PART I – NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. Request to establish a Bachelor of Science in Aquatic Ecology and Management in the Department of Fisheries and Wildlife. The University Committee on Undergraduate Education (UCUE) recommended approval of this request at its November 30, 2023 meeting.

a. Background Information:

The Department of Fisheries and Wildlife has offered an undergraduate degree program related to conservation of fish, wildlife, and water for more than 70 years. The program currently offers one Fisheries and Wildlife degree, with six concentrations – Conservation Biology, Fisheries Biology and Management, Wildlife Biology and Management, Water Sciences, Fish and Wildlife Disease Ecology and Management, and Pre-veterinary Medicine. The department proposes moving from a single bachelor’s degree to offering four degrees, each of which builds on one of our four concentrations with the highest enrollments—Applied Conservation Biology, Fish Ecology and Management, Wildlife Ecology and Management, and Aquatic Ecology and Management.

As the department developed these proposed new majors, they updated the degree requirements (as compared to the existing degree and concentration requirements), to meet the interests and needs of students, and to address the feedback from and demands of employers, so that the program stays competitive and remains a leader among similar programs in Michigan and across the U.S. The academic programs in Fisheries and Wildlife at MSU are recognized within the discipline as being among the top programs across the nation, and the adjustments that have been made to program requirements will help maintain that stature. These adjustments include increased emphasis on global climate change, natural resources policy, and diversity, equity and inclusion.

Also added are two new courses: a first-year skills-based 1-credit course, and a 3-credit senior capstone course (filling a gap in the curriculum in terms of synthesis).

The implementation of the four proposed degrees also will help prospective students find fisheries and wildlife earlier in their academic careers. Many students who have changed majors to Fisheries and Wildlife share they hadn’t thought they would be interested in Fisheries and Wildlife. By adding majors in Applied Conservation Biology, and Aquatic Ecology and Management, the department will better attract those students as they enroll at MSU, which will promote more timely degree progress for these students.

This proposed major and the other three proposed new majors will continue to be unique among degree programs at MSU, due to the integration of fundamental sciences (biology, ecology, chemistry, geology, etc), management and decision-making techniques, and human dimensions.

The department’s breadth of research and partnerships, and location in the greater Lansing area, give the program an additional advantage in that it incorporates personnel from several state and federal natural resource agencies (all potential employers of students) into classes and into student experiential opportunities.

There are no accrediting bodies for fisheries and wildlife, but the American Fisheries Society, The Wildlife Society, and the Ecological Society of America all have certification requirements. The curriculum is intentionally designed so that students can choose courses that will allow them to successfully apply for certification upon graduation, if that is what they desire. Students not desiring certification have even broader course options within topic categories.

The department has a strong and successful tradition of offering undergraduate degrees in this field. Many department alumni gain employment with Michigan natural resource agencies (and more broadly) with whom we have strong partnerships. Given the complex and increasingly apparent effects of climate change on natural resources, the program is timelier than ever.

b. Academic Programs Catalog Text:

The Bachelor of Science in Aquatic Ecology and Management is designed for students interested in examining the biological, physical, chemical, geological and hydrological aspects of lakes and ponds, rivers and streams, wetlands and groundwaters, with an emphasis on water quality. This
major provides students with the understanding and skills needed for careers related to protecting and restoring water resources around the North American Great Lakes region and the world.

**Admission as a Junior**

To be considered for admission to the major, the student must:

1. Complete at least 56 credits.
2. Complete the following courses with a minimum grade of 2.0 in each course:
   - FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management 3
   - FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab 2
   - FW 293 Undergraduate Seminar in Fisheries and Wildlife 1
3. Pass the following courses:
   - a. FW 102 Succeeding in Fisheries and Wildlife – New Student Seminar 1
   - b. One of the following courses:
     - MTH 124 Survey of Calculus I 3
     - MTH 132 Calculus I 3
     - LB 118 Calculus I 4

**Requirements for the Bachelor of Science Degree in Aquatic Ecology and Management**

1. The University requirements for bachelor's degrees as described in the Undergraduate Education section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Aquatic Ecology and Management.

   The University's Tier II writing requirement for the Aquatic Ecology and Management major is met by completing Fisheries and Wildlife 497 referenced in item 3. below.

   Students who are enrolled in the Aquatic Ecology and Management major leading to the Bachelor of Science degree in the Department of Fisheries and Wildlife may complete an alternative track to Integrative Studies in Biological and Physical Sciences by completing BS 161, BS 162 and CEM 141 below. The completion of BS 171 or BS 172 and CEM 161 satisfies the laboratory requirement. Completion of items 3. a., 3. b., and 3. c. below will be counted toward both the alternative track and the requirements for the major.

   The completion of the College of Agriculture and Natural Resources mathematics requirement may also satisfy the University mathematics requirement.

2. The requirements of the College of Agriculture and Natural Resources for the Bachelor of Science degree.

   Certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate. The completion of item 3. d. and 3. e. below satisfies the College's mathematics requirement.

   Students must earn a 2.0 or higher in all FW courses taken to complete major requirements in item 3. below.

   Only credits in courses graded on the numerical or Pass-No Grade system may be counted toward the requirements for the major. Students may not enroll in courses required for the major, including courses in other department, on a Credit-No Credit basis. Only elective courses can be enrolled on a Credit-No Credit basis.

3. The following requirements for the major:

   a. All of the following courses (28 credits):
      - BS 161 Cell and Molecular Biology 3
      - BS 162 Organismal and Population Biology 3
      - FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management 3
      - FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab 2
FW 102 Fundamentals of Fisheries and Wildlife – New Student Seminar 1
FW 293 Undergraduate Seminar in Fisheries and Wildlife 1
FW 334 Human Dimensions of Fisheries and Wildlife Management 3
FW 364 Ecological Problem Solving 3
FW 497 Capstone in Fisheries and Wildlife: Conservation and Management Decision Making (W) 3
IBIO 355 Ecology 3
MMG 201 Fundamentals of Microbiology 3
b. Two of the following courses (5 credits):
CEM 141 General Chemistry 4
CEM 161 Chemistry Laboratory 1
LB 171 Principles of Chemistry 4
LB 171L Principles of Chemistry Laboratory I 1
c. One of the following courses (2 credits):
BS 171 Cell and Molecular Biology Laboratory 2
BS 172 Organismal and Population Biology Laboratory 2
d. One of the following courses (3 or 4 credits):
LB 273 Physics I 4
PHY 221 Studio Physics for Life Scientists I 4
PHY 231 Introductory Physics I 3
e. One of the following courses (3 or 4 credits):
MTH 124 Survey of Calculus I 3
MTH 132 Calculus I 3
LB 118 Calculus I 4
f. One of the following courses (3 or 4 credits):
STT 201 Statistical Methods 4
STT 224 Introduction to Probability and Statistics for Ecologists 3
STT 231 Statistics for Scientists 3
STT 421 Statistics I 3
STT 464 Statistics for Biologists 3
g. One of the following courses (3 or 4 credits):
CSUS 310 History of Environmental Thought and Sustainability 3
FW 439 Conservation Ethics 3
HST 391 Environmental History of North America 3
PHL 340 Ethics 3
PHL 342 Environmental Ethics 3
PHL 380 Nature of Science 3
PHL 442 Ethics and Animals 3
PHL 480 Philosophy of Science 4
h. Two of the following courses (6 or 7 credits):
COM 100 Human Communication 3
COM 225 An Introduction to Interpersonal Communication 3
COM 240 Introduction to Organizational Communication 4
COM 275 Effects of Mass Communication 3
CSUS 433 Grant Writing and Fund Development 3
JRN 472 Environmental, Science and Health Reporting 3
WRA 331 Writing in the Public Interest (W) 3
WRA 333 Writing in Corporate Contexts 3
WRA 335 Writing in Scientific Contexts 3
WRA 337 Writing and Public Policy 3
WRA 453 Grant and Proposal Writing 3
i. Two of the following courses (6 credits):
CSUS 354 Water Resources Management 3
FW 207 Great Lakes: Biology and Management 3
FW 416 Marine Ecology and Management 3
FW 417 Wetland Ecology and Management 3
j. Two of the following courses (6 or 7 credits):
FW 420 Stream Ecology 3
FW 472 Limnology 3
GLG 303 Oceanography 3
IBIO 353 Marine Biology (W) 4
MMG 425 Microbial Ecology 3
k. One of the following courses (3 or 4 credits):
   EPI 390 Disease in Society: Introduction to Epidemiology and Public Health 4
   FW 423 Principles of Fish and Wildlife Disease 3
   FW 431 Ecophysiology and Toxicology of Fishes 3
   FW 463 Wildlife Disease Ecology 3

l. One of the following courses (3 or 4 credits):
   CSS 455 Environmental Pollutants in Soil and Water 3
   GEO 411 Stream Systems and Landforms 3
   GLG 411 Hydrogeology 3
   GLG 421 Environmental Geochemistry 4

