PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. Request to change the requirements for the Bachelor of Science degree in Nutritional Sciences in the Department of Food Science and Human Nutrition.

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

      (1) Change the total credits in item 3. a. from '40 to 42' to '41 to 43'.

      (2) In item 3. a. (1) change the credits from '24' to '25' and add the following course:

          HNF 250L Professional Development and Career Planning in Nutrition 1

      (3) In item 3. a. (5) add HNF 494 as a choice to complete the experiential learning requirement.

      (4) In item 3. b. under the Public Health Nutrition concentration, make the following changes:

          (a) Change the total credits from '41 to 44' to '40 to 43'.

          (b) In item (1) change the total credits from '24' to '23'.

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

               HNF 485 Advanced Research Methods in Nutrition and Health 4

               Add the following course:

               HNF 485 Advanced Public Health Nutrition 3

   Effective Summer 2017.

2. Request to change the requirements for the Bachelor of Science degree in Horticulture in the Department of Horticulture.

   The concentrations in the Bachelor of Science degree in Horticulture 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 Horticulture make the following changes:

      (1) In item 3. b. under Horticultural Science make the following changes:

          (a) In item (2) delete the following course:

               HRT 332 Tree Fruit Production and Management 2

               Add the following course:

               HRT 332 Tree Fruit Production and Management 3
(b) In item (3) delete the following course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS 302</td>
<td>Principles of Weed Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Add the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS 288</td>
<td>Principles of Weed Management</td>
<td>3</td>
</tr>
<tr>
<td>HRT 253</td>
<td>Compost Production and Use</td>
<td>1</td>
</tr>
<tr>
<td>HRT 475</td>
<td>International Studies in Horticulture</td>
<td>3</td>
</tr>
</tbody>
</table>

(2) In item 3. b. under Sustainable and Organic Horticulture make the following changes:

(a) Change the total credits from '34' to '31'.

(b) In item (1) change the total credits from '16' to '13' and delete the following course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRT 258</td>
<td>Study a Farm</td>
<td>3</td>
</tr>
</tbody>
</table>

(c) In item (2) delete the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS 302</td>
<td>Principles of Weed Management</td>
<td>3</td>
</tr>
<tr>
<td>HRT 332</td>
<td>Tree Fruit Production and Management</td>
<td>2</td>
</tr>
</tbody>
</table>

Add the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS 288</td>
<td>Principles of Weed Management</td>
<td>3</td>
</tr>
<tr>
<td>HRT 475</td>
<td>International Studies in Horticulture</td>
<td>3</td>
</tr>
</tbody>
</table>

(3) In item 3. b. under Horticulture Landscape Design, Construction, and Management make the following changes:

(a) In item (2) delete the following course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS 302</td>
<td>Principles of Weed Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Add the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS 288</td>
<td>Principles of Weed Management</td>
<td>3</td>
</tr>
<tr>
<td>HRT 475</td>
<td>International Studies in Horticulture</td>
<td>3</td>
</tr>
</tbody>
</table>

Effective Fall 2017.

3. Request to change the requirements for the Minor in Plant, Animal and Microbial Biotechnology in the Department of Horticulture.

a. Under the heading Minor in Plant, Animal and Microbial Biotechnology make the following change in item 2.:

(1) Delete the following course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZOL 341</td>
<td>Fundamental Genetics</td>
<td>4</td>
</tr>
</tbody>
</table>

Add the following course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBIO 341</td>
<td>Fundamental Genetics</td>
<td>4</td>
</tr>
</tbody>
</table>

Effective Fall 2017.
1. Request to change the requirements in the Bachelor of Science degree in Civil Engineering in the Department of Civil and Environmental Engineering.

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

(1) In item 3. d. delete the following:

**Technical electives.** Complete 18 credits of electives from the list below. At least four courses, totaling a minimum of 12 credits, must be from at least four different areas (environmental, geotechnical, pavements, structures, transportation, and water resources). Additional credits to meet the 18 credit requirement may be taken from the list of courses below, which includes courses in construction management.

Add the following:

**Design-intensive Electives.** Complete 12 credits of electives from the list below in at least four different areas (environmental, geotechnical, pavements, structures, transportation, and water resources).

