients with common presenting conditions.

The weekly template for Preparation for the Early Clinical Experience and Early Clinical Experience student workflow includes small group sessions, a Team-Based Learning Session or Integrative Clinical Correlation, Post Clinic Group, and guaranteed Guided Independent Learning time each week.
Topics in the Preparation for the Early Clinical Experience include: introductory gross anatomy and radiological correlates for the Core Physical Exam; and integrative molecular and cellular biology of common laboratory tests and host response to pathogen.

Topics for the Early Clinical Experience Chief Complaints include: blood pressure, knee and back pain, immunizations, dyspnea, dysuria, hyper/hypoglycemia, acute abdomen, mood disorders, palpitations, dizziness, and health maintenance.

**Intersessions**
The Shared Discovery Pathway includes a series of intersessions between the Early and Middle Clinical Experiences and again between the Middle and Late Clinical Experiences designed to help students prepare for their next level of clinical work.

There are four blocks of intersessions between the Early and Middle Clinical Experiences. Each block is four weeks long and students take two intersessions at a time creating eight total intersessions. Students take three required intersessions such as Medical Humanities, Health of Special Populations, and Evidence-based Medicine. Students also have the opportunity to take “catch-up” intersessions in basic sciences and clinical skills as well as take intersessions related to the college’s certificate programs.

Between the Middle and Late Clinical Experiences there are two blocks of intersessions. Each block is four weeks long and students take two intersessions at time creating four total intersessions. Students are required to take two intersessions such as Clinical Anatomy and the United States Medical Licensure Examination preparation. Students also have the opportunity to take “catch-up” intersessions in basic sciences and clinical skills as well as take intersessions related to the college’s certificate programs.

**Middle Clinical Experience**
The Middle Clinical Experience in the pathway further integrates clinical and necessary science and humanities experiences in more complex settings and to a greater depth. The learning community post clinic groups of the Early Clinical Experience continue once a week in the Middle Clinical Experience in support of the weekly programmed large group content. The clinical experiences of the Middle Clinical Experience are more varied than in the Early Clinical Experience but still have their own goals and objectives supported by a weekly rotation based small group precepted by the learning community faculty.

**Late Clinical Experience**
The Late Clinical Experience provides disciplinary clerkships to prepare students for residency and a career of learning in the specialty of their interest. The major disciplines will be included through four-week rotations in family medicine, internal medicine, intensive care, obstetrics and gynecology, pediatrics, psychiatry, Surgery 1 and 2, and electives. Because of the clinical intensity of the Middle Clinical Experience, many of these clerkships are at the level of a sub-internship. The learning society content and recurring progress assessment suites continue through the Late Clinical Experience.

**ELECTIVES**
Students are also required to complete 24 weeks of approved clinical electives as a part of meeting the college graduation requirements. At least 8 of the 24 weeks must be completed in the community to which the student is assigned. Students are encouraged to study broadly and/or to pursue intensively their special interests through elective programs. Elective programs may include any of the variety of courses offered by the college and university, research projects, or placements in hospitals other than those associated with Michigan State University. Students may also take elective courses at other medical schools.

**ASSESSMENT-PROGRESS ASSESSMENT**
From the first days of the pathway, and at regular intervals throughout a learner’s trajectory, a suite of progress assessments enable students and their faculty to verify learners’ achievement of competence and readiness to advance through the pathway. Progress testing is a longitudinal competency assessment that facilitates adult lifelong learning. In essence, the College of Human Medicine’s progress suite of assessments is the graduation test for the M.D. degree. Students take the progress suite assessment and move through the pathway as they demonstrate competency. With some slight variation for licensure preparation, every offering of the progress suite of assessments is equivalent.
and students are evaluated on the assessments many times in their College of Human Medicine career.

