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

This report is prepared and distributed for the following purposes:

1. To report new academic programs, changes in academic programs, discontinuations of academic programs, new courses, permanent changes in courses, and deletions of courses.
2. To notify the initiating colleges, schools, and departments of approval by the University Committee on Curriculum of their requests for new academic programs, changes in academic programs, discontinuations of academic programs, new courses, permanent changes in courses, and deletions of courses.
3. To provide information to members of the faculty in each department about academic programs and courses in all colleges, departments, and schools of the University.

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

PART I - NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES:

Organized by colleges in alphabetical order. For a given college, academic units are organized in alphabetical order. For a given academic unit, degrees, majors, and specializations are organized in alphabetical order.

PART II - NEW COURSES:

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

PART III - COURSE CHANGES:

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

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

One or more of the abbreviations that follow may be included in a course entry:

P: = Prerequisite monitored in SIS
C: = Corequisite
R: = Restriction
RB: = Recommended background
SA: = Semester Alias
PART I - NEW ACADEMIC PROGRAMS AND PROGRAM CHANGES

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1. 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, Fish Ecology and Management, Wildlife Ecology and Management, 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:
   - FW 102 Succeeding in Fisheries and Wildlife – New Student Seminar 1
   - 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 departments, 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:

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<thead>
<tr>
<th>CREDITS</th>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>FW 101</td>
<td>Fundamentals of Fisheries and Wildlife Ecology and Management</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>FW 101L</td>
<td>Fundamentals of Fisheries and Wildlife Ecology and Management Lab</td>
<td>2</td>
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<td>1</td>
<td>FW 102</td>
<td>Fundamentals of Fisheries and Wildlife – New Student Seminar</td>
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<td>1</td>
<td>FW 293</td>
<td>Undergraduate Seminar in Fisheries and Wildlife Management</td>
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<td>FW 334</td>
<td>Human Dimensions of Fisheries and Wildlife Management</td>
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<td>3</td>
<td>IBIO 355</td>
<td>Ecology</td>
<td>3</td>
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<tr>
<td>3</td>
<td>MMG 201</td>
<td>Fundamentals of Microbiology</td>
<td>3</td>
</tr>
</tbody>
</table>

b. One of the following groups of courses (6 or 9 credits):

(a) BS 161 | Cell and Molecular Biology | 3 |
(b) BS 162 | Organismal and Population Biology | 3 |

(c) One course from each group (5 credits):

(a) CEM 141 | General Chemistry | 4 |
(b) CEM 161 | Chemistry Laboratory | 1 |

(d) One of the following courses (2 credits):

BS 171 | Cell and Molecular Biology Laboratory | 2 |

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

LB 273 | Physics I | 4 |

(f) 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 |

(g) 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 | 3 |
STT 464 | Statistics for Biologists | 3 |

(h) 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 |

(i) 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 |
PART I – NEW PROGRAMS AND PROGRAM CHANGES

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

j. 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

k. 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

l. One of the following courses (3 or 4 credits):
   EPI 390 Disease in Society: Introduction to Epidemiology 4
   and Public Health
   FW 423 Principles of Fish and Wildlife Disease 3
   FW 431 Ecophysiology and Toxicology of Fishes 3
   FW 463 Wildlife Disease Ecology 3

m. 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

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

o. One of the following courses (3 credits):
   CSUS 464 Environmental and Natural Resource Policy 3
   in Michigan
   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

p. 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

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.
2. 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 departments, 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 (25 credits):
      - 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
PART I – NEW PROGRAMS AND PROGRAM CHANGES

FW 364   Ecological Problem Solving   3
FW 444   Conservation Biology   3
FW 445   Biodiversity Conservation Policy and Practice   3
FW 497   Capstone in Fisheries and Wildlife: Conservation and Management Decision Making (W)   3
IBIO 355   Ecology   3

b. One of the following groups of courses (6 or 9 credits):
(a) BS 161   Cell and Molecular Biology   3
BS 162   Organismal and Population Biology   3
(b) LB 144   Biology I: Organismal Biology   4
LB 145   Biology II: Cellular and Molecular Biology   5

This requirement is waived if students complete LB 144 or LB 145 in item b.

d. One course from each group (5 credits):
(a) CEM 141   General Chemistry   4
CEM 161   Chemistry Laboratory   1
LB 171   Principles of Chemistry   4
LB 171L   Principles of Chemistry Laboratory I   1

This requirement is waived if students complete LB 144 or LB 145 in item b.