m. One of the following courses (3 or 4 credits):
   FOR 419 Applications of Geographic Information Systems to Natural Resources Management 4
   FW 474 Field and Laboratory Techniques for Aquatic Studies 3
   FW 479 Fish Population Analysis and Management 3
   GEO 221 Introduction to Geographic Information and GEO 221L Introduction to Geographic Information Laboratory 1
   GLG 446 Ecosystems Modeling, Water and Food Security 3

n. One of the following courses (3 credits):
   CSUS 464 Environmental and Natural Resource Policy in Michigan 3
   CSUS 465 Environmental and Natural Law 3
   FOR 466 Natural Resource Policy 3
   FW 445 Biodiversity Conservation Policy and Practice 3
   FW 481 Global Issues in Fisheries and Wildlife 3
   IBIO 446 Environmental Issues in Public Policy 3
   MC 450 International Environmental Law and Policy 3

o. One of the following courses (3 credits):
   ANP 443 Human Adaptability 3
   ANP 486 Environmental Archaeology 3
   FOR 360 Forest Ecosystems, Carbon and Climate Change 3
   GEO 409 Global Climate Change and Variability 3
   IBIO 357 Global Change Biology (W) 3
   SOC 478 Climate Change and Society 3

p. Complete a minimum of 3 credits from the following courses (3 or 4 credits):
   FW 480 International Studies in Fisheries and Wildlife 1 to 3
   FW 490 Independent Study in Fisheries and Wildlife 1 to 3
   FW 493 Professional Internship in Fisheries and Wildlife 1 to 3
   FW 499 Senior Thesis in Fisheries and Wildlife 4

Effective Fall 2024.

2. Request to establish a Bachelor of Science in Applied Conservation Biology in the Department of Fisheries and Wildlife. The University Committee on Undergraduate Education (UCUE) recommended approval of this request at its November 30, 2023 meeting.

a. **Background Information:**

   The Department of Fisheries and Wildlife has offered an undergraduate degree program related to conservation of fish, wildlife, and water for more than 70 years. The program currently offers one Fisheries and Wildlife degree, with six concentrations – Conservation Biology, Fisheries Biology and Management, Wildlife Biology and Management, Water Sciences, Fish and Wildlife Disease Ecology and Management, and Pre-veterinary Medicine. The department proposes moving from a single bachelor’s degree to offering four degrees, each of which builds on one of our four concentrations with the highest enrollments – Applied Conservation Biology, Fish Ecology and Management, Wildlife Ecology and Management, and Aquatic Ecology and Management.

   As the department developed these proposed new majors, they updated the degree requirements (as compared to the existing degree and concentration requirements), to meet the interests and needs of students, and to address the feedback from and demands of employers, so that the program stays competitive and remains a leader among similar programs in Michigan and across
the U.S. The academic programs in Fisheries and Wildlife at MSU are recognized within the discipline as being among the top programs across the nation, and the adjustments that have been made to program requirements will help maintain that stature. These adjustments include increased emphasis on global climate change, natural resources policy, and diversity, equity and inclusion. Also added are two new courses: a first-year skills-based 1-credit course, and a 3-credit senior capstone course (filling a gap in the curriculum in terms of synthesis).

The implementation of the four proposed degrees also will help prospective students find fisheries and wildlife earlier in their academic careers. Many students who have changed majors to Fisheries and Wildlife share they hadn’t thought they would be interested in Fisheries and Wildlife. By adding majors in Applied Conservation Biology, and Aquatic Ecology and Management, the department will better attract those students as they enroll at MSU, which will promote more timely degree progress for these students.

This proposed major and the other three proposed new majors will continue to be unique among degree programs at MSU, due to the integration of fundamental sciences (biology, ecology, chemistry, geology, etc), management and decision-making techniques, and human dimensions. The department’s breadth of research and partnerships, and location in the greater Lansing area, give the program an additional advantage in that it incorporates personnel from several state and federal natural resource agencies (all potential employers of students) into classes and into student experiential opportunities.

There are no accrediting bodies for fisheries and wildlife, but the American Fisheries Society, The Wildlife Society, and the Ecological Society of America all have certification requirements. The curriculum is intentionally designed so that students can choose courses that will allow them to successfully apply for certification upon graduation, if that is what they desire. Students not desiring certification have even broader course options within topic categories.

The department has a strong and successful tradition of offering undergraduate degrees in this field. Many department alumni gain employment with Michigan natural resource agencies (and more broadly) with whom we have strong partnerships. Given the complex and increasingly apparent effects of climate change on natural resources, the program is timelier than ever.

b. Academic Programs Catalog Text:

The Bachelor of Science in Applied Conservation Biology focuses on the science of analyzing and conserving the earth’s biological diversity drawing from the biological, physical and social sciences, economics, and the practice of natural resource conservation and management.

Admission as a Junior

To be considered for admission to the major, the student must:

1. Complete at least 56 credits.
2. Complete the following courses with a minimum grade of 2.0 in each course:
   FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management 3
   FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab 2
   FW 293 Undergraduate Seminar in Fisheries and Wildlife 1
3. Pass the following courses:
   a. FW 102 Succeeding in Fisheries and Wildlife – New Student Seminar 1
   b. One of the following courses:
      MTH 124 Survey of Calculus I 3
      MTH 132 Calculus I 3
      LB 118 Calculus I 4

Requirements for the Bachelor of Science Degree in Applied Conservation Biology

1. The University requirements for bachelor’s degrees as described in the Undergraduate Education section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Applied Conservation Biology.
The University’s Tier II writing requirement for the Applied Conservation Biology major is met by completing Fisheries and Wildlife 497 referenced in item 3. below.

Students who are enrolled in the Applied Conservation Biology major leading to the Bachelor of Science degree in the Department of Fisheries and Wildlife may complete an alternative track to Integrative Studies in Biological and Physical Sciences by completing BS 161, BS 162 and CEM 141 below. The completion of BS 171 or BS 172 and CEM 161 satisfies the laboratory requirement. Completion of items 3. a., 3. b., and 3. c. below will be counted toward both the alternative track and the requirements for the major.

The completion of the College of Agriculture and Natural Resources mathematics requirement may also satisfy the University mathematics requirement.

2. The requirements of the College of Agriculture and Natural Resources for the Bachelor of Science degree.

Certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate. The completion of item 3. d. and 3. e. below satisfies the College’s mathematics requirement.

Students must earn a 2.0 or higher in all FW courses taken to complete major requirements in item 3. below.

Only credits in courses graded on the numerical or Pass-No Grade system may be counted toward the requirements for the major. Students may not enroll in courses required for the major, including courses in other department, on a Credit-No Credit basis. Only elective courses can be enrolled on a Credit-No Credit basis.

3. The following requirements for the major:

<table>
<thead>
<tr>
<th>CREDITS</th>
<th>COURSES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. All of the following courses (31 credits):</td>
</tr>
<tr>
<td>3</td>
<td>BS 161 Cell and Molecular Biology</td>
</tr>
<tr>
<td>3</td>
<td>BS 162 Organismal and Population Biology</td>
</tr>
<tr>
<td>3</td>
<td>FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management</td>
</tr>
<tr>
<td>3</td>
<td>FW 101L Fundamentals of Fisheries ad Wildlife Ecology and Management Lab</td>
</tr>
<tr>
<td>1</td>
<td>FW 102 Fundamentals of Fisheries and Wildlife – New Student Seminar</td>
</tr>
<tr>
<td>1</td>
<td>FW 293 Undergraduate Seminar in Fisheries and Wildlife</td>
</tr>
<tr>
<td>3</td>
<td>FW 334 Human Dimensions of Fisheries and Wildlife Management</td>
</tr>
<tr>
<td>3</td>
<td>FW 364 Ecological Problem Solving</td>
</tr>
<tr>
<td>3</td>
<td>FW 444 Conservation Biology</td>
</tr>
<tr>
<td>3</td>
<td>FW 445 Biodiversity Conservation Policy and Practice</td>
</tr>
<tr>
<td>3</td>
<td>FW 497 Capstone in Fisheries and Wildlife: Conservation and Management Decision Making (W)</td>
</tr>
<tr>
<td>3</td>
<td>IBIO 355 Ecology</td>
</tr>
<tr>
<td></td>
<td>b. One of the following courses (2 credits):</td>
</tr>
<tr>
<td>2</td>
<td>BS 171 Cell and Molecular Biology Laboratory</td>
</tr>
<tr>
<td>2</td>
<td>BS 172 Organismal and Population Biology Laboratory</td>
</tr>
<tr>
<td></td>
<td>c. Two of the following courses (5 credits):</td>
</tr>
<tr>
<td>4</td>
<td>CEM 141 General Chemistry</td>
</tr>
<tr>
<td>1</td>
<td>CEM 161 Chemistry Laboratory</td>
</tr>
<tr>
<td>4</td>
<td>LB 171 Principles of Chemistry</td>
</tr>
<tr>
<td>1</td>
<td>LB 171L Principles of Chemistry Laboratory I</td>
</tr>
<tr>
<td></td>
<td>d. One of the following courses (3 or 4 credits):</td>
</tr>
<tr>
<td>3</td>
<td>MTH 124 Survey of Calculus I</td>
</tr>
<tr>
<td>3</td>
<td>MTH 132 Calculus I</td>
</tr>
<tr>
<td>4</td>
<td>LB 118 Calculus I</td>
</tr>
<tr>
<td></td>
<td>e. One of the following courses (3 or 4 credits):</td>
</tr>
<tr>
<td>4</td>
<td>STT 201 Statistical Methods</td>
</tr>
<tr>
<td>3</td>
<td>STT 224 Introduction to Probability and Statistics for Ecologists</td>
</tr>
<tr>
<td>3</td>
<td>STT 231 Statistics for Scientists</td>
</tr>
<tr>
<td>3</td>
<td>STT 421 Statistics I</td>
</tr>
<tr>
<td>3</td>
<td>STT 464 Statistics for Biologists</td>
</tr>
<tr>
<td></td>
<td>f. One of the following courses (3 or 4 credits):</td>
</tr>
</tbody>
</table>
CSUS 310   History of Environmental Thought and Sustainability  3
FW  439   Conservation Ethics  3
HST  391  Environmental History of North America  3
PHL  340   Ethics  3
PHL  342   Environmental Ethics  3
PHL  380   Nature of Science  3
PHL  442   Ethics and Animals  3
PHL  480   Philosophy of Science  4