(2) In item 3. d. delete the following courses from each of the areas:

- **Environmental**
  - ENE 481 Environmental Chemistry: Equilibrium Concepts 3
  - ENE 487 Microbiology for Environmental Science and Engineering 3

- **Pavements**
  - CE 831 Advanced Concrete Pavement Analysis and Design 3
  - CE 832 Advanced Asphalt Pavement Analysis and Design 3

- **Structures**
  - CE 805 Advanced Design of Steel Structures 3
  - CE 806 Advanced Structural Concrete Design 3

- **Transportation**
  - CE 448 Transportation Planning 3

- **Water Resources**
  - ENE 822 Groundwater Modeling 3

The additional six credits may include courses from the construction management program courses below or from the above list.

- CE 471 Construction Engineering-Equipment, Methods and Planning 3
- CMP 311 Construction Project Scheduling 3
- CMP 415 Cost Estimating and Analysis 3
- CMP 423 Construction Project Management 3

(3) Add the following item 3. e.:

**Technical Electives.** Complete 6 additional credits in courses not used to fulfill areas above or from the following:

- CE 400 Structural Mechanics 3
- CE 407 Materials Engineering: Properties, Selection and Processing 3
- CE 432 Pavement Rehabilitation 3
- CE 448 Transportation Planning 3
- CE 471 Construction Engineering – Equipment, Methods and Planning 3
- ENE 481 Environmental Chemistry: Equilibrium Concepts 3
- ENE 487 Microbiology for Environmental Science and Engineering 3

Effective Fall 2017.
LYMAN BRIGGS COLLEGE

1. Request to change the administrative responsibility for the **Minor in Bioethics, Humanities and Society** in the College of Human Medicine to Lyman Briggs College.

   Effective Fall 2017.

2. Request to change the name of the **Minor in Bioethics, Humanities and Society** in Lyman Briggs College to **Bioethics**.

   Students admitted to the minor prior to Fall 2017 will graduate with a Minor in Bioethics, Humanities and Society.

   Students admitted to the minor Fall 2017 and forward will graduate with a Minor in Bioethics.

   Effective Fall 2017.

3. Request to change the requirements for the **Minor in Bioethics** in Lyman Briggs College.

   a. Under the heading **Requirements for the Minor in Bioethics** replace the entire entry with the following:

   1. Both of the following courses (3 credits):
      - LB 240 Bioethics: Theories and Methods 2
      - LB 440 Bioethics Capstone 1
   2. Complete 15 credits from at least four courses. No more than 8 credits may be from the same discipline. Students should work with the advisor for appropriate substitution requests.
      - ANP 270 Women and Health: Anthropological and International Perspectives 3
      - ANP 370 Culture, Health, and Illness 3
      - ANP 423 Psychological Anthropology 3
      - ANP 425 Issues in Medical Anthropology 3
      - ANP 471 The Anthropology of Alternative Medicine 3
      - ANS 427 Environmental Toxicology and Society 3
      - CEP 470 Disability in a Diverse Society 3
      - EC 498 Economics of Health Care (W) 3
      - ENG 473A Literature and Medicine 3
      - EPI 390 Disease in Society: An Introduction to Epidemiology and Public Health 4
      - GEO 435 Geography of Health and Disease 3
      - HNF 375 Community Nutrition 3
      - HNF 406 Global Foods and Culture 3
      - HST 420 History of Sexuality since 18th Century 3
      - HST 425 American and European Health Care since 1800 4
      - KIN 445 Sport and Physical Activity in Society (W) 3
      - LB 324A Science and Sex, Gender, Sexuality – Arts and Humanities (W) 4
      - LB 324B Science and Sex, Gender, Sexuality – Social Sciences (W) 4
      - LB 326A Medicine and Health – Arts and Humanities (W) 4
      - LB 326B Medicine and Health – Social Sciences (W) 4
      - LB 355 Philosophy of Technology (W) 4
      - MC 351 Science and Social Policy 4
      - PHL 344 Ethical Issues in Health Care 4
      - PHL 380 Nature of Science 3
      - PHL 444 Philosophical Issues in Biomedicine 4
      - PHL 480 Philosophy of Science 4
      - PHL 485 Philosophy of Social Science 3
      - PSY 280 Abnormal Psychology 3
      - PSY 320 Health Psychology 3
      - REL 385 Religion, Health, and Healthcare 3
      - SOC 368 Science, Technology and Society 4
      - SOC 451 Dynamics of Population 3
      - SOC 475 Health and Society 3
COLLEGE OF NATURAL SCIENCE