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

This requirement is waived if students complete LB 144 or LB 145 in item b.

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):
FW 424   Wildlife Population Analysis and Management   3
FW 479   Fisheries Population Analysis and Management   3

j. 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
PART I – NEW PROGRAMS AND PROGRAM CHANGES

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

l. 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

m. 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

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 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):
   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 422 Principles of Fish and Wildlife Disease 3
   FW 463 Wildlife Disease Ecology 3
   PLB 443 Restoration Ecology 3

p. 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

q. 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

r. 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. 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 departments, 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 (29 credits):
      - 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
### PART I – NEW PROGRAMS AND PROGRAM CHANGES

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<tr>
<th>Course Code</th>
<th>Course Name</th>
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<td>FW 471</td>
<td>Ichthyology</td>
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<tr>
<td>FW 474</td>
<td>Field and Laboratory Techniques for Aquatic Studies</td>
<td>3</td>
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<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</td>
<td>3</td>
</tr>
<tr>
<td>and Management Decision Making (W)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IBIO 355</td>
<td>Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

**b. One of the following groups of courses (6 or 9 credits):**

(a) BS 161 Cell and Molecular Biology 3
    BS 162 Organismal and Population Biology 3

(b) LB 144 Biology I: Organismal Biology 4
    LB 145 Biology II: Cellular and Molecular Biology 5

**c. One of the following courses (2 credits):**

- BS 171 Cell and Molecular Biology Laboratory 2
- BS 172 Organismal and Population Biology Laboratory 2

This requirement is waived if students complete LB 144 or LB 145 in item b.

**d. One course from each group (5 credits):**

(a) CEM 141 General Chemistry 4
    LB 171 Principles of Chemistry 4

(b) CEM 161 Chemistry Laboratory 1
    LB 171L Principles of Chemistry Laboratory I 1

**e. 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 I 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.

**f. 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

**g. 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

**h. 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
PART I – NEW PROGRAMS AND PROGRAM CHANGES

PHL 480 Philosophy of Science 4

i. 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

j. 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

k. 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

l. 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

m. 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

n. 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

o. 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. 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, 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 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 credits)
   - FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab (2 credits)
   - FW 293 Undergraduate Seminar in Fisheries and Wildlife (1 credit)
3. Pass the following courses:
   - FW 102 Succeeding in Fisheries and Wildlife – New Student Seminar (1 credit)
   - One of the following courses:
     - MTH 124 Survey of Calculus I (3 credits)
     - MTH 132 Calculus I (3 credits)
     - LB 118 Calculus I (4 credits)

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 departments, 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 (34 credits):
      - CSS 210 Fundamentals of Soil Science (3 credits)
      - FW 101 Fundamentals of Fisheries and Wildlife Ecology and Management (3 credits)
      - FW 101L Fundamentals of Fisheries and Wildlife Ecology and Management Lab (2 credits)
      - FW 102 Fundamentals of Fisheries and Wildlife – New Student Seminar (1 credit)
      - FW 293 Undergraduate Seminar in Fisheries and Wildlife (1 credit)
      - FW 334 Human Dimensions of Fisheries and Wildlife Management (3 credits)
### PART I – NEW PROGRAMS AND PROGRAM CHANGES

- **FW 364** Ecological Problem Solving 3
- **FW 410** Upland Ecology and Management 3
- **FW 413** Wildlife Research and Management Techniques 3
- **FW 417** Wetland Ecology and Management 3
- **FW 424** Wildlife Population Analysis and Management 3
- **FW 497** Capstone in Fisheries and Wildlife: Conservation and Management Decision Making (W) 3

### IBIO 355 Ecology 3

b. One of the following groups of courses (6 or 9 credits):

(a) **BS 161** Cell and Molecular Biology 3
(b) **LB 144** Biology I: Organismal Biology 4
(c) **BS 162** Organismal and Population Biology 3
(d) **LB 145** Biology II: Cellular and Molecular Biology 5