g.   Two of the following courses (6 or 7 credits):
    COM  100  Human Communication  3
    COM  225  An Introduction to Interpersonal Communication  3
    COM  240   Introduction to Organizational Communication  4
    COM  275  Effects of Mass Communication  3
    CSUS  433   Grant Writing and Fund Development  3
    JRN  472  Environmental, Science and Health Reporting  3
    WRA  331   Writing in the Public Interest (W)  3
    WRA  333  Writing in Corporate Contexts  3
    WRA  335  Writing in Scientific Contexts  3
    WRA  337  Writing and Public Policy  3
    WRA  453  Grant and Proposal Writing  3

h.   One of the following courses (3 credits):
    FW  424  Wildlife Population Analysis and Management  3
    FW  479   Fisheries Population Analysis and Management  3

i.   One of the following courses (3 or 4 credits):
    FOR  419   Applications of Geographic Information Systems to Natural Resources Management  4
    FW  413   Wildlife Research and Management Techniques  3
    FW  474   Field and Laboratory Techniques for Aquatic Studies  3
    GEO  221  Introduction to Geographic Information  3
And
    GEO  221L   Introduction to Geographic Information Laboratory  1

j.   One of the following courses (3 or 4 credits):
    CSS  350  Introduction to Plant Genetics  3
    IBIO  341  Fundamental Genetics  4

k.   One of the following courses (3 or 4 credits):
    IBIO  445  Evolution (W)  3
    GLG  304   Physical and Biological History of the Earth  4
    GLG  434  Evolutionary Paleobiology  4

l.   One of the following courses (3 or 4 credits):
    FOR  340  Forest Ecology  3
    FW  420  Stream Ecology  3
    FW  472  Limnology  3
    IBIO  353   Marine Biology (W)  4
    IBIO  485  Tropical Biology  3
    PLB  441  Plant Ecology  3

m.   One of the following courses (3 credits):
    CSUS  464   Environmental and Natural Resource Policy in Michigan  3
    CSUS  465  Environmental and Natural Law  3
    FOR  466  Natural Resource Policy  3
    FW  481  Global Issues in Fisheries and Wildlife  3
    IBIO  446  Environmental Issues in Public Policy  3
    MC  450  International Environmental Law and Policy  3

n.   One of the following courses (3 credits):
    FOR  413   Wildland Fire Ecology and Management  3
    FW  410  Upland Ecology and Management  3
    FW  416  Marine Ecology and Management  3
    FW  417   Wetland Ecology and Management  3
    FW  423   Principles of Fish and Wildlife Disease  3
    FW  463  Wildlife Disease Ecology  3
    PLB  443  Restoration Ecology  3

o.   One of the following courses (3 credits):
    ANP  443  Human Adaptability  3
    ANP  486  Environmental Archaeology  3
    FOR  360   Forest Ecosystems, Carbon and Climate Change  3
GEO 409 Global Climate Change and Variability 3
IBIO 357 Global Change Biology (W) 3
SOC 478 Climate Change and Society 3

p. Two of the following courses (6 to 8 credits):
   ENT 404 Fundamentals of Entomology 4
   ENT 422 Aquatic Entomology 3
   FOR 204 Forest Vegetation 3
   FW 471 Ichthyology 4
   IBIO 306 Invertebrate Biology 4
   IBIO 360 Biology of Birds 4
   IBIO 365 Biology of Mammals 4
   IBIO 384 Biology of Amphibians and Reptiles (W) 4
   PLB 218 Plants of Michigan 3
   PLB 418 Plant Systematics 3

q. Complete a minimum of 3 credits from the following courses (3 or 4 credits):
   FW 480 International Studies in Fisheries and Wildlife 1 to 3
   FW 490 Independent Study in Fisheries and Wildlife 1 to 3
   FW 493 Professional Internship in Fisheries and Wildlife 1 to 3
   FW 499 Senior Thesis in Fisheries and Wildlife 4

Effective Fall 2024.

3. Request to establish a Bachelor of Science in Fish Ecology and Management in the Department of Fisheries and Wildlife. The University Committee on Undergraduate Education (UCUE) recommended approval of this request at its November 30, 2023 meeting.

a. Background Information:

   The Department of Fisheries and Wildlife has offered an undergraduate degree program related to conservation of fish, wildlife, and water for more than 70 years. The program currently offers one Fisheries and Wildlife degree, with six concentrations – Conservation Biology, Fisheries Biology and Management, Wildlife Biology and Management, Water Sciences, Fish and Wildlife Disease Ecology and Management, and Pre-veterinary Medicine. The department proposes moving from a single bachelor’s degree to offering four degrees, each of which builds on one of our four concentrations with the highest enrollments– Applied Conservation Biology, Fish Ecology and Management, Wildlife Ecology and Management, and Aquatic Ecology and Management.

As the department developed these proposed new majors, they updated the degree requirements (as compared to the existing degree and concentration requirements), to meet the interests and needs of students, and to address the feedback from and demands of employers, so that the program stays competitive and remains a leader among similar programs in Michigan and across the U.S. The academic programs in Fisheries and Wildlife at MSU are recognized within the discipline as being among the top programs across the nation, and the adjustments that have been made to program requirements will help maintain that stature. These adjustments include increased emphasis on global climate change, natural resources policy, and diversity, equity and inclusion. Also added are two new courses: a first-year skills-based 1-credit course, and a 3-credit senior capstone course (filling a gap in the curriculum in terms of synthesis).

The implementation of the four proposed degrees also will help prospective students find fisheries and wildlife earlier in their academic careers. Many students who have changed majors to Fisheries and Wildlife share they hadn’t thought they would be interested in Fisheries and Wildlife. By adding majors in Applied Conservation Biology, and Aquatic Ecology and Management, the department will better attract those students as they enroll at MSU, which will promote more timely degree progress for these students.

This proposed major and the other three proposed new majors will continue to be unique among degree programs at MSU, due to the integration of fundamental sciences (biology, ecology, chemistry, geology, etc), management and decision-making techniques, and human dimensions. The department’s breadth of research and partnerships, and location in the greater Lansing area, give the program an additional advantage in that it incorporates personnel from several state and federal natural resource agencies (all potential employers of students) into classes and into student experiential opportunities.
There are no accrediting bodies for fisheries and wildlife, but the American Fisheries Society, The Wildlife Society, and the Ecological Society of America all have certification requirements. The curriculum is intentionally designed so that students can choose courses that will allow them to successfully apply for certification upon graduation, if that is what they desire. Students not desiring certification have even broader course options within topic categories.

The department has a strong and successful tradition of offering undergraduate degrees in this field. Many department alumni gain employment with Michigan natural resource agencies (and more broadly) with whom we have strong partnerships. Given the complex and increasingly apparent effects of climate change on natural resources, the program is timelier than ever.

b. Academic Programs Catalog Text:

The Bachelor of Science in Fish Ecology and Management is designed for students interested in the research and management of fish populations, other freshwater and marine organisms, and the ecosystems that sustain them.

Admission as a Junior

To be considered for admission to the major, the student must:

1. Complete at least 56 credits.
2. Complete the following courses with a minimum grade of 2.0 in each course:
   - FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management 3
   - FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab 2
   - FW 293 Undergraduate Seminar in Fisheries and Wildlife 1
3. Pass the following courses:
   a. FW 102 Succeeding in Fisheries and Wildlife – New Student Seminar 1
   b. One of the following courses:
      - MTH 124 Survey of Calculus I 3
      - MTH 132 Calculus I 3
      - LB 118 Calculus I 4

Requirements for the Bachelor of Science Degree in Fish Ecology and Management

1. The University requirements for bachelor’s degrees as described in the Undergraduate Education section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Fish Ecology and Management.