Pragmatism as an educational philosophical stance requires assessing thought, action and their interaction. The pathway utilizes a group of assessments that include the nationally-normed multiple choice examinations associated with a professional education but do not stop at the determination of simply what our learners “know.” A core assessment is the Progress Clinical Skills Examination of actual performance with standardized patients. Other assessments in the suite include a multi-source rating by their faculty, peers, health care team members and actual patients which will indicate what our College of Human Medicine students “do.” Portfolios of evidence containing essays, multimedia, reflections, scholarly products and projects are regularly reviewed by faculty to assure that acquisition of the necessary knowledge, skills and attitudes is taking place, and that learners can receive anticipatory guidance to achieve not only competence, but excellence. Ongoing data flow from these multiple types of assessments assure students, faculty, staff, and administration are engaging in continuous quality improvement. Students with particular strengths, such as a strong basic science or clinical background, and weaknesses, such as a time away from formal schooling or an atypical college major, are guided to focus on particular areas of challenge and opportunity.

Progress suite assessments are offered twice a semester to students of all levels of the pathway. Students are required to pass the progress suite of assessments in order to advance through the pathway.

(4) Under the heading ADMISSION TO THE PROGRAM IN HUMAN MEDICINE make the following changes:

(a) Replace paragraph three with the following:

The admissions process will continue the college’s traditional use of holistic review, which uses a balanced assessment of academic metrics, activities, and personal characteristics, and attributes when making admissions decisions. The College of Human Medicine Committee on Admissions evaluates applicants’ AMCAS applications, including experiences and personal statements, letters of recommendation (personal characteristics and attributes), and academic profile (major, classes, GPA trends, MCAT scores). At the same time, applicants are required to submit a minimum of three letters of evaluation. The Committee evaluates the applications to determine the most qualified applicants to advance to the next phase of the admissions process, the interview. Students are invited to Interview Day to learn more about the College of Human Medicine and to be assessed through interviews with a faculty member and a student. Interviewers are trained to assess applicants on the qualities the College associates with becoming exemplar physicians.

(b) In paragraph four, delete item 4., and replace items 2. and 3. with the following:

2. Experiences consistent with a commitment and success within medicine, such as clinical experiences, non-medical community service experiences, experiences with people different from self, experiences showing commitment to a community of people, mentoring experiences, leadership experiences, and teamwork experiences.

3. Personal characteristics and attributes that are consistent with a commitment and success within medicine, such as compassion, maturity, social responsibility, professional responsibility, morals and ethics, sociability, cultural competence, self-awareness calm-disposition, honesty, competence, and respect for others.

(c) In paragraph five, change item 4. to the following:

Completion of two upper-level (junior or senior level) biological sciences courses from the following list: biochemistry, cell biology, embryology, genetics, microbiology, molecular biology, neuroscience, or physiology.
(d) Replace paragraph six with the following:

Students interested in the Shared Discovery Pathway will apply to the pathway after admission to the College of Human Medicine. Students will be chosen to represent a diverse group of academic, service, and social backgrounds.

Effective Fall 2015.

2. Request to change the requirements for the Graduate Certificate in Public Health Administration in the College of Human Medicine. The University Committee on Graduate Studies (UCGS) will consider this request at its March 9, 2015 meeting.

The Graduate Certificate in Public Health Administration is a Type 2 graduate certificate and will appear on the transcript as “Graduate Certificate Program in Public Health Administration”.

a. Under the heading Requirements for the Graduate Certificate in Public Health Administration make the following changes:

(1) Change the total credits from ‘15’ to ‘18’.

(2) Delete the following course:

HM 842 Introduction to Public Health Informatics 3

Add the following courses:

HM 801 Introduction to Public Health 3
HM 840 Public Health Finance 3

Effective Summer 2015.

COLLEGE OF NATURAL SCIENCE

1. Request to change the Graduation Requirements for the Bachelor of Arts and Bachelor of Science degrees in the College of Natural Science.

a. Under the heading Graduation Requirements make the following change in paragraph two, following item 3.:

(1) Update ‘Biological Science 110, 111’ to ‘Biological Science 161, 162’.

Effective Fall 2015.