- This requirement is waived if students complete LB 144 or LB 145 in item b.

d. One course from each group (5 credits):

(a) **CEM 141** General Chemistry 4
(b) **CEM 161** Chemistry Laboratory 1
(c) **LB 171** Principles of Chemistry 4
(d) **LB 171L** Principles of Chemistry Laboratory I 1

### 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 (8 credits):
   - FW 471 Ichthyology 4
   - IBIO 360 Biology of Birds 4
   - IBIO 365 Biology of Mammals 4
   - IBIO 384 Biology of Amphibians and Reptiles 4

k. One of the following courses (3 or 4 credits):
   - FOR 204 Forest Vegetation 3
   - PLB 218 Plants of Michigan 3
   - PLB 418 Plant Systematics 3

l. 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

m. 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 Fisheries and Wildlife Disease 3
   - FW 463 Wildlife Disease Ecology 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

n. 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

o. 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.
PART I – NEW PROGRAMS AND PROGRAM CHANGES

COLLEGE OF EDUCATION

1. Change the requirements for the Master of Arts degree in Education in the College of Education. The University Committee on Graduate Studies (UCGS) approved this request at its January 22, 2024 meeting.

The primary concentrations in the Master of Arts degree in Education are noted on the student’s academic record when the requirements for the degree have been completed.

a. Under the heading Requirements for the Master of Arts Degree in Education make the following change in item 3.:

(1) Delete the ‘Sport Coaching and Leadership’ concentration.

(2) Add the following two concentrations:

   Athletic Administration
   Athletic Coaching

Effective Fall 2024.

COLLEGE OF HUMAN MEDICINE

1. 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) approved 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.
COLLEGE OF NATURAL SCIENCE

1. Change the requirements for the Doctor of Philosophy degree in Chemistry in the Department of Chemistry. The University Committee on Graduate Studies (UCGS) approved this request at its January 22, 2024 meeting.

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

   1. Complete a minimum of one year of teaching requirement
   2. Complete a minimum of 12 to 18 credits of 800-900 level courses through a minimum of 6 courses. Credits earned in requirements 3. and 4. may not be used to fulfill this requirement.
   3. Complete the following courses (2 credits):
       CEM 890 Chemical Problems and Reports 1
           (section 1 Faculty Seminar)
       CEM 890 Chemical Problems and Reports 1
           (section 2 Second Year Oral)
   4. Complete 2 credits of seminar course work from one of the following areas: Analytical, Inorganic, Nuclear, Organic, or Physical to demonstrate research preparedness and as a defense of the dissertation. The student's course work must be planned and approved by their academic advisor.
   5. Satisfactory performance on doctoral comprehensive examinations of the cumulative type is required. Details about these and the qualification examinations may be obtained from the department.
   6. Complete at least 24 credits and no more than 36 credits of CEM 999 Doctoral Dissertation Research.
   7. All students must complete Responsible Conduct of Research Training - https://grad.msu.edu/recr
   8. Additional details on applicable course work can be found in the CEM graduate handbook at www.chemistry.msu.edu.

   Effective Summer 2024.

COLLEGE OF SOCIAL SCIENCE

1. Change the name of the Minor in Geographic Information Science to Earth Observation and Geospatial Analytics in the Department of Geography, Environment, and Spatial Sciences.

   No new students are to be admitted to the Minor in Geographic Information Science effective Fall 2024. No students are to be readmitted to the Minor in Geographic Information Science effective Fall 2024. Effective Spring 2029, coding for the Minor in Geographic Information Science will be discontinued and the program will no longer be available in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the minor prior to Fall 2024 will be awarded a Minor in Geographic Information Science in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the minor Fall 2024 and forward will be awarded a Minor in Earth Observation and Geospatial Analytics in the Department of Geography, Environment, and Spatial Sciences.