1. Request to change the requirements for the Minor in Actuarial Science in the Department of Mathematics.

   a. Under the heading Requirements for the Minor in Actuarial Science make the following changes in item 1.:

      (1) Delete the following course:

      FI 379 Advanced Derivatives (D) 3

      MTH 361 Financial Mathematics for Actuaries I 3

Effective Fall 2017.
PART II - NEW COURSES AND CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

HNF 250L  Professional Development and Career Planning in Nutrition
Fall of every year. Spring of every year. 1(0-2) P: HNF 250 or concurrently R: Open to students in the Nutritional Sciences Major and open to students in the Lyman Briggs Nutritional Sciences Coordinate Major.

NEW  Experiential learning and career opportunities in nutrition. Skills for professional and career development.
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

HNF 385  Public Issues in Nutrition and Health
Public Health Nutrition
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: (HNF 150) and ((STT 200 or concurrently) or (STT 201 or concurrently) or (STT 224 or concurrently) or (STT 464 or concurrently) or approval of department) R: Not open to freshmen.
Nutrition from a public health perspective. Overview of public health research, evidence-based recommendations and epidemiology. Diet and nutrition assessment. Ethical issues surrounding public health nutrition recommendations.
Effective Summer 2016 Effective Summer 2017

HNF 485  Advanced Research Methods in Nutrition and Health
Advanced Public Health Nutrition
Fall of every year. Spring of every year. 3(2-2) P: HNF 250 and HNF 385 and STT 422 R: Open to students in the Nutritional Sciences Major. R: Open to students in the Nutritional Sciences Major and open to students in the Lyman Briggs Nutritional Sciences Coordinate Major.
Survey design, data collection and analysis of nutrition and health data. Use of statistical analysis software (SPSS/SAS). Interpretation and presentation of research results.
Effective Summer 2016 Effective Summer 2017

PLP 405  Plant Pathology
Spring of every year. 3(2-3) P: (BS 161 and BS 162) or (PLB 105 and PLB 106) or ((LB 144 and LB 145) and completion of Tier I writing requirement) P: ((BS 161 and BS 162) and completion of Tier I writing requirement) or ((PLB 105 and PLB 106) and completion of Tier I writing requirement) or ((LB 144 and LB 145) and completion of Tier I writing requirement) Not open to students with credit in PLP 407.
Plant diseases and the organisms that cause them. Principles of disease management including application of chemicals, plant breeding, biological control, and genetic engineering.
SA: BOT 405
Effective Spring 2014 Effective Fall 2016

COLLEGE OF ENGINEERING

CE 273  Civil and Environmental Engineering Measurements
Fall of every year. Spring of every year. 2(1-3) P: ((MTH 132 or concurrently) or (MTH 152H or concurrently) or (LB 118 or concurrently)) and (EGR 102 or concurrently) Measurements, surveying and error analysis with applications to civil and environmental engineering problems
SA: CE 271
Effective Fall 2016 Effective Fall 2017
CE 274  Graphics for Civil and Environmental Engineers  
Fall of every year. Spring of every year. 1(1-3) P: ((MTH 132 or concurrently) or (MTH 152H or concurrently)) or (LB 118 or concurrently) and (EGR 100 or concurrently)  
Basic operations in CAD software with applications in civil and environmental engineering  
SA: CE 272  
Effective Fall 2016 Effective Fall 2017

CE 337  Civil Engineering Materials I  
Civil Engineering Materials  
Fall of every year. Spring of every year. 4(3-3) P: (ME 222 or concurrently) and (CE 273 or concurrently) and (CE 274 or concurrently) R: Open to juniors or seniors in the Department of Civil and Environmental Engineering.  
Common civil engineering construction and paving materials: aggregates, inorganic cements, asphalts, concretes, wood, and steel. Composition, structure, physical and mechanical properties, tests, and production mix design.  
Effective Fall 2016 Effective Spring 2017