2. Request to change the requirements for the Bachelor of Science degree in Environmental Biology/Plant Biology in the Department of Plant Biology.

a. Under the heading Requirements for the Bachelor of Science Degree in Environmental Biology/Plant Biology make the following changes:

(1) Reletter item 3. a. to 3. f. and replace with the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS 210</td>
<td>Fundamentals of Soil Science</td>
<td>3</td>
</tr>
<tr>
<td>FW 417</td>
<td>Wetland Ecology and Management</td>
<td>3</td>
</tr>
<tr>
<td>GEO 221</td>
<td>Introduction to Geographic Information</td>
<td>3</td>
</tr>
<tr>
<td>PLB 201</td>
<td>Biology of Plants</td>
<td>4</td>
</tr>
<tr>
<td>PLB 415</td>
<td>Plant Physiology</td>
<td>3</td>
</tr>
<tr>
<td>PLB 418</td>
<td>Plant Systematics</td>
<td>3</td>
</tr>
<tr>
<td>PLB 498</td>
<td>Undergraduate Research</td>
<td>3</td>
</tr>
</tbody>
</table>
PLB 499 Senior Seminar (W) 1
STT 231 Statistics for Scientists 3
ZOL 355 Ecology 3
ZOL 355L Ecology Laboratory (W) 1

(2) Add the following new item 3. a.:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEM 141</td>
<td>General Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CEM 142</td>
<td>General and Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CEM 161</td>
<td>Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>LB 171</td>
<td>Principles of Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>LB 171L</td>
<td>Introduction to Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>LB 172</td>
<td>Principles of Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CEM 181H</td>
<td>Honors Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CEM 182H</td>
<td>Honors Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>CEM 185H</td>
<td>Honors Chemistry Laboratory I</td>
<td>2</td>
</tr>
</tbody>
</table>

(3) Delete items 3. b. and 3. c.

(4) Reletter item 3. g. to item 3. b. and add the following courses to group (3):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS 191H</td>
<td>Honors Cell and Molecular Biology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BS 192H</td>
<td>Honors Organismal and Population Biology Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

(5) Add the following new items 3. c., 3. d., and 3. e.:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 183</td>
<td>Physics for Scientists and Engineers I</td>
<td>4</td>
</tr>
<tr>
<td>PHY 184</td>
<td>Physics for Scientists and Engineers II</td>
<td>4</td>
</tr>
<tr>
<td>PHY 231</td>
<td>Introductory Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHY 232</td>
<td>Introductory Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHY 251</td>
<td>Introductory Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>PHY 252</td>
<td>Introductory Physics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>LB 273</td>
<td>Physics I</td>
<td>4</td>
</tr>
<tr>
<td>LB 274</td>
<td>Physics II</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH 124</td>
<td>Survey of Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>MTH 132</td>
<td>Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>MTH 152H</td>
<td>Honors Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>LB 118</td>
<td>Calculus I</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEM 143</td>
<td>Survey of Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CEM 251</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CEM 252</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
</tbody>
</table>

(6) Reletter items 3. d., 3. e., and 3. f. to 3. g., 3. h., and 3. i. respectively.

(7) Reletter item 3. h. to item 3. j.

Effective Fall 2015.
3. Request to change the requirements for the **Bachelor of Science** degree in **Plant Biology** in the Department of Plant Biology.

   a. Under the heading **Requirements for the Bachelor of Science Degree in Plant Biology** make the following changes:

   (1) In item 1., replace paragraph two with the following:

   The University’s Tier II writing requirement for the Plant Biology major is met by completing Plant Biology 498 and 499 and Zoology 355L and 445. Those courses are referenced in item 3. below.