   Effective Fall 2024.
2. Change the requirements for the Minor in Earth Observation and Geospatial Analytics in the Department of Geography, Environment, and Spatial Sciences.

   a. Under the heading Minor in Earth Observation and Geospatial Analytics, replace the entire entry with the following:

   1. The following course (3 credits):
      GEO 221 Introduction to Geographic Information 3
   2. Complete a minimum of 9 credits from the following courses:
      FOR 372 Ecological Monitoring and Data Analysis 3
      FOR 419 Applications of Geographic Information Systems to Natural Resources Management 4
      GEO 221L Introduction to Geographic Information Laboratory 1
      GEO 324 Remote Sensing of the Environment 4
      GEO 325 Geographic Information Systems 3
      GEO 326 Cartographic Design and Production 4
      GEO 363 Introduction to Quantitative Methods for Geographers 3
      GEO 424 Advanced Remote Sensing 4
      GEO 425 Problems in Geographic Information Science (W) 3
      GEO 426 Thematic Cartography 4
      GEO 428 Digital Terrain Analysis 3
      GEO 429 Programming with Spatial Data 3
   3. Complete an additional minimum of 3 credits from any GEO electives.

   Effective Fall 2024.

3. Change the requirements for the Minor in Environment and Health in the Department of Geography, Environment and Spatial Sciences.

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

   Complete a minimum of 15 credits from the following:

   1. One of the following courses (3 credits):
      GEO 151 Introduction to Human Geography 3
      GEO 235 Geography of Environment and Health 3
   2. One of the following courses (3 or 4 credits):
      ANP 204 Introduction to Medical Anthropology 3
      EC 498 Economics of Health Care (W) 3
      HDFS 225 Lifespan Human Development in the Family 3
      HST 425 American and European Health Care since 1800 4
      PSY 320 Health Psychology 3
      SOC 252 Introduction to Environmental Sociology 3
      SOC 451 Dynamics of Population 3
   3. Complete two of the following courses (6 to 8 credits):
      AFRE 100 Decision-making in the Agri-Food System 3
      AFRE 206 World Food, Population and Poverty 3
      ANS 427 Environmental Toxicology and Society 3
      CSS 120 Issues in Food and Agriculture 3
      CSS 210 Fundamentals of Soil Science 3
      CSUS 200 Introduction to Sustainability 3
      CSUS 354 Water Resources Management 3
      ENT 205 Pests, Society, and Environment 3
      EPI 390 Disease in Society: Introduction to Epidemiology and Public Health 4
      FOR 372 Ecological Monitoring and Data Analysis 3
      FOR 411 Fire and Environmental Quality 3
      HNF 150 Introduction to Human Nutrition 3
      HNF 385 Public Health Nutrition 3
      MC 337 Global Public Health 4
      OST 402 Introduction to Global Health 3
      PH 101 Introduction to Public Health 3
PART I – NEW PROGRAMS AND PROGRAM CHANGES

PHL  453  Ethical Issues in Global Public Health    3
REL  210  Religion and the Environment     3
STT  224  Introduction to Probability and Statistics for Ecologists  3
STT  464  Statistics for Biologists     3
4. Complete one of the following courses (3 credits):
   ANP  370  Culture, Health, and Illness     3
   GEO  435  Geography of Health and Disease  3

Effective Fall 2024.

4. Change the name of the **Minor in Geography** to **Human-Environment and Economic Geography** in the Department of Geography, Environment, and Spatial Sciences.

No new students are to be admitted to the Minor in Geography effective Fall 2024. No students are to be readmitted to the Minor in Geography effective Fall 2024. Effective Spring 2029, coding for the Minor in Geography will be discontinued and the program will no longer be available in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the minor prior to Fall 2024 will be awarded a Minor in Geography in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the minor Fall 2024 and forward will be awarded a Minor in Human-Environment and Economic Geography in the Department of Geography, Environment, and Spatial Sciences.

Effective Fall 2024.

5. Change the requirements for the **Minor in Human-Environment and Economic Geography** in the Department of Geography, Environment, and Spatial Sciences.

a. Under the heading **Minor in Human Environment and Economic Geography**, replace the entire entry with the following:

1. Complete one of the following courses:
   GEO  113  Introduction to Economic Geography   3
   GEO  151  Introduction to Human Geography    3
   GEO  204  World Regional Geography   3
   GEO  214  Geography of Drugs    3
   GEO  215  Sports Geography   3
   GEO  235  Geography of Environment and Health   3

2. Complete a minimum of 9 credits from the following courses:
   GEO  410  Geography of Food and Agriculture   3
   GEO  413  Urban Geography    3
   GEO  414  Transportation Systems and Sustainable Cities   3
   GEO  435  Geography of Health and Disease    3
   GEO  436  Spatial Analysis of Populations   3
   GEO  440  Geopolitics   3
   GEO  441  Cultural Geography   3
   GEO  453  Metropolitan Environments: Urban Forms and Land Uses   3

3. Complete an additional minimum of 3 credits from any GEO electives.

Effective Fall 2024.
6. Change the name of the Minor in Climate Science to Physical Environment and Climate in the Department of Geography, Environment, and Spatial Sciences.

