PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Animal Science-Environmental Toxicology in the Department of Animal Science. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Animal Science. Students who have not met the requirements for the Doctor of Philosophy degree in Animal Science-Environmental Toxicology through the Department of Animal Science prior to Spring 2030 will have to change their major.

2. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Fisheries and Wildlife-Environmental Toxicology in the Department of Fisheries and Wildlife. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Fisheries and Wildlife. Students who have not met the requirements for the Doctor of Philosophy degree in Fisheries and Wildlife-Environmental Toxicology through the Department of Fisheries and Wildlife prior to Spring 2030 will have to change their major.

3. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Food Science-Environmental Toxicology in the Department of Food Science and Human Nutrition. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Food Science and Human Nutrition. Students who have not met the requirements for the Doctor of Philosophy degree in Food Science-Environmental Toxicology through the Department of Food Science and Human Nutrition prior to Spring 2030 will have to change their major.

4. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Human Nutrition-Environmental Toxicology in the Department of Food Science and Human Nutrition. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Food Science and Human Nutrition. Students who have not met the requirements for the Doctor of Philosophy degree in Human Nutrition-Environmental Toxicology through the Department of Food Science and Human Nutrition prior to Spring 2030 will have to change their major.
5. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Forestry-Environmental Toxicology in the Department of Forestry. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Forestry. Students who have not met the requirements for the Doctor of Philosophy degree in Forestry-Environmental Toxicology through the Department of Forestry prior to Spring 2030 will have to change their major.

6. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Crop and Soil Sciences-Environmental Toxicology in the Department of Plant, Soil and Microbial Sciences. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Plant, Soil and Microbial Sciences. Students who have not met the requirements for the Doctor of Philosophy degree in Crop and Soil Sciences-Environmental Toxicology through the Department of Plant, Soil and Microbial Sciences prior to Spring 2030 will have to change their major.

COLLEGE OF ENGINEERING

1. Request to change the requirements for the Bachelor of Science degree in Biosystems Engineering in the Department of Biosystems and Agricultural Engineering.

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

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

The University’s Tier II writing requirement for the Biosystems Engineering major is met by completing Biosystems Engineering 334 or 485. These courses are referenced in item 3. a. below.

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>201 Drafting in Biosystems Engineering</td>
<td>1</td>
</tr>
<tr>
<td>CEM</td>
<td>151 General and Descriptive Chemistry</td>
<td>4</td>
</tr>
</tbody>
</table>

Delete the following course:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE</td>
<td>274 Graphics for Civil and Environmental Engineers</td>
<td>1</td>
</tr>
</tbody>
</table>

(3) In item 3. b., delete the following course:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>172 Organismal and Population Biology Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

Add the following course:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>172L Organismal and Population Biology Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

(4) In item 3. d., add the following course:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMG</td>
<td>404 Human Genetics</td>
<td>3</td>
</tr>
</tbody>
</table>
Delete the following course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLB 424</td>
<td>Algal Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

b. Under the heading **Concentration in Biosystems Engineering** make the following changes:

1. In the **Bioenergy and Bioproduct Engineering** concentration make the following changes:

   a. In item 2., add the following courses:
      
      | Course Code | Course Name                          | Credits |
      |-------------|--------------------------------------|---------|
      | CSS 442     | Agricultural Ecology                 | 3       |
      | FOR 427     | Biomass and Bioproducts Chemistry    | 3       |
      | FOR 466     | Natural Resource Policy              | 3       |
      | FW 444      | Conservation Biology                 | 3       |
      | GLG 435     | Geomicrobiology                      | 4       |
      | MMG 425     | Microbial Ecology                    | 3       |

   Delete the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 882</td>
<td>Advanced Biochemical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CHE 883</td>
<td>Multidisciplinary Bioprocessing Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>GLG 471</td>
<td>Applied Geophysics</td>
<td>4</td>
</tr>
<tr>
<td>PLB 424</td>
<td>Algal Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