   (2) In item 3. a. (3) add the following courses to group (3):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS 191H</td>
<td>Honors Cell and Molecular Biology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BS 192H</td>
<td>Honors Organismal and Population Biology Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

   (3) In item 3. c. delete the following course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMB 461</td>
<td>Advanced Biochemistry I</td>
<td>3</td>
</tr>
</tbody>
</table>

   (4) Replace item 3. g. with the following:

   All of the following courses (27 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLB 203</td>
<td>Biology of Plants</td>
<td>4</td>
</tr>
<tr>
<td>PLB 415</td>
<td>Plant Physiology</td>
<td>3</td>
</tr>
<tr>
<td>PLB 416L</td>
<td>Plant Physiology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>PLB 418</td>
<td>Plant Systematics</td>
<td>3</td>
</tr>
<tr>
<td>PLB 498</td>
<td>Undergraduate Research</td>
<td>3</td>
</tr>
<tr>
<td>PLB 499</td>
<td>Senior Seminar</td>
<td>1</td>
</tr>
<tr>
<td>ZOL 355</td>
<td>Ecology</td>
<td>3</td>
</tr>
<tr>
<td>ZOL 355L</td>
<td>Ecology Laboratory (W)</td>
<td>1</td>
</tr>
<tr>
<td>ZOL 341</td>
<td>Fundamental Genetics</td>
<td>4</td>
</tr>
<tr>
<td>ZOL 445</td>
<td>Evolution (W)</td>
<td>3</td>
</tr>
</tbody>
</table>

   (5) Delete items 3. h. and 3. i.

   (6) Add the following items 3. h., 3. i., 3. j., and 3. k.:

   h. One of the following options (4 or 6 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMB 401</td>
<td>Comprehensive Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td>BMB 461</td>
<td>Advanced Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>BMB 462</td>
<td>Advanced Biochemistry II</td>
<td>3</td>
</tr>
</tbody>
</table>

   i. One of the following courses (3 or 4 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLB 434</td>
<td>Plant Structure and Function</td>
<td>4</td>
</tr>
<tr>
<td>PLB 441</td>
<td>Plant Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

   j. One of the following courses (3 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMG 409</td>
<td>Eukaryotic Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>MMG 431</td>
<td>Microbial Genetics</td>
<td>3</td>
</tr>
</tbody>
</table>

   k. Two 300-400 level courses relating to plant biology approved by the Department of Plant Biology (6 to 8 credits)

   Effective Fall 2015.
4. Request to change the requirements for the Master of Science degree in Plant Biology in the Department of Plant Biology. The University Committee on Graduate Studies (UCGS) will consider this request at its March 9, 2015 meeting.

a. Under the heading Requirements for the Master of Science Degree in Plant Biology make the following changes:

(1) In item 1. delete the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLB 800</td>
<td>Seminar in Plant Biology</td>
<td>1</td>
</tr>
<tr>
<td>PLB 803</td>
<td>Integrative Topics in Plant Biology</td>
<td>2</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>PLB 801</td>
<td>Foundations of Plant Biology</td>
<td>3</td>
</tr>
<tr>
<td>PLB 804</td>
<td>Frontiers in Plant Biology</td>
<td>2</td>
</tr>
</tbody>
</table>

(2) Add the following item 3.:

Completion of the Responsible Conduct of Research workshop series offered by The Graduate School.

Effective Fall 2015.

5. Request to change the requirements for the Doctor of Philosophy degree in Plant Biology in the Department of Plant Biology. The University Committee on Graduate Studies (UCGS) will consider this request at its March 9, 2015 meeting.

a. Under the heading Requirements for the Doctor of Philosophy Degree in Plant Biology make the following changes:

(1) In item 1. a. delete the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLB 800</td>
<td>Seminar in Plant Biology</td>
<td>1</td>
</tr>
<tr>
<td>PLB 803</td>
<td>Integrative Topics in Plant Biology</td>
<td>2</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>PLB 801</td>
<td>Foundations of Plant Biology</td>
<td>3</td>
</tr>
<tr>
<td>PLB 804</td>
<td>Frontiers in Plant Biology</td>
<td>2</td>
</tr>
</tbody>
</table>

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

Completion of the Responsible Conduct of Research workshop series offered by The Graduate School.