   The University’s Tier II writing requirement for the Fish Ecology and Management major is met by completing Fisheries and Wildlife 497 referenced in item 3. below.

   Students who are enrolled in the Fish Ecology and Management major leading to the Bachelor of Science degree in the Department of Fisheries and Wildlife may complete an alternative track to Integrative Studies in Biological and Physical Sciences by completing BS 161, BS 162 and CEM 141 below. The completion of BS 171 or BS 172 and CEM 161 satisfies the laboratory requirement. Completion of items 3. a., 3. b., and 3. c. below will be counted toward both the alternative track and the requirements for the major.

   The completion of the College of Agriculture and Natural Resources mathematics requirement may also satisfy the University mathematics requirement.

2. The requirements of the College of Agriculture and Natural Resources for the Bachelor of Science degree.

   Certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate. The completion of item 3. d. and 3. e. below satisfies the College's mathematics requirement.

   Students must earn a 2.0 or higher in all FW courses taken to complete major requirements in item 3. below.
Only credits in courses graded on the numerical or Pass-No Grade system may be counted toward the requirements for the major. Students may not enroll in courses required for the major, including courses in other department, on a Credit-No Credit basis. Only elective courses can be enrolled on a Credit-No Credit basis.

3. The following requirements for the major:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS 161</td>
<td>Cell and Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>BS 162</td>
<td>Organismal and Population Biology</td>
<td>3</td>
</tr>
<tr>
<td>FW 101</td>
<td>Fundamentals of Fisheries and Wildlife Ecology and Management</td>
<td>3</td>
</tr>
<tr>
<td>FW 101L</td>
<td>Fundamentals of Fisheries and Wildlife Ecology and Management Lab</td>
<td>2</td>
</tr>
<tr>
<td>FW 102</td>
<td>Fundamentals of Fisheries and Wildlife -- New Student Seminar</td>
<td>1</td>
</tr>
<tr>
<td>FW 293</td>
<td>Undergraduate Seminar in Fisheries and Wildlife</td>
<td>1</td>
</tr>
<tr>
<td>FW 334</td>
<td>Human Dimensions of Fisheries and Wildlife Management</td>
<td>3</td>
</tr>
<tr>
<td>FW 364</td>
<td>Ecological Problem Solving</td>
<td>3</td>
</tr>
<tr>
<td>FW 471</td>
<td>Ichthyology</td>
<td>4</td>
</tr>
<tr>
<td>FW 474</td>
<td>Field and Laboratory Techniques for Aquatic Studies</td>
<td>3</td>
</tr>
<tr>
<td>FW 479</td>
<td>Fish Population Analysis and Management</td>
<td>3</td>
</tr>
<tr>
<td>FW 497</td>
<td>Capstone in Fisheries and Wildlife: Conservation and Management Decision Making (W)</td>
<td>3</td>
</tr>
<tr>
<td>IBIO 355</td>
<td>Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

b. One of the following courses (2 credits):
   - BS 171 Cell and Molecular Biology Laboratory                                  | 2       |
   - BS 172 Organismal and Population Biology Laboratory                          | 2       |

c. Two of the following courses (5 credits):
   - CEM 141 General Chemistry                                                    | 4       |
   - CEM 161 Chemistry Laboratory                                                 | 1       |
   - LB 171 Principles of Chemistry                                               | 4       |
   - LB 171L Principles of Chemistry Laboratory I                                | 1       |

d. At least 7 credits from the following courses:
   - CEM 142 General and Inorganic Chemistry                                     | 3       |
   - CEM 162 Chemistry Laboratory II                                             | 1       |
   - CEM 143 Survey of Organic Chemistry                                         | 4       |
   - CEM 251 Organic Chemistry I                                                 | 3       |
   - CSS 210 Fundamentals of Soil Science                                        | 3       |
   - FOR 419 Applications of Geographic Information Systems to Natural Resources Management | 4       |
   - GEO 203 Introduction to Meteorology                                         | 3       |
   - GEO 206 Physical Geography                                                   | 3       |
   - GEO 208 Physical Geography of the National Parks                           | 2       |
   - GEO 221 Introduction to Geographic Information                             | 3       |
   - GEO 221L Introduction to Geographic Information Laboratory                 | 1       |
   - GEO 333 Geography of Michigan and the Great Lakes Region                    | 3       |
   - GEO 411 Stream Systems and Landforms                                        | 3       |
   - GLG 201 The Dynamic Earth                                                   | 4       |
   - GLG 411 Hydrogeology                                                        | 3       |
   - LB 172 Principles of Chemistry II                                           | 3       |
   - LB 172L Principles of Chemistry II -- Reactivity Laboratory I               | 1       |
   - LB 271 Organic Chemistry                                                    | 3       |
   - LB 273 Physics I                                                            | 4       |
   - PHY 221 Studio Physics for Life Scientists                                 | 4       |
   - PHY 231 Introductory Physics I                                              | 3       |
   - PHY 251 Introductory Physics Laboratory I                                  | 1       |

Students who select FOR 419 to fulfill this requirement may not also use GEO 221 and 221L.

e. One of the following courses (3 or 4 credits):
   - MTH 124 Survey of Calculus I                                               | 3       |
   - MTH 132 Calculus I                                                          | 3       |
   - LB 118 Calculus I                                                           | 4       |

f. One of the following courses (3 or 4 credits):
   - STT 201 Statistical Methods                                                | 4       |
STT 224 Introduction to Probability and Statistics for Ecologists 3
STT 231 Statistics for Scientists 3
STT 421 Statistics I 3
STT 464 Statistics for Biologists 3

g. One of the following courses (3 or 4 credits):
   CSUS 310 History of Environmental Thought and Sustainability 3
   FW 439 Conservation Ethics 3
   HST 391 Environmental History of North America 3
   PHL 340 Ethics 3
   PHL 342 Environmental Ethics 3
   PHL 380 Nature of Science 3
   PHL 442 Ethics and Animals 3
   PHL 480 Philosophy of Science 4

h. Two of the following courses (6 or 7 credits):
   COM 100 Human Communication 3
   COM 225 An Introduction to Interpersonal Communication 3
   COM 240 Introduction to Organizational Communication 4
   COM 275 Effects of Mass Communication 3
   CSUS 433 Grant Writing and Fund Development 3
   JRN 472 Environmental, Science and Health Reporting 3
   WRA 331 Writing in the Public Interest (W) 3
   WRA 333 Writing in Corporate Contexts 3
   WRA 335 Writing in Scientific Contexts 3
   WRA 337 Writing and Public Policy 3
   WRA 453 Grant and Proposal Writing 3

i. One of the following courses (3 credits):
   CSUS 464 Environmental and Natural Resource Policy in Michigan 3
   CSUS 465 Environmental and Natural Law 3
   FOR 466 Natural Resource Policy 3
   FW 445 Biodiversity Conservation Policy and Practice 3
   FW 481 Global Issues in Fisheries and Wildlife 3
   IBIO 446 Environmental Issues in Public Policy 3
   MC 450 International Environmental Law and Policy 3

j. Two of the following courses (6 credits):
   CSUS 354 Water Resources Management 3
   FW 416 Marine Ecology and Management 3
   FW 417 Wetland Ecology and Management 3
   FW 420 Stream Ecology 3
   FW 472 Limnology 3
   GLG 303 Oceanography 3

k. One of the following courses (3 or 4 credits):
   PLB 218 Plants of Michigan 3
   PLB 418 Plant Systematics 3
   ENT 404 Fundamentals of Entomology 4
   ENT 422 Aquatic Entomology 3
   IBIO 306 Invertebrate Biology 4

l. One of the following courses (3 or 4 credits):
   FW 423 Principles of Fish and Wildlife Disease 3
   FW 431 Ecophysiology and Toxicology of Fishes 3
   FW 463 Wildlife Disease Ecology 3
   IBIO 313 Animal Behavior 3
   IBIO 328 Comparative Anatomy and Biology of Vertebrates 4
   IBIO 341 Fundamental Genetics 4
   IBIO 483 Environmental Physiology 3

m. One of the following courses (3 credits):
   ANP 443 Human Adaptability 3
   ANP 486 Environmental Archaeology 3
   FOR 360 Forest Ecosystems, Carbon and Climate Change 3
   GEO 409 Global Climate Change and Variability 3
   IBIO 357 Global Change Biology (W) 3
   SOC 478 Climate Change and Society 3

n. Complete a minimum of 3 credits from the following courses (3 or 4 credits):
   FW 480 International Studies in Fisheries and Wildlife 1 to 3
FW 490 Independent Study in Fisheries and Wildlife 1 to 3
FW 493 Professional Internship in Fisheries and Wildlife 1 to 3
FW 499 Senior Thesis in Fisheries and Wildlife 4

Effective Fall 2024.