2. In the **Biomedical Engineering** concentration make the following changes:

   a. In item 2., add the following course:
      
      | Course Code | Course Name                          | Credits |
      |-------------|--------------------------------------|---------|
      | MMG 404     | Human Genetics                       | 3       |

   b. In item 3., add the following course:
      
      | Course Code | Course Name                          | Credits |
      |-------------|--------------------------------------|---------|
      | BE 440      | Entrepreneurial Engineering for Innovation in Health and Safety | 3       |
      | MMG 404     | Human Genetics                       | 3       |

3. In the **Ecosystems Engineering** concentration make the following changes:

   a. In item 1., add the following course:
      
      | Course Code | Course Name                          | Credits |
      |-------------|--------------------------------------|---------|
      | BE 484      | Water Resource Recovery Engineering  | 3       |

   Delete the following course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMG 425</td>
<td>Microbial Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

   b. Renumber item 2. to item 3., and add the following new item 2.:
      
      One of the following courses (3 credits):

      | Course Code | Course Name                          | Credits |
      |-------------|--------------------------------------|---------|
      | CSS 442     | Agricultural Ecology                 | 3       |
      | MMG 425     | Microbial Ecology                    | 3       |

   c. In item 3., add the following courses and note:
      
      | Course Code | Course Name                          | Credits |
      |-------------|--------------------------------------|---------|
      | ENE 422     | Applied Hydraulics                   | 3       |
      | FW 444      | Conservation Biology                 | 3       |
      | GEO 402     | Agricultural Climatology             | 3       |
      | MC 450      | International Environmental Law and Policy | 3   |
      | MMG 425     | Microbial Ecology                    | 3       |
      | PLB 418     | Plant Systematics                    | 3       |
Courses used to fulfill requirement 2. in this concentration may not be used to fulfill this requirement.

Delete the following course:

CE  422   Applied Hydraulics        3

Effective Fall 2023.

2. Request to change the requirements in the Bachelor of Science degree in Mechanical Engineering in the Department of Mechanical Engineering.

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

(1) In item 3. c. Senior Electives, add the following courses:

ME  456   Mechatronic System Design   3
ME  496   Biomechanical Analysis of Human Movement  3

(2) In item 3. d. Design-intensive Senior Electives, add the following course:

ME  456   Mechatronic System Design   3

(3) Under the heading Aerospace Engineering concentration replace the requirements with the following:

Both of the following courses (6 credits):

ME  440   Aerospace Propulsion  3
ME  441   Aerodynamics and Aircraft Performance  3

One of the following courses (3 credits):

ME  423   Intermediate Mechanics of Deformable Solids   3
ME  456   Mechatronic System Design   3
ME  426   Introduction to Composite Materials  3
ME  475   Computer Aided Design of Structures  3

One of the following courses (3 credits):

ME  422   Introduction to Combustion   3
ME  433   Introduction to Computational Fluid Dynamics   3
ME  442   Turbomachinery   3

(4) Under the heading Biomedical Engineering concentration replace the requirements with the following:

Both of the following courses (7 credits):

BS  161   Cell and Molecular Biology  3
PSL  250   Introductory Physiology  4

Nine credits from the following courses:

BE  444   Biosensors for Medical Diagnostics   3
ECE  445   Biomedical Instrumentation   3
ME  494   Biofluid Mechanics and Heat Transfer   3
ME  495   Tissue Mechanics   3
ME  496   Biomechanical Analysis of Human Movement   3
ME  497   Biomechanical Design in Product Development   3
MSE  425   Biomaterials and Biocompatibility   3

Students who select BE 444, ECE 445, or MSE 425 may request to apply these course credits towards fulfillment of the Mechanical Engineering Major Senior-Elective requirement (item 3.c. above).

(5) Under the heading Manufacturing Engineering concentration add the following note:
Students who select CHE 472, ECE 415, or MSE 426 may request to apply these course credits towards fulfillment of the Mechanical Engineering Major Senior-Elective requirement (item 3.c. above).

Effective Fall 2023.

COLLEGE OF NATURAL SCIENCE

1. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Cell and Molecular Biology-Environmental Toxicology in the College of Natural Science. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the College of Natural Science. Students who have not met the requirements for the Doctor of Philosophy degree in Cell and Molecular Biology-Environmental Toxicology through the College of Natural Science prior to Spring 2030 will have to change their major.

2. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Genetics and Genome Sciences-Environmental Toxicology in the College of Natural Science. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the College of Natural Science. Students who have not met the requirements for the Doctor of Philosophy degree in Genetics and Genome Sciences-Environmental Toxicology through the College of Natural Science prior to Spring 2030 will have to change their major.

3. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Neuroscience-Environmental Toxicology in the College of Natural Science. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the College of Natural Science. Students who have not met the requirements for the Doctor of Philosophy degree in Neuroscience-Environmental Toxicology through the College of Natural Science prior to Spring 2030 will have to change their major.

4. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Biochemistry and Molecular Biology-Environmental Toxicology in the Department of Biochemistry and Molecular Biology. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Biochemistry and Molecular Biology. Students who have not met the requirements for the Doctor of Philosophy degree in Biochemistry and Molecular Biology-Environmental Toxicology through the Department of Biochemistry and Molecular Biology prior to Spring 2030 will have to change their major.
5. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Chemistry-Environmental Toxicology in the Department of Chemistry. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Chemistry. Students who have not met the requirements for the Doctor of Philosophy degree in Chemistry-Environmental Toxicology through the Department of Chemistry prior to Spring 2030 will have to change their major.

6. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Environmental Geosciences-Environmental Toxicology in the Department of Earth and Environmental Sciences. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Earth and Environmental Sciences. Students who have not met the requirements for the Doctor of Philosophy degree in Environmental Geosciences-Environmental Toxicology through the Department of Earth and Environmental Sciences prior to Spring 2030 will have to change their major.

7. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Integrative Biology-Environmental Toxicology in the Department of Integrative Biology. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Integrative Biology. Students who have not met the requirements for the Doctor of Philosophy degree in Integrative Biology-Environmental Toxicology through the Department of Integrative Biology prior to Spring 2030 will have to change their major.

8. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Physiology-Environmental Toxicology in the Department of Physiology. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Physiology. Students who have not met the requirements for the Doctor of Philosophy degree in Physiology-Environmental Toxicology through the Department of Physiology prior to Spring 2030 will have to change their major.
1. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Comparative Medicine and Integrative Biology-Environmental Toxicology in the College of Veterinary Medicine. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the College of Veterinary Medicine. Students who have not met the requirements for the Doctor of Philosophy degree in Comparative Medicine and Integrative Biology-Environmental Toxicology through the College of Veterinary Medicine prior to Spring 2030 will have to change their major.

2. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Microbiology-Environmental Toxicology in the Department of Microbiology and Molecular Genetics. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Microbiology and Molecular Genetics. Students who have not met the requirements for the Doctor of Philosophy degree in Microbiology-Environmental Toxicology through the Department of Microbiology and Molecular Genetics prior to Spring 2030 will have to change their major.

3. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Pathobiology-Environmental Toxicology in the Department of Pathobiology and Diagnostic Investigation. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Pathobiology and Diagnostic Investigation. Students who have not met the requirements for the Doctor of Philosophy degree in Pathobiology-Environmental Toxicology through the Department of Pathobiology and Diagnostic Investigation prior to Spring 2030 will have to change their major.

4. Request to delete the curriculum and degree requirements for the Doctor of Philosophy degree in Pharmacology and Toxicology-Environmental Toxicology in the Department of Pharmacology and Toxicology. The University Committee on Graduate Studies (UCGS) provided consultative commentary to the Provost after considering this request at its January 23, 2023 meeting. The Provost made the determination to discontinue the program after considering the consultative commentary from the University Committee on Graduate Studies.

No new students are to be admitted to the program effective Fall 2022. No students are to be readmitted to the program effective Fall 2022. Effective Fall 2030, coding for the program will be discontinued and the program will no longer be available in the Department of Pharmacology and Toxicology. Students who have not met the requirements for the Doctor of Philosophy degree in Pharmacology and Toxicology-Environmental Toxicology through the Department of Pharmacology and Toxicology prior to Spring 2030 will have to change their major.
PART II - NEW COURSES AND CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