(3) In item 1. c. delete the following course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 804</td>
<td>Forest Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

Effective Fall 2015.
PART II - NEW COURSES AND CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

ANS 418  Comprehensive Nutrient Management Planning

Animal Agriculture and the Environment

Fall of every year. 3(2-2) Interdepartmental with Biosystems Engineering. P: (BS 161 or LB 145 or BS 181H) and (CEM 143 or CEM 251) RB: CSS 210

Comprehensive nutrient management plans (CNMP) for animal feeding operations. Trends in animal production, environmental issues, and diet formulation and their impact on manure production. Development of CNMP for a specific animal feeding operation.

Effective Spring 2014 Effective Summer 2016

COLLEGE OF HUMAN MEDICINE

HM 552  Medical School 1

Fall of every year. 16(8-16) A student may earn a maximum of 32 credits in all enrollments for this course. R: Open to graduate-professional students in the College of Human Medicine.

NEW  A first course in a primary care, patient centered experience, integrating necessary biomedical and social sciences and humanities with clinical skills and professional development.

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 Fall 2015

HM 553  Medical School 2

Spring of every year. 16(8-16) A student may earn a maximum of 32 credits in all enrollments for this course. P: HM 552 R: Open to graduate-professional students in the College of Human Medicine.

NEW  Continuation of a primary care, patient centered experience, integrating necessary biomedical and social sciences and humanities with clinical skills and professional development. Includes Selectives to develop areas of strength and remediate gaps.

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 2016

HM 554  Medical School 3

Summer of every year. 16(8-16) A student may earn a maximum of 32 credits in all enrollments for this course. P: HM 553 R: Open to graduate-professional students in the College of Human Medicine.

NEW  Continuation of a set of selectives to develop areas of strength and remediate gaps, The beginning of an interdisciplinary, patient centered experience, integrating necessary biomedical and social sciences and humanities with clinical skills and professional development.

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 Summer 2016
HM 555  Medical School 4  
Fall of every year. 16(8-16) A student may earn a maximum of 32 credits in all enrollments for this course. P: HM 554 R: Open to graduate-professional students in the College of Human Medicine.  
NEW  Continuation of an interdisciplinary, patient centered experience, integrating necessary biomedical and social sciences and humanities with clinical skills and professional development.  
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 Fall 2016

HM 556  Medical School 5  
Spring of every year. 16(8-16) A student may earn a maximum of 32 credits in all enrollments for this course. P: HM 555 R: Open to graduate-professional students in the College of Human Medicine.  
NEW  Continuation of an interdisciplinary, patient centered experience, integrating necessary biomedical and social sciences and humanities with clinical skills and professional development. Includes selectives to develop areas of strength and remediate gaps.  
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 2017

HM 632  Rural Community Health Elective  
Spring of every year. 6(6-0) A student may earn a maximum of 18 credits in all enrollments for this course. RB: Completion of preclinical requirements for the Leadership in Rural Medicine Certificate. R: Approval of college.  
NEW  Patient centered and community based experience in rural medicine and rural medical health systems.  
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 2 semesters after the end of the semester of enrollment.  
Effective Summer 2013

HM 633  Advanced Rural Community Health Elective  
Spring of every year. 6(6-0) A student may earn a maximum of 18 credits in all enrollments for this course. RB: Completion of preclinical requirements for the Leadership in Rural Medicine Certificate. R: Approval of college.  
NEW  Provide students with experiences in rural medicine and rural community health that will enable them to better address the medical needs of rural populations. This course will follow HM 632 Rural Community Health Elective.  
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 2 semesters after the end of the semester of enrollment.  
Effective Summer 2013

HM 642  Critical Care in the LCE  
Fall of every year. Spring of every year. Summer of every year. 6(10-150) A student may earn a maximum of 18 credits in all enrollments for this course. P: (HM 556) and (MED 641 or PHD 641 or SUR 641) R: Open to graduate-professional students in the College of Human Medicine. Approval of college.  
NEW  Critical care experience in medicine  
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 Fall 2017
HM 651  Advanced Skills and Knowledge in Medical School 1
Fall of every year. 2(2-0) A student may earn a maximum of 20 credits in all enrollments for this course. P: HM 556 R: Open to graduate-professional students in the College of Human Medicine.
NEW Interdisciplinary small group course for advanced medical students combining advanced clinical skills with deep exploration of scientific and humanities literature underlying these skills.
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 Fall 2017