CE 371  Sustainable Civil and Environmental Engineering Systems  
Fall of every year. Spring of every year. 3(3-0) P: ((MTH 234 or concurrently) or (LB 220 or concurrently) or (MTH 254H or concurrently)) and (EGR 102 and ENE 280) P: ((MTH 234 or concurrently) or (LB 220 or concurrently) or (MTH 254H or concurrently)) and ENE 280 R: Open to juniors or seniors in the Civil Engineering Major or in the Environmental Engineering Major.  
Principles and tools of sustainable design and engineering economics in Civil and Environmental Engineering.  
SA: CE 272  
Effective Fall 2016 Effective Fall 2017

CE 372  Risk Analysis in Civil and Environmental Engineering  
Fall of every year. Spring of every year. 2(2-0) P: (MTH 234 or concurrently) or (LB 220 or concurrently) or (MTH 254H or concurrently) or (MTH 234 or concurrently) or (LB 220 or concurrently) or (MTH 254H or concurrently) R: Open to juniors in the Civil Engineering Major or in the Environmental Engineering Major and open to seniors in the Civil Engineering Major or in the Environmental Engineering Major.  
Applications of probability, statistics, uncertainty and risk analysis to topics in civil and environmental engineering, characterization of system safety, and comparison tests for engineering quality control and environmental analyses.  
SA: CE 272  
Effective Fall 2016 Effective Fall 2017

CE 431  Pavement Design and Analysis I  
Pavement Design and Analysis  
Fall of every year. 3(3-0) P: CE 337 R: Open to juniors or seniors or graduate students in the College of Engineering.  
Effective Fall 2013 Effective Fall 2017

CE 432  Pavement Rehabilitation  
Spring of every year, Spring of odd years. 3(3-0) P: CE 337 RB: CE 431 R: Open to seniors or graduate students in the College of Engineering.  
Engineering concepts and information needed to rehabilitate pavements. Network and project survey and evaluation: design of rigid and flexible overlays, other methods of rehabilitation, selection of rehabilitation alternatives. Initial and life cycle cost analysis of various rehabilitation alternatives.  
Effective Spring 2014 Effective Fall 2017
PART II - NEW COURSES AND CHANGES – continued - 8
February 16, 2017

CE 495  Senior Design in Civil and Environmental Engineering
Fall of every year. Spring of every year. 4(2-3) P: (CE 274 and CE 371 and CE 372) and (ENE 421 or ENE 422 or ENE 483 or ENE 489 or CE 418 or CE 431 or CE 405 or CE 406 or CE 444 or CE 449) and (ENE 421 or ENE 422 or ENE 483 or ENE 489 or CE 405 or CE 406 or CE 418 or CE 431 or CE 444 or CE 449) and (ENE 421 or ENE 422 or ENE 483 or ENE 489 or CE 405 or CE 406 or CE 418 or CE 431 or CE 444 or CE 449) R: Open to seniors in the Civil Engineering Major or in the Environmental Engineering Major. Approval of department. R: Open to seniors in the Civil Engineering Major or in the Environmental Engineering Major.


Effective Fall 2016
Effective Fall 2017

ENE 483  Water and Wastewater Engineering
Fall of every year. 3(3-1) Interdepartmental with Civil Engineering. P: (ENE 280 or BE 230) and (CE 321 or CHE 311) R: Open to juniors or seniors or graduate students in the College of Engineering.

Engineering and scientific basis and design of physical, chemical and biological methods for the treatment of drinking water and wastewater. Operation process selection and design.

Effective Fall 2016
Effective Fall 2017

LYMAN BRIGGS COLLEGE

LB 240  Bioethics: Theories and Methods
Fall of every year. Summer of every year. 2(2-0) RB: Completion of Tier I Writing Requirement

NEW Interdisciplinary survey of key theories and methods in bioethics. Topics include aging, cultural diversity, and health care policy.

Effective Summer 2017

LB 440  Bioethics Capstone
Fall of every year. Spring of every year. 1(1-0) P: LB 240 RB: Completion of 9 credits in the bioethics minor. R: Open to juniors or seniors in the Bioethics, Humanities, and Society Minor.

NEW Selective topics in bioethics. Analysis of key issues and problems. Case studies.

Effective Fall 2017

COLLEGE OF NATURAL SCIENCE

GLG 864  Mineral and Rock Physics
Spring of even years. 4(3-2) P: GLG 321 RB: GLG 401 and MTH 235 and MTH 309

NEW Physical properties of rocks and minerals fundamental to understanding the structure and dynamics of the Earth and other planets for behavior, including elasticity, rheology, and thermal and electrical transport; theory, experimental measurement, and application to geophysical problems.