4. Request to establish a Bachelor of Science in Wildlife Ecology and Management in the Department of Fisheries and Wildlife. The University Committee on Undergraduate Education (UCUE) recommended approval of this request at its November 30, 2023 meeting.

a. Background Information:

The Department of Fisheries and Wildlife has offered an undergraduate degree program related to conservation of fish, wildlife, and water for more than 70 years. The program currently offers one Fisheries and Wildlife degree, with six concentrations – Conservation Biology, Fisheries Biology and Management, Wildlife Biology and Management, Water Sciences, Fish and Wildlife Disease Ecology and Management, and Pre-veterinary Medicine. The department proposes moving from a single bachelor’s degree to offering four degrees, each of which builds on one of our four concentrations with the highest enrollments—Applied Conservation Biology, Fish Ecology and Management, Wildlife Ecology and Management, and Aquatic Ecology and Management.

As the department developed these proposed new majors, they updated the degree requirements (as compared to the existing degree and concentration requirements), to meet the interests and needs of students, and to address the feedback from and demands of employers, so that the program stays competitive and remains a leader among similar programs in Michigan and across the U.S. The academic programs in Fisheries and Wildlife at MSU are recognized within the discipline as being among the top programs across the nation, and the adjustments that have been made to program requirements will help maintain that stature. These adjustments include increased emphasis on global climate change, natural resources policy, and diversity, equity and inclusion. Also added are two new courses: a first-year skills-based 1-credit course, and a 3-credit senior capstone course (filling a gap in the curriculum in terms of synthesis).

The implementation of the four proposed degrees also will help prospective students find fisheries and wildlife earlier in their academic careers. Many students who have changed majors to Fisheries and Wildlife share they hadn’t thought they would be interested in Fisheries and Wildlife. By adding majors in Applied Conservation Biology, Fish Ecology and Management, the department will better attract those students as they enroll at MSU, which will promote more timely degree progress for these students.

This proposed major and the other three proposed new majors will continue to be unique among degree programs at MSU, due to the integration of fundamental sciences (biology, ecology, chemistry, geology, etc), management and decision-making techniques, and human dimensions. The department’s breadth of research and partnerships, and location in the greater Lansing area, give the program an additional advantage in that it incorporates personnel from several state and federal natural resource agencies (all potential employers of students) into classes and into student experiential opportunities.

There are no accrediting bodies for fisheries and wildlife, but the American Fisheries Society, The Wildlife Society, and the Ecological Society of America all have certification requirements. The curriculum is intentionally designed so that students can choose courses that will allow them to successfully apply for certification upon graduation, if that is what they desire. Students not desiring certification have even broader course options within topic categories.

The department has a strong and successful tradition of offering undergraduate degrees in this field. Many department alumni gain employment with Michigan natural resource agencies (and more broadly) with whom we have strong partnerships. Given the complex and increasingly apparent effects of climate change on natural resources, the program is timelier than ever.

b. Academic Programs Catalog Text:

The Bachelor of Science in Wildlife Ecology and Management is for students interested in understanding and managing terrestrial habitats and animals including game, non-game, and endangered species.
Admission as a Junior

To be considered for admission to the major, the student must:

1. Complete at least 56 credits.
2. Complete the following courses with a minimum grade of 2.0 in each course:
   - FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management 3
   - FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab 2
   - FW 293 Undergraduate Seminar in Fisheries and Wildlife 1
3. Pass the following courses:
   a. FW 102 Succeeding in Fisheries and Wildlife – New Student Seminar 1
   b. One of the following courses:
      - MTH 124 Survey of Calculus I 3
      - MTH 132 Calculus I 3
      - LB 118 Calculus I 4

Requirements for the Bachelor of Science Degree in Wildlife Ecology and Management

1. The University requirements for bachelor's degrees as described in the Undergraduate Education section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Wildlife Ecology and Management.

   The University's Tier II writing requirement for the Wildlife Ecology and Management major is met by completing Fisheries and Wildlife 497 referenced in item 3. below.

   Students who are enrolled in the Wildlife Ecology and Management major leading to the Bachelor of Science degree in the Department of Fisheries and Wildlife may complete an alternative track to Integrative Studies in Biological and Physical Sciences by completing BS 161, BS 162 and CEM 141 below. The completion of BS 171 or BS 172 and CEM 161 satisfies the laboratory requirement. Completion of items 3. a., 3. b., and 3. c. below will be counted toward both the alternative track and the requirements for the major.

   The completion of the College of Agriculture and Natural Resources mathematics requirement may also satisfy the University mathematics requirement.

2. The requirements of the College of Agriculture and Natural Resources for the Bachelor of Science degree.

   Certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate. The completion of item 3. d. and 3. e. below satisfies the College's mathematics requirement.

   Students must earn a 2.0 or higher in all FW courses taken to complete major requirements in item 3. below.

   Only credits in courses graded on the numerical or Pass-No Grade system may be counted toward the requirements for the major. Students may not enroll in courses required for the major, including courses in other department, on a Credit-No Credit basis. Only elective courses can be enrolled on a Credit-No Credit basis.

3. The following requirements for the major:
   a. All of the following courses (40 credits):
      - BS 161 Cell and Molecular Biology 3
      - BS 162 Organismal and Population Biology 3
      - CSS 210 Fundamentals of Soil Science 3
      - FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management 3
      - FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab 2
      - FW 102 Fundamentals of Fisheries and Wildlife – New Student Seminar 1
      - FW 293 Undergraduate Seminar in Fisheries and Wildlife 1
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW 334</td>
<td>Human Dimensions of Fisheries and Wildlife Management</td>
<td>3</td>
</tr>
<tr>
<td>FW 364</td>
<td>Ecological Problem Solving</td>
<td>3</td>
</tr>
<tr>
<td>FW 410</td>
<td>Upland Ecology and Management</td>
<td>3</td>
</tr>
<tr>
<td>FW 413</td>
<td>Wildlife Research and Management Techniques</td>
<td>3</td>
</tr>
<tr>
<td>FW 417</td>
<td>Wetland Ecology and Management</td>
<td>3</td>
</tr>
<tr>
<td>FW 424</td>
<td>Wildlife Population Analysis and Management</td>
<td>3</td>
</tr>
<tr>
<td>FW 497</td>
<td>Capstone in Fisheries and Wildlife: Conservation and Management Decision Making (W)</td>
<td>3</td>
</tr>
<tr>
<td>IBIO 355</td>
<td>Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

b. One of the following courses (2 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS 171</td>
<td>Cell and Molecular Biology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BS 172</td>
<td>Organismal and Population Biology Laboratory</td>
<td>2</td>
</tr>
</tbody>
</table>

c. Two of the following courses (5 credits):

<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 161</td>
<td>Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>LB 171</td>
<td>Principles of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>LB 171L</td>
<td>Principles of Chemistry Laboratory I</td>
<td>1</td>
</tr>
</tbody>
</table>

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

<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>LB 118</td>
<td>Calculus I</td>
<td>4</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STT 201</td>
<td>Statistical Methods</td>
<td>4</td>
</tr>
<tr>
<td>STT 224</td>
<td>Introduction to Probability and Statistics for Ecologists</td>
<td>3</td>
</tr>
<tr>
<td>STT 231</td>
<td>Statistics for Scientists</td>
<td>3</td>
</tr>
<tr>
<td>STT 421</td>
<td>Statistics I</td>
<td>3</td>
</tr>
<tr>
<td>STT 464</td>
<td>Statistics for Biologists</td>
<td>3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSUS 310</td>
<td>History of Environmental Thought and Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>FW 439</td>
<td>Conservation Ethics</td>
<td>3</td>
</tr>
<tr>
<td>HST 391</td>
<td>Environmental History of North America</td>
<td>3</td>
</tr>
<tr>
<td>PHL 340</td>
<td>Ethics</td>
<td>3</td>
</tr>
<tr>
<td>PHL 342</td>
<td>Environmental Ethics</td>
<td>3</td>
</tr>
<tr>
<td>PHL 380</td>
<td>Nature of Science</td>
<td>3</td>
</tr>
<tr>
<td>PHL 442</td>
<td>Ethics and Animals</td>
<td>3</td>
</tr>
<tr>
<td>PHL 480</td>
<td>Philosophy of Science</td>
<td>4</td>
</tr>
</tbody>
</table>