No new students are to be admitted to the Minor in Climate Science effective Fall 2024. No students are to be readmitted to the Minor in Climate Science effective Fall 2024. Effective Spring 2029, coding for the Minor in Climate Science will be discontinued and the program will no longer be available in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the minor prior to Fall 2024 will be awarded a Minor in Climate Science in the Department of Geography, Environment, and Spatial Sciences. Effective Spring 2029, coding for the Minor in Climate Science will be discontinued and the program will no longer be available in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the minor Fall 2024 and forward will be awarded a Minor in Physical Environment and Climate in the Department of Geography, Environment, and Spatial Sciences.

Effective Fall 2024.

7. Change the requirements for the Minor in Physical Environment and Climate in the Department of Geography, Environment, and Spatial Sciences.

   a. Under the heading Minor in Physical Environment and Climate, replace the entire entry with the following:

   1. Complete one of the following courses:
      GEO 201 Introduction to Plant Geography 3
      GEO 203 Introduction to Meteorology 3
      GEO 206 Physical Geography 3
   2. Complete a minimum of 9 credits from the following courses:
      GEO 206L Physical Geography Laboratory 2
      GEO 302 Climates of the World 3
      GEO 303 Severe and Hazardous Weather 3
      GEO 306 Environmental Geomorphology 3
      GEO 402 Agricultural Climatology 3
      GEO 403 Dynamic Meteorology (W) 3
      GEO 405 Weather Analysis and Forecasting 4
      GEO 407 Regional Geomorphology of the United States 3
      GEO 409 Global Climate Change and Variability 3
      GEO 411 Stream Systems and Landforms 3
   3. Complete an additional minimum of 3 credits from any GEO electives.

Effective Fall 2024.

8. Change the name of the Bachelor of Arts degree in Human Geography to Geography in the Department of Geography, Environment, and Spatial Sciences.

   No new students are to be admitted to the Bachelor of Arts Degree in Human Geography effective Fall 2024. No students are to be readmitted to the Bachelor of Arts Degree in Human Geography effective Fall 2024. Effective Spring 2029, coding for the Bachelor of Arts Degree in Human Geography will be discontinued and the program will no longer be available in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the bachelor's degree prior to Fall 2024 will be awarded a Bachelor of Arts Degree in Human Geography in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the bachelor's degree Fall 2024 and forward will be awarded a Bachelor of Arts Degree in Geography in the Department of Geography, Environment, and Spatial Sciences.

Effective Fall 2024.

9. Change the requirements for the Bachelor of Arts Degree in Geography in the Department of Geography, Environment, and Spatial Sciences.

   a. Under the heading Requirements for the Bachelor of Arts Degree in Geography, replace the entire entry with the following:

   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 Arts degree in Geography.

   The University's Tier II writing requirement for the Geography major is met by completing Geography 480. That course is referenced in item 3. below.
PART I – NEW PROGRAMS AND PROGRAM CHANGES

2. The requirements of the College of Social Science for the Bachelor of Arts degree. The Experiential Learning requirement is satisfied with a minimum numeric grade of 2.0 in GEO 480.