Effective Spring 2017

GLG 873  Introduction to Numerical Tools for Earth and Environmental Scientists
Fall of odd years. 3(3-0) RB: B.S. in the Earth Sciences or related field

NEW Computation is increasingly becoming more important in every aspect of the Earth and Environmental Sciences. Introductory course in the following topics: learning to use the Linux operating system, coding in the C programming language, and learning basic numerical methods that repeatedly arise in the Geological Sciences such as integration, curve-fitting, and solving relatively simple but commonly used differential equations. Prior coursework in computational methods and differential equations is not required.

Effective Fall 2017
NEU 416  Development of the Nervous System Through the Lifespan
Fall of every year. 3(3-0) Interdepartmental with Integrative Biology. P: NEU 302 or ZOL 402 or PSY 209 P: NEU 302 or IBIO 300 or PSY 209 RB: ZOL 341 RB: IBIO 341 R: Open to undergraduate students in the Program in Neuroscience or in the Department of Integrative Biology or in the Department of Psychology or in the Lyman Briggs Neuroscience Major or in the Lyman Briggs Zoology Coordinate Major.
Development of neurons and their connections, roles of both genetics and behavioral experience in shaping the mammalian nervous system. Effective Fall 2016 Effective Summer 2017

PHY 241  Physics for Cellular and Molecular Biologists 1
Fall of every year. 4(4-0) P: (MTH 124 or concurrently) or (MTH 132 or concurrently) or (MTH 152H or concurrently) or (LB 118 or concurrently) RB: CEM 141 and BS 161 R: Not open to students in the College of Engineering or in the Department of Physics and Astronomy. Not open to students with credit in LB 273 or PHY 183 or PHY 183B or PHY 193H or PHY 231 or PHY 231C or PHY 233B.
NEW  Physics of cellular and molecular biology. Examples will be drawn from systems such as Bacterial flagella, myosin and protein folding.
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

PHY 242  Physics for Cellular and Molecular Biologists 2
Spring of every year. 4(4-0) P: (PHY 241) and PHY 241 RB: CEM 141 and BS 161 R: Not open to students in the College of Engineering or in the Department of Physics and Astronomy. Not open to students with credit in PHY 184 or PHY 184B or PHY 294H or PHY 232 or PHY 232C or PHY 234B or LB 274.
NEW  Physics of cellular and molecular biology. Examples will be drawn from systems such as ATPase and photosynthesis.
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

PSL 310  Physiology for Pre-Health Professionals
Fall 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. Not open to students with credit in PSL 431.
Fundamental concepts of human organ system physiology with clinical examples for students entering health care fields. Effective Spring 2014 Effective Summer 2017

COLLEGE OF OSTEOPATHIC MEDICINE

OST 551  Osteopathic Patient Care I
Fall of every year. 2(1-2) R: Open to graduate-professional students in the College of Osteopathic Medicine.
Integration of components of the doctor patient relationship, clinical assessment skills and evidence based medicine to develop effective critical thinking and assessment skills in the care of patients. Emphasis is on communication in doctor patient relationships.
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 2013 Effective Fall 2017
OST 552  Osteopathic Patient Care II
Spring of every year. 2(1-2) R: Open to graduate-professional students in the College of Osteopathic Medicine.
Integration of components of the doctor patient relationship, clinical assessment skills and evidence based medicine to develop effective critical thinking and assessment skills in the care of patients, as it relates to neurology, orthopedics, physiatry, endocrine, female reproduction and genitourinary 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 1 semester after the end of the semester of enrollment.
Effective Summer 2013 Effective Spring 2017

COLLEGE OF VETERINARY MEDICINE

PHM 350  Introductory Human Pharmacology
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: (PSL 250 or PSL 310) or (PSL 431 and PSL 432) R: Not open to freshmen. Not open to students with credit in PHM 430 or PHM 440.
General principles of pharmacology. Central nervous system, autonomic nervous system, cardiovascular, renal, cancer, microbial, and endocrine pharmacology.
Effective Spring 2014 Effective Summer 2017