HM 652  Advanced Skills and Knowledge in Medical School 2
Spring of every year. 2(2-0) A student may earn a maximum of 6 credits in all enrollments for this course. P: HM 651 R: Open to graduate-professional students in the College of Human Medicine.
NEW Interdisciplinary small group course for advanced medical students combining advanced clinical skills with deep exploration of scientific and humanities literature underlying these skills.
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 2018

HM 653  Advanced Skills and Knowledge in Medical School 3
Summer of every year. 2(2-0) A student may earn a maximum of 6 credits in all enrollments for this course. P: HM 652 R: Open to graduate-professional students in the College of Human Medicine.
NEW Interdisciplinary small group course for advanced medical students combining advanced clinical skills with deep exploration of scientific and humanities literature underlying these skills.
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 Summer 2018

HM 654  Advanced Skills and Knowledge in Medical School 4
Summer of every year. 2(2-0) A student may earn a maximum of 6 credits in all enrollments for this course. P: HM 653 R: Open to graduate-professional students in the College of Human Medicine.
NEW Interdisciplinary small group course for advanced medical students combining advanced clinical skills with deep exploration of scientific and humanities literature underlying these skills.
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 Fall 2018

HM 655  Advanced Skills and Knowledge in Medical School 5
Spring of every year. 2(2-0) A student may earn a maximum of 6 credits in all enrollments for this course. P: HM 654 R: Open to graduate-professional students in the College of Human Medicine.
NEW Interdisciplinary small group course for advanced medical students combining advanced clinical skills with deep exploration of scientific and humanities literature underlying these skills.
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 2019
FM 641  Family Medicine Subinternship in the LCE  
Fall of every year. Spring of every year. Summer of every year. 6(10-150) A student may earn a maximum of 18 credits in all enrollments for this course. P: HM 556 R: Open to graduate-professional students in the College of Human Medicine.

NEW  
Clinical experience in which students take primary responsibility for managing the care of patients in a primary care setting under the supervision of attending physicians.  
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 Fall 2017

MED 641  Internal Medicine Subinternship in the LCE  
Fall of every year. Spring of every year. Summer of every year. 6(10-150) A student may earn a maximum of 18 credits in all enrollments for this course. P: HM 556 R: Open to graduate-professional students in the College of Human Medicine.

NEW  
Clinical experience in which students take primary responsibility for managing the care of adult patients under the supervision of senior residents and/or attending physicians.  
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 Fall 2017

OGR 641  Obstetrics and Gynecology Clerkship in the LCE  
Fall of every year. Spring of every year. Summer of every year. 6(10-150) A student may earn a maximum of 18 credits in all enrollments for this course. P: HM 556 R: Open to graduate-professional students in the College of Human Medicine.

NEW  
Diagnosis and management of common patient problems in obstetrics and gynecology.  
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 Fall 2017

PHD 641  Pediatric Subinternship in the LCE  
Fall of every year. Spring of every year. Summer of every year. 6(10-150) A student may earn a maximum of 18 credits in all enrollments for this course. P: HM 556 R: Open to graduate-professional students in the College of Human Medicine.

NEW  
Clinical experience in which students take primary responsibility for managing the care of pediatric patients under the supervision of senior residents and/or attending physicians.  
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 Fall 2017

PSC 641  Psychiatry and Behavioral Science Clerkship in the LCE  
Fall of every year. Spring of every year. Summer of every year. 6(10-150) A student may earn a maximum of 18 credits in all enrollments for this course. P: HM 556 R: Open to graduate-professional students in the College of Human Medicine.