3. The following courses with a minimum 2.0 grade-point average across all attempted GEO courses (minimum of 30 credits):
   a. Complete a minimum of 12 credits from the following courses:
      - GEO 113 Introduction to Economic Geography 3
      - GEO 151 Introduction to Human Geography 3
      - GEO 201 Introduction to Plant Geography 3
      - GEO 203 Introduction to Meteorology 3
      - GEO 204 World Regional Geography 3
      - GEO 206 Physical Geography 3
      - GEO 206L Physical Geography Laboratory 2
      - GEO 208 Physical Geography of the National Parks 2
      - GEO 211 Environmental Policy and Practice 3
      - GEO 214 Geography of Drugs 3
      - GEO 215 Sports Geography 3
      - GEO 221 Introduction to Geographic Information 3
      - GEO 221L Introduction to Geographic Information Laboratory 1
      - GEO 235 Geography of Environment and Health 3
      - GEO 286 Undergraduate Research in Geography 3
   b. The following course (3 credits):
      - GEO 480 Undergraduate Seminar in Geography (W) 3
   c. Complete an additional minimum of 15 credits from any GEO course at the 300-level or 400-level.

Students are encouraged to complete a first-year seminar such as UGS 110, as well as an internship experience, which can apply as GEO 498 when approved by the student’s academic advisor. Students planning to complete a graduate degree in geography are encouraged to complete GEO 113, GEO 151, GEO 206, GEO 221, and GEO 363.

Effective Fall 2024.

10. Change the name of the Bachelor of Science degree in Environmental Geography to Geography in the Department of Geography, Environment, and Spatial Sciences.

No new students are to be admitted to the Bachelor of Science Degree in Environmental Geography effective Fall 2024. No students are to be readmitted to the Bachelor of Science Degree in Environmental Geography effective Fall 2024. Effective Spring 2029, coding for the Bachelor of Science Degree in Environmental Geography will be discontinued and the program will no longer be available in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the bachelor’s degree prior to Fall 2024 will be awarded a Bachelor of Science Degree in Environmental Geography in the Department of Geography, Environment, and Spatial Sciences. Students admitted to the bachelor’s degree Fall 2024 and forward will be awarded a Bachelor of Science Degree in Geography in the Department of Geography, Environment, and Spatial Sciences.

Effective Fall 2024.
11. Request to change the requirements for the Bachelor of Science Degree in Geography in the Department of Geography, Environment, and Spatial Sciences.

The concentrations in the Bachelor of Science degree in Geography 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 Arts Degree in Geography, replace the entire entry with the following:

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 Geography.

The University’s Tier II writing requirement for the Geography major is met by completing Geography 480. That course is referenced in item 3. below.

2. The requirements of the College of Social Science for the Bachelor of Arts degree. The Experiential Learning requirement is satisfied with a minimum numeric grade of 2.0 in GEO 480. The STEM requirement for the College of Social Science is met by completion of 12 credits as noted below.

3. The following courses with a minimum 2.0 grade-point average across all attempted GEO courses (minimum of 30 credits):

   a. Complete a minimum of 12 credits from the following courses:

   GEO 113 Introduction to Economic Geography  3
   GEO 151 Introduction to Human Geography  3
   GEO 201 Introduction to Plant Geography  3
   GEO 203 Introduction to Meteorology  3
   GEO 204 World Regional Geography  3
   GEO 206 Physical Geography  3
   GEO 206L Physical Geography Laboratory  2
   GEO 208 Physical Geography of the National Parks  2
   GEO 211 Environmental Policy and Practice  3
   GEO 214 Geography of Drugs  3
   GEO 215 Sports Geography  3
   GEO 221 Introduction to Geographic Information  3
   GEO 221L Introduction to Geographic Information Laboratory  1
   GEO 235 Geography of Environment and Health  3
   GEO 286 Undergraduate Research in Geography  3

   b. Complete a minimum of 12 credits from one of the following concentrations:

   **Earth Observation and Geospatial Analytics**
   FOR 372 Ecological Monitoring and Data Analysis  3
   FOR 419 Applications of Geographic Information Systems to Natural Resources Management  4
   GEO 324 Remote Sensing of the Environment  4
   GEO 325 Geographic Information Systems  3
   GEO 326 Cartographic Design and Production  4
   GEO 363 Introduction to Quantitative Methods for Geographers  3
   GEO 424 Advanced Remote Sensing  4
   GEO 425 Problems in Geographic Information Science (W)  3
   GEO 426 Thematic Cartography  4
   GEO 428 Digital Terrain Analysis  3
   GEO 429 Programming with Spatial Data  3