AT 100  Career Development in Agricultural Technology
Fall of every year. 1(1-0) A student may earn a maximum of 1 credit in all enrollments for this
course. R: Not open to undergraduate students.
NEW  This class will introduce students to the Institute of Agricultural Technology at Michigan
State University and their local community college. Students will explore different
aspects of agricultural industries, careers in agriculture, and preparation for professional
internships. Field trips and professional presentations may be required. Field trips
required.
SA: CSS 105
Effective Fall Semester 2022

FOR 150  Foundations of Forestry Field Skills
Fall of every year. 1(1-0) R: Open to undergraduate students in the Department of Community
Sustainability or in the Department of Fisheries and Wildlife or in the Department of Forestry.
NEW  Introduction to the power equipment commonly used in the field of Forestry. The course
will focus on safety, operation, and maintenance.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall Semester 2023

HRT 812  Laboratory Research Techniques
Fall of even years, Fall of odd years. 2(1-3) R: Open to graduate students in the Department of
Horticulture.
Demonstration and experience using various research techniques.
Effective Fall Semester 2019  Effective Fall Semester 2022

COLLEGE OF ENGINEERING

BME 860  NanoEngineering in Biomedicine
Fall of every year. 3(3-0) RB: The following courses are recommended as prerequisites (but not
phenomena. R: Open to seniors or graduate students.
NEW  Recent advances in nanoeengineering and nanotechnology have been harnessed to fix
technical problems and test hypotheses in complex biomedical questions. The course will
cover conventional synthetic and manufacturing techniques of nanoscale materials,
devices, and specific nanosystems, applied to medicine, medical diagnostics, imaging,
sensing, and tissue regeneration.
Effective Fall Semester 2023

CHE 806  Foundations of Chemical Engineering III
Fall of every year. 3(3-0) P: CHE 804 and CHE 805 RB: Differential Equations
NEW  Process Dynamics, Linearization of Dynamics, Control Strategies, Controller Tuning,
Process Economics, Process Design
Effective Fall Semester 2023

EGR 840  Engineering Entrepreneurship
Science and Engineering Entrepreneurship
Fall of every year. 3(3-0) R: Open to graduate students in the College of Engineering. R: Open to
graduate students in the College of Engineering or in the College of Natural Science.
Technical skills to enable and engage in engineering related entrepreneurship at all
levels. Discovery, evaluation, and engagement of entrepreneurial opportunities starting
with technology development to solve a problem, bring about desired change that is
scalable, and the application of engineering principles in business related endeavors.
Effective Fall Semester 2017  Effective Fall Semester 2023
ME 496  Biomechanical Analysis of Human Movement
Fall of even years. 3(3-0) P: ME 470 or concurrently

COLLEGE OF NATURAL SCIENCE

CEM 143  Survey of Organic Chemistry
Fall of every year. Spring of every year. Summer of every year. 4(3-3) P: CEM 141 or CEM 151 or CEM 181H or LB 171 Not open to students with credit in CEM 351. Not open to students with credit in CEM 351 or CEM 144 or CEM 251 or LB 271.
Chemistry of carbon compounds. Chemistry of the main organic functional groups with applications to everyday life, industry, and biology. One-semester survey of the main organic functional groups with applications to everyday life, industry, and biology and laboratory to highlight important organic laboratory techniques. Effective Fall Semester 2013 Effective Fall Semester 2023

CEM 144  Organic Chemistry and Applications
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: CEM 141 or CEM 151 or CEM 181H or LB 171 R: Approval of department. Not open to students with credit in CEM 351 or CEM 143 or CEM 251 or LB 271.
NEW  One-semester survey of the main organic functional groups with applications to everyday life, industry, and biology. Effective Fall Semester 2023

MTH 317H  Honors Linear Algebra
Fall of every year. Spring of every year. 4(5-0) P: MTH 133 or MTH 153H or LB 119 R: Open to students in the Honors College or approval of department. Not open to students with credit in MTH 309.
Systems of equations, matrix algebra, vector spaces, linear transformations, geometry of R^n, eigenvalues, eigenvectors, diagonalization, inner products. Emphasis on mathematical reasoning, proofs, and concepts. Effective Fall Semester 2012 Effective Fall Semester 2022