g. Two of the following courses (6 or 7 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 100</td>
<td>Human Communication</td>
<td>3</td>
</tr>
<tr>
<td>COM 225</td>
<td>An Introduction to Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td>COM 240</td>
<td>Introduction to Organizational Communication</td>
<td>4</td>
</tr>
<tr>
<td>COM 275</td>
<td>Effects of Mass Communication</td>
<td>3</td>
</tr>
<tr>
<td>CSUS 433</td>
<td>Grant Writing and Fund Development</td>
<td>3</td>
</tr>
<tr>
<td>JRN 472</td>
<td>Environmental, Science and Health Reporting</td>
<td>3</td>
</tr>
<tr>
<td>WRA 331</td>
<td>Writing in the Public Interest (W)</td>
<td>3</td>
</tr>
<tr>
<td>WRA 333</td>
<td>Writing in Corporate Contexts</td>
<td>3</td>
</tr>
<tr>
<td>WRA 335</td>
<td>Writing in Scientific Contexts</td>
<td>3</td>
</tr>
<tr>
<td>WRA 337</td>
<td>Writing and Public Policy</td>
<td>3</td>
</tr>
<tr>
<td>WRA 453</td>
<td>Grant and Proposal Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSUS 464</td>
<td>Environmental and Natural Resource Policy</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>in Michigan</td>
<td></td>
</tr>
<tr>
<td>CSUS 465</td>
<td>Environmental and Natural Law</td>
<td>3</td>
</tr>
<tr>
<td>FOR 466</td>
<td>Natural Resource Policy</td>
<td>3</td>
</tr>
<tr>
<td>FW 445</td>
<td>Biodiversity Conservation Policy and Practice</td>
<td>3</td>
</tr>
<tr>
<td>FW 481</td>
<td>Global Issues in Fisheries and Wildlife</td>
<td>3</td>
</tr>
<tr>
<td>IBIO 446</td>
<td>Environmental Issues in Public Policy</td>
<td>3</td>
</tr>
<tr>
<td>MC 450</td>
<td>International Environmental Law and Policy</td>
<td>3</td>
</tr>
</tbody>
</table>

i. Two of the following courses (8 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW 471</td>
<td>Ichthyology</td>
<td>4</td>
</tr>
<tr>
<td>IBIO 360</td>
<td>Biology of Birds</td>
<td>4</td>
</tr>
<tr>
<td>IBIO 365</td>
<td>Biology of Mammals</td>
<td>4</td>
</tr>
<tr>
<td>IBIO 384</td>
<td>Biology of Amphibians and Reptiles</td>
<td>4</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 204</td>
<td>Forest Vegetation</td>
<td>3</td>
</tr>
</tbody>
</table>
PLB 218 Plants of Michigan 3
PLB 418 Plant Systematics 3

k. One of the following courses (3 or 4 credits):
   CSS 350 Introduction to Plant Genetics 3
   FOR 340 Forest Ecology 3
   GEO 201 Introduction to Plant Geography 3
   IBIO 485 Tropical Biology 3
   PLB 105 Plant Biology 3
   PLB 301 Introductory Plant Physiology 3
   PLB 402 Biology of Fungi 4
   PLB 441 Plant Ecology 3
   PLB 443 Restoration Ecology 3

l. One of the following courses (3 or 4 credits):
   CSS 411 Fire and Environmental Quality 3
   FOR 413 Wildland Fire Ecology and Management 3
   FOR 419 Applications of Geographic Information Systems to Natural Resources Management 4
   FW 423 Principles of Fish and Wildlife Disease 3
   FW 463 Wildlife Disease Ecology 3
   GEO 201 Introduction to Plant Geography 3
   GEO 221 Introduction to Geographic Information 3
   and
   GEO 221L Introduction to Geographic Information Laboratory 1
   IBIO 313 Animal Behavior 3
   IBIO 328 Comparative Anatomy and Biology of Vertebrates 4
   IBIO 341 Fundamental Genetics 4
   IBIO 483 Environmental Physiology 3
   SOC 452 Advanced Seminar in Environmental Sociology 3

m. One of the following courses (3 credits):
   ANP 443 Human Adaptability 3
   ANP 486 Environmental Archaeology 3
   FOR 360 Forest Ecosystems, Carbon and Climate Change 3
   GEO 409 Global Climate Change and Variability 3
   IBIO 357 Global Change Biology (W) 3
   SOC 478 Climate Change and Society 3

n. Complete a minimum of 3 credits from the following courses (3 or 4 credits):
   FW 480 International Studies in Fisheries and Wildlife 1 to 3
   FW 490 Independent Study in Fisheries and Wildlife 1 to 3
   FW 493 Professional Internship in Fisheries and Wildlife 1 to 3
   FW 499 Senior Thesis in Fisheries and Wildlife 4

Effective Fall 2024.

**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 January 22, 2024 meeting.

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

      (1) Under the heading **Admission to the Program in Human Medicine** add the following to paragraph five:

      7. Be immunized per the CDC recommendations for health care providers.

      (2) Under the **Requirements for the Doctor of Medicine Degree**, in item 4., make the following changes:

      (1) Delete MED 635.

      (2) Add the following course:
NOP 630 Senior Clinical Elective in Neurology 6 to 12

(3) Change the credits of PHD 604 from '6' to '3 to 12'.

Effective Summer 2024.
PART II - NEW COURSES AND CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

FW 102  Succeeding in Fisheries & Wildlife - New Student Seminar
Fall of every year. Spring of every year. 1(1-0) R: Open to undergraduate students in the Department of Fisheries and Wildlife.

NEW Exploration of academic, social, personal and career decisions that students face in college, with a primary focus on succeeding in Fisheries and Wildlife; and the skills needed to be successful.
Request the use of the Pass-No Grade (P-N) system.
Effective Spring Semester 2024

FW 497  Capstone in Fisheries and Wildlife: Conservation and Management Decision Making (W)
Fall of every year. Spring of every year. 3(3-0) P: (FW 334) and (CSUS 354 or FW 410 or FW 416 or FW 417 or FW 424 or FW 444 or FW 479) and Completion of Tier I Writing Requirement R: Open to seniors in the Department of Fisheries and Wildlife and open to seniors in the Lyman Briggs College.

NEW Senior capstone. Emphasis on modes of decision making in natural resources conservation and management, role of models and uncertainty in decision making, and effective communication practices to overcome barriers to decision making.
Effective Fall Semester 2024

FSC 816  Codex Alimentarius - The Food Code
International Food Standards, Codex Alimentarius
Spring of every year. 3(3-0) RB: (FSC 810) or food science, law, food safety, international development or related disciplines. Not open to students with credit in LAW 810F.
How Codex Alimentarius formulates and harmonizes food standards for hygiene, contaminants, food additives, veterinary drugs, and pesticide residues, including its role in the World Trade Organization (WTO) Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) Agreements.
Effective Spring Semester 2024 Effective Spring Semester 2024

FSC 821  Wine, Beer, and Spirits Laws and Regulations
Beer, Wine and Spirits Laws and Regulations
Spring of even years. Spring of every year. 3(3-0) RB: (FSC 811) or prior coursework in food safety, food laws, or food science Not open to students with credit in LAW 810Y.
Laws, regulations, and policies that govern alcoholic beverages in the United States.
Effective Summer Semester 2018 Effective Spring Semester 2024

COLLEGE OF ENGINEERING

BE 475  International Studies in Biosystems Engineering
Fall of every year. Abroad Spring of every year. Abroad 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department; application required.

REINSTATEMENT Study abroad emphasizing biosystems and agricultural engineering issues affecting agriculture and natural resources in world, national, and local communities.
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 Semester 2024

CHE 433  Process Design and Optimization I
Fall of every year. 4(5-0) 4(4-0) P: (CHE 311 and CHE 312 and CHE 321 and CHE 431) and completion of Tier I writing requirement R: Open to seniors in the Chemical Engineering Major.
Applications of chemical engineering principles in design calculations. Selection of optimum design. Influence of design on capital investment, operating cost, product loss and quality. Mathematical programming methods for optimization.
Effective Fall Semester 2014 Effective Fall Semester 2024
CSE 801C  Introduction to Python Programming  
Fall of every year. Spring of every year. 3(2-2) A student may earn a maximum of 3 credits in all enrollments for this course. R: Not open to students in the Department of Computer Science and Engineering. Not open to students with credit in CSE 231.