PHM 430  Human Pharmacology
Summer of every year. 3 credits. P: (PSL 250 or PSL 310) or (PSL 431 and PSL 432) RB:
Molecular biology, biochemistry, chemistry, physiology, and/or human biology. R: Open to master’s students in the Integrative Pharmacology Major or in the Pharmacology and Toxicology Major.
Approval of department. R: Open to master’s students in the Integrative Pharmacology Major or in the Pharmacology and Toxicology Major and open to undergraduate students. Approval of department. Not open to students with credit in PHM 350 or PHM 440.
General principles of pharmacology. Central nervous system and autonomic nervous system, cardiovascular, renal, cancer, microbial, and endocrine pharmacology.
Effective Spring 2014 Effective Spring 2017

PHM 450  Introduction to Chemical Toxicology
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: (BS 161 and BS 162 and CEM 251) or (LB 144 and LB 145 and CEM 251) R: Not open to freshmen or sophomores.
Mammalian toxicology. Disposition of chemicals in the body, detoxication, elimination, and mechanisms of toxicity in major organ systems. Selected toxic agents.
Effective Fall 2014 Effective Spring 2017

PHM 461  Tropical Medicine Pharmacology
Fall of every year. Spring of every year. Summer of every year. 2(2-0) P: PHM 350 or concurrently R: Open to juniors or seniors or master's students. Approval of department.
Tropical diseases, epidemiologic and clinical features, and pharmacologic treatments. Multidisciplinary and interdisciplinary approaches, especially in poverty settings.
Effective Fall 2016 Effective Spring 2017

PHM 802  Cellular, Molecular and Integrated Systems Pharmacology
Spring of every year. 4(4) or 3(3-0) P: (BMB 801 or BMB 802) and (PHM 827 or PSL 828 or PSL 829) R: Open to doctoral students or approval of department.
Cellular and molecular mechanisms of drug actions on organ systems of humans and other mammals.
Effective Spring 2015 Effective Spring 2018
PHM 803  Chemical disposition in mammals
Fall of every year. 1(1-0) R: Open to doctoral students. Approval of department. Not open to students with credit in PHM 801 or PHM 819.

NEW  Principles of drug/toxicant absorption, distribution, metabolism, elimination, and kinetics in mammalian systems.
Effective Fall 2017

PHM 819  Principles of Drug-Tissue Interactions
Fall of every year. Spring of every year. Summer of every year. 1 to 2 credits. 2(2-0) A student may earn a maximum of 3 credits in all enrollments for this course. R: Open to graduate students or lifelong graduate students. Not open to students with credit in PHM 801. General principles relevant to the interaction of chemicals with biological systems. Topics include pharmacokinetics and/or pharmacodynamics.
Effective Fall 2009 Effective Fall 2017

PHM 832  Applied Integrative Pharmacology Laboratory
Summer of every year. 4(2-4) 3(3-0) P: PHM 819 and PHM 830 P: (PHM 813 or concurrently) and PHM 819 and PHM 830 RB: Undergrad degree in biology, chemistry or related field. Prior biomedical lab experience helpful. R: Not open to undergraduate students. Approval of department.
Integrative and organ-level pharmacology. Regulatory issues in the use of experimental animals, animal models of diseases, animal and tissue preparation for whole animal and organ level pharmacology experiments, experimental design, data collection, data analysis, and data interpretation. This course teaches students research methods for studying integrative physiology and pharmacology and may include training in methods to study autonomic control of cardiac function and blood pressure; measuring vascular reactivity, in vitro; assessing the effects of anesthetics on cardiovascular and autonomic function; and studying drug effects on the brain.
Effective Summer 2008 Effective Summer 2017

SCS 566  Emergency and Critical Care Medicine Seminars
Fall of every year. Spring of every year. 1(1-0) RB: Completion of year 1 of the graduate professional program in the College of Veterinary Medicine. R: Open to graduate-professional students in the College of Veterinary Medicine.
Case-based discussion of small animal veterinary emergency and critical care medical issues.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall 2016 Effective Fall 2017

VM 611  Veterinary Externship
Fall of every year. Spring of every year. Summer of every year. 3 credits. A student may earn a maximum of 9 credits in all enrollments for this course. A student may earn a maximum of 15 credits in all enrollments for this course. RB: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine. R: Open to graduate-professional students in the College of Veterinary Medicine.
Clinical or research experience in an off-campus 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 Summer 2013 Effective Summer 2017