MTH 327H  Honors Introduction to Analysis
Fall of every year. Spring of every year. 3(3-0) P: MTH 317H R: Approval of department. Emphasis on foundations and metric topology. Convergence of sequence and series, continuity of functions. Differentiation and integration in one dimension. Effective Summer Semester 2015 Effective Fall Semester 2020

MTH 340  Ordinary Differential Equations I
Fall of every year. Summer of every year. 3(3-0) P: (MTH 309 or MTH 317H) and (MTH 133 or MTH 153H or LB 119) Not open to students with credit in MTH 347H.
Techniques for solving differential equations, existence and uniqueness theorems, qualitative theory, Fourier series and applications. Effective Summer Semester 2015 Effective Fall Semester 2020

MTH 425  Complex Analysis
Fall of every year. Spring of every year. 3(3-0) P: MTH 320 Not open to students with credit in MTH 428h.
Analytic functions of a complex variable, Cauchy integral theorem, conformal maps, bilinear transformation, harmonic functions. Classification of singularities, residues, conformal mappings. Effective Summer Semester 2015 Effective Fall Semester 2020
HBIO 497  Internship in Human Biology
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. P: Completion of Tier I Writing requirement. P: Completion of Tier I Writing Requirement. Not open to students with credit in NSC 493.
Practical experience applying human biology training outside the classroom 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 2 semesters after the end of the semester of enrollment. SA: NSC 497
Effective Fall Semester 2022  Effective Fall Semester 2023

NSC 844  Tools for Women in STEM
Spring of every year. 2(2-0) R: Open to graduate students in the College of Engineering or in the College of Natural Science. Approval of college. Directed at graduate students that identify as female, considering a career in STEM. Practical tools helpful to students that identify as women in advancing their goals and mitigating the challenges they may encounter. Directed at graduate students of all genders considering a career in STEM. Practical tools helpful to students in advancing their goals and mitigating the challenges they may encounter. Effective Spring Semester 2021  Effective Spring Semester 2023

NEU 460  Current Approaches in Molecular and Cellular Neuroscience
Spring of every year. 3(3-0) P: (NEU 301) and ((PSL 310 or concurrently) or (PSL 431 or concurrently)) P: (NEU 301 and NEU 302) and ((PSL 310 or concurrently) or (PSL 431 or concurrently)) R: Open to undergraduate students in the Neuroscience Major. Investigation of the molecular and cellular pathways that allow neurons to connect and communicate, including the latest tools and technologies used to understand how complex molecular machinery within neuronal membranes interact with electrical potentials. Effective Spring Semester 2022  Effective Spring Semester 2023

STT 201  Statistical Methods
Fall of every year. Spring of every year. Summer of every year. 4(3-2) P: (MTH 102 or MTH 103 or MTH 116 or LB 117 or MTH 124 or MTH 132 or LB 118) or designated score on Mathematics Placement test P: (MTH 102 or MTH 103 or MTH 116 or LB 117 or MTH 124 or MTH 132 or LB 118 or MTH 101) or designated score on Mathematics Placement test R: Open to undergraduate students. Not open to students with credit in STT 200 or STT 421. Probability and statistics with computer applications. Data analysis, probability models, random variables, tests of hypotheses, confidence intervals, simple linear regression. Weekly lab using statistical software. Effective Spring Semester 2023

COLLEGE OF OSTEOPATHIC MEDICINE

OST 828  Global Health Capstone
Fall of every year. Spring of every year. Summer of every year. 3 credits. R: Open to master’s students in the Global Health Major. Approval of college. R: Open to master’s students. Approval of college. Integration of knowledge, skills and competencies acquired in global health. 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 Spring Semester 2024  Effective Summer Semester 2023
OST 830  Independent Study in Global Health
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 to master's students in the College of Osteopathic Medicine or approval of college. 
R: Open to graduate students in the College of Osteopathic Medicine or in the Global Health Major or in the Global Health Graduate Certificate or approval of college.

Independent study in areas relevant to global health.
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 Fall Semester 2019 Effective Summer Semester 2023

OST 832  Independent Study in United States Health Systems
On Demand. 1 to 3 credits.

Independent study in areas relevant to the United States 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 Semester 2020 Effective Summer Semester 2023