NEW  
Supervised practice with in-patient, out-patient, emergency, and community mental health services.  
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 Fall 2017
ANTR 211  Human Tissues and Cells for Medical Illustrators  
Summer of every year. 3(2-2) R: Not open to students in the College of Natural Science. Approval of department. Not open to students with credit in ZOL 408.  
PCR  
Elementary structure and function of human tissues, cells, and representative biomolecular classes. Virtual histology laboratory.  
Effective Summer 2013 Effective Spring 2015

ANTR 355  Human Gross Anatomy Laboratory  
Summer of every year. 1(0-3) P: ANTR 350 or concurrently R: Approval of department. Not open to students with credit in KIN 217.  
PCR  
Introductory, structured laboratory survey of human regional gross anatomy using prosections, medical imaging, and multimedia for students in allied medical fields. Correct usage and pronunciation of medical terminology.  
SA: ANTR 381  
Effective Summer 2013 Effective Spring 2015

ANTR 440  Human Anatomic Variation  
Spring of even years. 2(2-0) P: ANTR 350 or KIN 216 or ZOL 328  
PCR  
Human anatomical variation including developmental, pathological and accidental.  
Effective Spring 2014 Effective Spring 2015

ANTR 485  Directed Study in Human Prosection  
Fall of every year. Spring of every year. Summer of every year. 2 to 4 credits. A student may earn a maximum of 15 credits in all enrollments for this course. P: ANTR 350 or ZOL 328 or KIN 217 P: ANTR 350 or ZOL 328 or KIN 217 or ZOL 320 R: Open only to juniors or seniors.  
PCR  
Prosection of selected regions and isolated structures of preserved human cadavers.  
Effective Fall 2002 Effective Spring 2015

ANTR 490  Special Problems in Anatomy  
Fall of every year. Spring of every year. Summer of every year. 1 to 5 credits. A student may earn a maximum of 15 credits in all enrollments for this course. R: Approval of department.  
PCR  
Topics from an anatomical field such as gross anatomy, histology, cytology, neuroanatomy, or embryology.  
SA: ANT 480  
Effective Summer 2013 Effective Spring 2015

SUR 641  Surgery in the LCE 1  
Fall of every year. Spring of every year. Summer of every year. 6(10-150) A student may earn a maximum of 18 credits in all enrollments for this course. P: HM 556 R: Open to graduate-professional students in the College of Human Medicine.  
NEW  
Diagnosis and management of common patient problems in the general surgical setting.  
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 Fall 2017

SUR 642  Surgery in the LCE 2  
Fall of every year. Spring of every year. Summer of every year. 6(10-150) A student may earn a maximum of 18 credits in all enrollments for this course. P: HM 556 and SUR 641 R: Open to graduate-professional students in the College of Human Medicine.  
NEW  
Diagnosis and management of common patient problems in surgical subspecialties.  
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 Fall 2017
COLLEGE OF NATURAL SCIENCE

MTHE 430 History of Mathematics
Spring of every year. 3(3-0) P: MTH 133 and MTH 301
Development of mathematical thought from ancient times to the present, selected from Egyptian, Babylonian, Mayan, Greek, Indian, and Arab contributions to mathematics and to the context of today's school mathematics curriculum.
SA: SME 430
Effective Summer 2013 Effective Fall 2015

PCR
Development of mathematical thought from ancient times to the present, selected from Egyptian, Babylonian, Mayan, Greek, Indian, and Arab contributions to mathematics and to the context of today's school mathematics curriculum.
SA: SME 430
Effective Summer 2013 Effective Fall 2015

NSC 204 Introduction to Computational Science
Spring of every year. 4(4-0) P: MTH 124 or MTH 132 or MTH 152H or LB 118
NEW Basics of computational science using a wide variety of applications examples.
Algorithmic thinking and model building, programming fundamentals, data visualization, numerical methods.
Effective Spring 2016

NSC 205 Computational Science Tools and Techniques
Fall of every year. 4(4-0) P: NSC 204
NEW Continuation of introduction to computational science focusing on standard methods and tools used for modeling and data analysis. Topics may include statistical analysis, symbolic math, linear algebra, simulation techniques, data mining.
Effective Fall 2016