NEW  
Programming using Python. Design, implementation and testing of programs to solve problems such as those in engineering, mathematics and science. Programming fundamentals, functions, objects, and use of libraries of functions. 
Effective Fall Semester 2024

EGR 494  Advanced Experiential Education II  
Fall of every year. Spring of every year. Summer of every year. 1(1-0) A student may earn a maximum of 2 credits in all enrollments for this course. P: EGR 493 R: Open to undergraduate students in the College of Engineering. 
Supporting students’ fourth internship through assessment and reflection to enhance career understanding. Supporting students’ fourth internship through assessment and reflection to enhance career understanding. Second enrollments in this course are allowed with approval of the instructor. 
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 Semester 2020 Effective Fall Semester 2024

COLLEGE OF HUMAN MEDICINE

EPI 812  Causal Inference in Epidemiology  
Foundations of Population Health  
Fall of every year. 3(3-0) P: EPI 810 and EPI 829 or approval of department R: LCS 829 R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department. 
Causality in epidemiology. Application of theoretical concepts to the design, analysis, and assessment of epidemiologic research. Fundamentals of population health research including prevention and intervention strategies for improving population health, and the disparities that exist in morbidity, mortality, and quality of life. 
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. 
SA: HM 812 
Effective Fall Semester 2014 Effective Spring Semester 2023

EPI 836  Practicum in Epidemiological Methods  
Fall of every year. 3(3-0) P: (EPI 812 or concurrently) and (EPI 826 or concurrently) P: EPI 810 and EPI 829 and EPI 851 and EPI 852 R: Open to graduate students in the Department of Epidemiology and Biostatistics or approval of department. 
Data management, analysis, interpretation and presentations using public data sets. 
Effective Spring Semester 2018 Effective Fall Semester 2024

PH 102  Social Justice and Determinants of Health: United States  
Fall of every year. Spring of every year. Summer of every year. 3(3-0) RB: PH 101 
NEW  
Introduction to the role of social justice in public health, and the determinants of health, specifically the socio-economic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities. 
Effective Spring Semester 2024
PH 103  Social Justice and Health Equity: Global Perspectives
Fall of every year. Spring of every year. Summer of every year. 3(3-0) RB: PH 101 and PH 102
NEW
In-depth multidisciplinary exploration of critical transnational challenges in global public health such as food insecurity, the refugee and migrant crisis, slums and the global housing crisis, population growth, complex humanitarian emergencies, global mental health, interpersonal violence, among others. Topics will be considered from a social justice and health equity perspective, including the influence of social, economic, political and environmental systems on global health outcomes.
Effective Fall Semester 2024

PH 825  Transition to Graduate Academic Writing
Fall of every year. Spring of every year. Summer of every year. 1(1-0) RB: completion of Tier 2 writing assignment or undergraduate degree R: Open to students in the Public Health Major and open to juniors or seniors or graduate students or approval of college.
Identify and analyze scholarly articles and published research studies to develop effective writing skills within the genre of academic writing and scholarship.
Request the use of the Pass-No Grade (P-N) system.
SA: HM 825
Effective Spring Semester 2024

ANTR 350  Human Gross Anatomy for Pre-Health Professionals
Fall of every year. Spring of every year. Summer of every year. 3(4-0) 4(4-0) P: BS 161 or BS 181H or LB 145 R: Not open to freshmen or approval of department.
Survey of human systemic gross anatomy with clinical illustrations. Structural basis of organ system physiology. Introduction to medical terminology and clinical language.
Effective Summer Semester 2015 Effective Fall Semester 2023

ANTR 355  Human Gross Anatomy Laboratory
Fall of every year. Grand Rapids, Grand Rapids, Grand Rapids Grand Rapids Spring of every year. Grand Rapids, Grand Rapids, Grand Rapids Grand Rapids Summer of every year. Grand Rapids, Grand Rapids, Grand Rapids Grand Rapids 1(0-3) 2(0-4) P: ANTR 350 or concurrently R: Approval of department; application required.
Not open to students with credit in KIN 217.
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 Spring Semester 2018 Effective Spring Semester 2022

ANTR 485  Directed Study in Human Prosection
Fall of every year. Spring of every year. Summer of every year. 2(0-6) 3(0-6) A student may earn a maximum of 14 credits in all enrollments for this course. A student may earn a maximum of 12 credits in all enrollments for this course. P: ANTR 350 or IBIO 328 or KIN 217 or IBIO 320 R: Open to juniors or seniors. Approval of department. R: Open to juniors or seniors. Approval of department; application required.
Prosection of selected regions and isolated structures of preserved human cadavers.
Effective Fall Semester 2016 Effective Spring Semester 2023

ANTR 585  Directed Study in Human Prosection
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. P: ANTR 551 or ANTR 510 P: ANTR 510 or OST 510 R: Open to human medicine students or osteopathic medicine students. Approval of department.
Prosection of selected regions and isolated structures of preserved human cadavers. Oral presentation.
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 Semester 2018 Effective Fall Semester 2023
ANTR 590  Independent Study in Clinical Human Morphology
Fall of every year. Spring of every year. Summer of every year. 1 to 5 credits. A student may earn a maximum of 10 credits in all enrollments for this course. P: OST 510 or ANTR 510 RB: Admission to the College of Human Medicine or the College of Osteopathic Medicine or graduate program in the College of Nursing R: Open to human medicine students and open to osteopathic medicine students and open to graduate students in the College of Nursing. Approval of department.
Independent study of a specific topic from gross anatomy, histology, radiological anatomy, cytology, neuroscience, or embryology.
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 Semester 2011 Effective Spring Semester 2024

ANTR 880  Advanced Human Gross Anatomy for Education or Research
Fall of even years. Spring of odd years. 5(4-1) 5(3-4) R: Approval of department.
Human gross anatomy using prosections, medical imaging, and multimedia resources.
Effective Fall Semester 2019 Effective Spring Semester 2025

COLLEGE OF NATURAL SCIENCE

BS 182H  Honors Organismal and Population Biology
Fall of every year. 3(3-0) Interdepartmental with Plant Biology Not open to students with credit in LB 144.
Diversity and basic properties of organisms, with emphasis on genetic principles, ecological interactions, and the evolutionary process. Historical approach to knowledge discovery.
SA: BS 148H, BS 110
Effective Summer Semester 2022 Effective Summer Semester 2023

BS 192H  Honors Organismal and Population Biology Laboratory
Fall of every year. 2(1-3) Interdepartmental with Plant Biology P: BS 182H or concurrently Not open to students with credit in LB 144.
Nature and process of organismal biology, including experimental design and statistical methods, hypothesis testing, genetics, ecology, and evolution.
SA: BS 158H, BS 110
Effective Summer Semester 2022 Effective Summer Semester 2023

GLG 200  Introduction to Environmental Science and Global Change
Fall of every year. Spring of every year. 4(3-2) NEW
Tools and knowledge to understand our earth systems and current issues in the environmental sciences and global change. Use of geology, physics, chemistry, and biology to explore concepts and case studies across local, regional, and global scales.
Build the environmental science foundation for communicating and working across disciplines to solve problems in society.
Effective Spring Semester 2024

GLG 201  The Dynamic Earth
Introduction to Earth and Planetary Sciences
Fall of every year. Spring of every year. 4(3-2) Not open to students with credit in GLG 301.
Physical and chemical processes related to the past, present and future behavior of the earth system, and the energy systems that drive these processes. A study of the earth’s materials, the earth’s surface and the earth’s interior. Physical and chemical processes related to the past, present, and future behavior of Earth systems, and the energy systems that drive them. Earth and planetary materials, interior and surface processes, and associated natural resources and hazards.
Effective Fall Semester 2012 Effective Fall Semester 2023
GLG 203  Geology of the Great Lakes Region
Spring of every year. 3(3-0) P: (PHY 183 or PHY 231 or PHY 193H or PHY 221) and (CEM 141 or CEM 151 or LB 171 or CEM 181H) RB: Physical science, environmental engineering, civil engineering R: Open to undergraduate students in the Department of Civil and Environmental Engineering. Not open to students with credit in GLG 201 or GLG 301.
Effective Fall Semester 2023

GLG 203L Geology of the Great Lakes Region Supplementary Laboratory
On Demand. 1(0-2) P: (GLG 203 or concurrently) or (GLG 301 or concurrently) Not open to students with credit in GLG 201.
NEW Laboratory investigation of physical, chemical, and biological phenomena and processes in Earth systems. Experiential study and tools for characterizing and describing Earth materials and observations.
Effective Fall Semester 2023

GLG 380 Natural Resources, the Energy Transition, and the Environment
Fall of every year. 3(3-0) R: Not open to undergraduate students.
NEW Introduction to natural resources in the context of the coming energy transition. Will provide an overview of the key concepts, challenges, and opportunities associated with natural resource origin, management, energy transition, and environmental sustainability.
Effective Fall Semester 2024

GLG 401 Global Tectonics and Earth Structure (W)
Fall of every year. 4(3-2) P: ((GLG 304) and completion of Tier I writing requirement) and (MTH 114 or MTH 116 or MTH 124 or MTH 132 or MTH 152H or LB 118) and (PHY 183 or PHY 183B or PHY 231 or PHY 231C or LB 273 or PHY 193H) P: ((GLG 304) and completion of Tier I writing requirement) and (MTH 114 or MTH 116 or MTH 124 or MTH 132 or MTH 152H or LB 118) and (PHY 183 or PHY 183B or PHY 231 or PHY 231C or LB 273 or PHY 193H or PHY 173 or PHY 221 or PHY 241) R: Open to seniors or graduate students. R: Open to undergraduate students or graduate students.
Structural geology, geological and geophysical methods of studying the structure and dynamics of the earth and planets. Plate kinematics and global geodynamic processes, plate margin processes and evolution, marine geology. Field trip required.
SA: GLG 371
Effective Fall Semester 2017 Effective Fall Semester 2023

GLG 412 Glacial Geology and the Record of Climate Change
Spring of every year. 4(3-2) Interdepartmental with Geography RB: GLG 201 or GEO 306 or GEO 408 or GLG 301 R: Not open to freshmen or sophomores.
In-depth analysis of glacial geology and the record of climate change, with emphasis on North America and Europe. Field trip required.
Effective Spring Semester 2018 Effective Fall Semester 2023

GLG 422 Field Methods in Environmental Science
Fall of every year. 3(1-4) P: (GLG 201 or GEO 206 or IBIO 355) and (CEM 141 and CEM 161) and (STT 200 or STT 201 or STT 231) R: Open to undergraduate students.
NEW Intro to field methods in enviro sciences, conceptual design, sample collection, and analysis. Make observations, pose research questions, collect, analyze data, & present findings. Field trips required. Offered first half of semester.
Effective Fall Semester 2024
GLG 444  Cosmochemistry
Spring of odd years. 3(2-2) Interdepartmental with Astronomy and Astrophysics. P: (GLG 201 or
AST 208) and (MTH 124 or MTH 132 or MTH 152 or LB 118) and (CEM 142 or CEM 152 or
CEM 182H or LB 172 or MSE 250) and (PHY 174 or PHY 184 or PHY 184B or PHY 222 or PHY
232 or PHY 232C or PHY 242 or PHY 294H or LB 274) R: Not open to freshmen or graduate
students. Not open to students with credit in GLG 844.
NEW Origin of the elements throughout the universe. History of the galaxy, solar system, and
planet Earth as told by the materials that compose them. Study of meteorites and
planetary samples theoretically and in the laboratory. Summarize state of field on
directed topics.
Effective Spring Semester 2024

GLG 445  Planetary Sciences
Spring of even years. 3(3-0) Interdepartmental with Astronomy and Astrophysics. P: (GLG 201 or
AST 208) and (CEM 142 or CEM 152 or CEM 182H or LB 172 or MSE 250) and (PHY 174 or PHY
184 or PHY 184B or PHY 222 or PHY 232 or PHY 232C or PHY 242 or PHY 294H or LB 274) and
(MTH 124 or MTH 132 or MTH 152H or LB 118) R: Not open to freshmen or graduate students.
Not open to students with credit in GLG 845.
NEW Survey of planetary sciences including planetary interiors, surface processes,
atmospheres and magnetospheres. Origin and dynamics of planetary systems.
Habitability and astrobiology. History and future of space exploration. Design the
scientific investigation of a future space mission.
Effective Spring Semester 2024

GLG 828  Biogeochemical Cycles Through Time
Fall of even years. 3(3-0) RB: Introductory chemistry or equivalent R: Not open to undergraduate
students.
NEW Introduction to chemical tracers for elucidating biogeochemical process on multiple
timescales. This includes an overview of modern spatiotemporal biogeochemical
gradients, pathways of their geologic preservation, and records of biogeochemical cycles
across key events in Earth history.
Effective Fall Semester 2024

GLG 844  Graduate Cosmochemistry
Spring of odd years. 3(2-2) Interdepartmental with Astronomy and Astrophysics. RB: Introductory
chemistry (CEM 142 or equivalent), introductory physics (PHY 174 or equivalent), calculus 1 (MTH
124 or equivalent), and introductory earth or planetary science (GLG 201 or AST 208 or
equivalent) R: Not open to undergraduate students. Not open to students with credit in GLG 444.
NEW Chemical composition of the universe, the Sun, the planets, and their building blocks.
Origin of the elements, astrophysical sites of nucleosynthesis, and their galactic chemical
evolution. Chemically and isotopically trace cosmic genetic relationships, date important
events such as formation of the first solids in the Solar System. Processes that segregate
elements and isotopes into different astrophysical and planetary reservoirs. Observe
primitive and evolved meteoritic and planetary materials in the laboratory. Synthesize
current research on directed topic
Effective Spring Semester 2024

GLG 845  Graduate Planetary Sciences
Spring of even years. 3(3-0) RB: Introductory chemistry (CEM 142 or equivalent), introductory
physics (PHY 174 or equivalent), calculus 1 (MTH 124 or equivalent), and introductory earth or
planetary science (GLG 201 or AST 208 or equivalent) R: Not open to undergraduate students.
Not open to students with credit in GLG 445.
NEW Surface and internal properties and processes of planets and their natural satellites,
aroids, and comets. Origin, composition, structure, tectonics, volcanism, impact
phenomena, atmospheric evolution, atmosphere-surface interactions, habitability, and
history of solar system bodies. Results of recent space exploration programs and
missions. Design the scientific investigation of a future space mission using methods
from the peer-reviewed literature.
Effective Spring Semester 2024
MTH 396  Capstone in Mathematics for Secondary Education (W)
Fall of every year. Spring of every year. 3(3-0) P: (MTH 309 or MTH 317H or approval of department) and (MTH 310 or MTH 418H or approval of department) and (MTH 320 or MTH 327H or approval of department) and Completion of Tier I Writing Requirement P: (MTH 309 or MTH 317H or approval of department) and (MTH 310 or MTH 418H or approval of department) and (MTH 320 or MTH 327H) and Completion of Tier I Writing Requirement R: Approval of department. R: Open to students in the Mathematics-Secondary Education Major. Not open to students with credit in MTH 496.
A capstone course for secondary education math majors. High school mathematics from an advanced viewpoint.
Effective Fall Semester 2013 Effective Fall Semester 2024

MTH 483  Mathematical Machine Learning
Spring of every year. 3(3-0) P: (MTH 309 or MTH 314 or MTH 317H) and (CSE 231 or CMSE 201)
NEW Regression, clustering, dimension reduction, density estimation, anomaly detection, classification, and related methods (e.g., k-nearest neighbors, support vector machines, neural networks, decision trees, random forests), autoencoders, generative adversarial networks, and existing machine learning tools, training methods, and software.
Effective Fall Semester 2024

MTH 929  Complex Analysis II
Spring of even years. 3(3-0) RB: MTH 828 and MTH 829 R: Open to doctoral students in the College of Natural Science or approval of department.
Effective Spring Semester 2024

MTH 989  Representation Theory II
Spring of even years. 3(3-0) P: MTH 988 or approval of department
REINSTATEMENT Basic objects and notions of representation theory: associative algebras, algebras defined by generators and relations, group algebras, quivers and path algebras, basic general results of representation theory, representations of finite dimensional algebras and semi simple algebras, extensions of representations, representations of quivers.
Effective Spring Semester 2024

PLB 499  Senior Seminar (W)
Spring of every year. 1(1-0) P: (PLB 498) and completion of Tier I writing requirement P: (PLB 498 or PLB 495) and completion of Tier I writing requirement
Effective Fall Semester 2015 Effective Spring Semester 2024

COLLEGE OF NURSING

NUR 914  Biostatistics for the APRN
Fall of every year. Spring of every year. 3(3-0)
NEW The application of descriptive statistics, bivariable and multivariable inferential statistics (parametric and non-parametric), and essential epidemiological concepts
Effective Fall Semester 2024
COLLEGE OF OSTEOPATHIC MEDICINE

OST 582  Transitions I: Board Preparation
Preclerkship Board Preparation
Spring of every year, Summer of every year. 6 credits. 4(4-0) R: Open to graduate-professional
students in the College of Osteopathic Medicine.
Selected topics in preparation for licensure board exams.
Request the use of the Pass-No Grade (P-N) system.
Effective Summer Semester 2020 Effective Spring Semester 2024

OST 591  Medical Case Study Journal Review
Medical Case Studies
Fall of every year. Spring of every year. Summer of every year. 1(2-0) A student may earn a
maximum of 4 credits in all enrollments for this course. R: Open to graduate-professional students
in the College of Osteopathic Medicine.
Analysis and presentation of published clinical case reports in the context of basic
science principles and biomedical concepts.
Request the use of the Pass-No Grade (P-N) system.
Effective Spring Semester 2020 Effective Fall Semester 2023

OST 595  Modern Applications of Osteopathic Science
Fall of every year. Spring of every year. 1(1-0) A student may earn a maximum of 6 credits in all
enrollments for this course. R: Open to osteopathic medicine students in the College of
Osteopathic Medicine.
NEW
Osteopathic Science is a 1 credit hour course that provides students with an opportunity
to consider aspects of Osteopathic care that are separate from Osteopathic
Manipulation. This will help Osteopathic medical students form a category for their
distinctive place in healthcare. Osteopathic Science is the body of clinical research that
supports the tenets of Osteopathy. It focuses specifically on mechanisms of self-healing
in the physical, emotional, mental, and spiritual realms of 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 1
semester after the end of the semester of enrollment.
Effective Spring Semester 2024

OST 597  Biomedical Research Structure and Methods
Spring of every year. 2(2-0) P: OST 598 P: OST 598 or OST 520
Intensive review of biomedical research methods and statistical analyses for mentored
clinical research projects.
Request the use of the Pass-No Grade (P-N) system.
Effective Spring Semester 2020 Effective Spring Semester 2024