BMS 880 Laboratory Rotation
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to doctoral students in the College of Natural Science or in the Department of Biochemistry and Molecular Biology or in the Department of Pharmacology and Toxicology or in the Department of Microbiology and Molecular Genetics or in the Department of Physiology or in the Cell and Molecular Biology major or in the Cell & Molecular Biology-Environmental Toxicology major or in the Genetics major. R: Open to doctoral students in the College of Natural Science or in the Department of Biochemistry and Molecular Biology or in the Department of Pharmacology and Toxicology or in the Department of Microbiology and Molecular Genetics or in the Department of Physiology or in the Cell and Molecular Biology major or in the Cell & Molecular Biology-Environmental Toxicology major or in the Genetics major.
Participation in research projects in laboratories of biomolecular sciences faculty.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall 2014 Effective Summer 2016
ZOL 141 Introductory Human Genetics
Fall of every year. Spring of every year. 3(3-0)
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 Entomology Major or in the Genetics Major or in the Human Biology Major or in the Microbiology Major or in the Physiology Major or in the Plant Biology Major or in the Zoology Major.
R: Not open to students in the Biochemistry and Molecular Biology major or in the Biological Science Major or in the Human Biology 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 Biomedical Laboratory Science Major or in the Environmental Biology/Microbiology Major or in the Environmental Biology/Plant Biology Major or in the Environmental Biology/Zoology Major or in the Genomics and Molecular Genetics Major or in the Neuroscience Major and not open to students in the Lyman Briggs Biochemistry and Molecular Biology Coordinate Major or in the Lyman Briggs Biomedical Laboratory Science Coordinate Major or in the Lyman Briggs Environmental Biology/Plant Biology Coordinate Major or in the Lyman Briggs Environmental Biology/Microbiology Coordinate Major or in the Lyman Briggs Environmental Biology/Zoology Coordinate Major or in the Lyman Briggs Human Biology Coordinate Major or in the Lyman Briggs Neuroscience Major or in the Lyman Briggs Microbiology Coordinate Major.
SA: ZOL 141
Effective Spring 2014 Effective Summer 2016

PLB 434 Plant Structure and Function
Fall of even years. Spring of odd years. 4(2-4) P: (BS 161 and BS 162) or (LB 144 and LB 145) or (BS 181H and BS 182H)
Plant anatomy from a structural and functional perspective. Physiological, developmental, and ecological significance of cell types, tissue types, and meristems of vegetative and reproductive plant parts. Plant morphology and anatomy from a structural and functional perspective. Ecological and evolutionary significance of variation in the physiology and development of plant cells, tissues, meristems and organs.
SA: BOT 434
Effective Fall 2014 Effective Fall 2016

PLB 800 Seminar in Plant Biology
Fall of every year. 1(1-0) A student may earn a maximum of 4 credits in all enrollments for this course. R: Open only to graduate students.
Current research and approaches in plant biology.
Request the use of the Pass-No Grade (P-N) system.
SA: BOT 800
DELETE COURSE
Effective Fall 2015

PLB 801 Foundations of Plant Biology
Fall of every year. 3(3-0) A student may earn a maximum of 3 credits in all enrollments for this course.
NEW An introduction to the history and current status of major research questions in Plant Biology, and approaches used to answer them.
Effective Fall 2015

PLB 803 Integrative Topics in Plant Biology
Spring of even years. 1 to 2 credits. A student may earn a maximum of 4 credits in all enrollments for this course.
Integrative topics in plant biology. Molecular, physiological, ecological, and evolutionary perspectives. Proposal writing and presentation.
DELETE COURSE
Effective Fall 2015
PLB 804  Frontiers in Plant Biology
Spring of every year. 2(2-0) A student may earn a maximum of 2 credits in all enrollments for this course.
NEW  Introduction to new and emerging research directions in the plant sciences, and provide tools needed for professional development.
Effective Fall 2015