   **Human-Environment, and Economic Geography**
   GEO 410 Geography of Food and Agriculture  3
   GEO 413 Urban Geography  3
   GEO 414 Transportation Systems and Sustainable Cities  3
   GEO 435 Geography of Health and Disease  3
   GEO 436 Spatial Analysis of Populations  3
   GEO 440 Geopolitics  3
   GEO 441 Cultural Geography  3
   GEO 453 Metropolitan Environments: Urban Forms and Land Uses  3
### Physical Environment and Climate

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 302</td>
<td>Climates of the World</td>
<td>3</td>
</tr>
<tr>
<td>GEO 303</td>
<td>Severe and Hazardous Weather</td>
<td>3</td>
</tr>
<tr>
<td>GEO 306</td>
<td>Environmental Geomorphology</td>
<td>3</td>
</tr>
<tr>
<td>GEO 402</td>
<td>Agricultural Climatology</td>
<td>3</td>
</tr>
<tr>
<td>GEO 403</td>
<td>Dynamic Meteorology (W)</td>
<td>3</td>
</tr>
<tr>
<td>GEO 405</td>
<td>Weather Analysis and Forecasting</td>
<td>4</td>
</tr>
<tr>
<td>GEO 407</td>
<td>Regional Geomorphology of the United States</td>
<td>3</td>
</tr>
<tr>
<td>GEO 409</td>
<td>Global Climate Change and Variability</td>
<td>3</td>
</tr>
<tr>
<td>GEO 411</td>
<td>Stream Systems and Landforms</td>
<td>3</td>
</tr>
</tbody>
</table>

c. Complete the following course:
   - GEO 480 Undergraduate Seminar in Geography (W) 3

d. Complete an additional minimum of 3 credits from any GEO electives at the 300-level or 400-level.

Students are encouraged to complete a first-year seminar such as UGS 110, as well as an internship experience, which can apply as GEO 498 when approved by the student’s academic advisor. Students planning to complete a graduate degree in geography are encouraged to complete GEO 113, GEO 151, GEO 206, GEO 221, and GEO 363.

e. Complete 12 credits in Science, Technology, Engineering, and Mathematics (STEM) courses from the following courses. Fulfillment of this requirement satisfies the College of Social Science STEM Graduation Requirement for the Bachelor of Science degree. Courses used may not concurrently satisfy a University requirement.

1. Complete one of the following courses:
   - LB 118 Calculus I 4
   - MTH 124 Survey of Calculus I 3
   - MTH 132 Calculus I 3
   - MTH 152H Honors Calculus I 3

2. Complete a minimum of 9 credits from the following courses:
   - AST 101 The Celestial Clockworks 1
   - AST 207 The Science of Astronomy 3
   - AST 208 Planets and Telescopes 3
   - BE 101 Introduction to Biosystems Engineering 1
   - BE 230 Engineering Analysis of Biological Systems 3
   - BS 161 Cell and Molecular Biology 3
   - BS 162 Organismal and Population Biology 3
   - BS 171 Cell and Molecular Biology Laboratory 2
   - BS 172 Organismal and Population Biology Laboratory 2
   - CE 221 Statics 3
   - CE 273 Civil and Environmental Engineering Measurements 2
   - CE 274 Graphics for Civil and Environmental Engineers 1
   - CE 275 GIS for Civil and Environmental Engineers 1
   - CEM 141 General Chemistry 4
   - CEM 142 General and Inorganic Chemistry 3
   - CEM 143 Survey of Organic Chemistry 3
   - CEM 151 General and Descriptive Chemistry 4
   - CEM 152 Principles of Chemistry 3
   - CEM 161 Chemistry Laboratory I 1
   - CEM 162 Chemistry Laboratory II 1
   - CEM 262 Quantitative Analysis 3
   - CHE 201 Material and Energy Balances 3
   - CHE 210 Modeling and Analysis of Transport Phenomena 3
   - CMSE 201 Computational Modeling and Data Analysis I 4
   - CMSE 202 Computational Modeling and Data Analysis II 4
   - CSE 102 Algorithmic Thinking and Programming 3
   - CSE 231 Introduction to Programming I 4
   - CSS 101 Introduction to Crop Science 3
   - CSS 210 Fundamentals of Soil Science 3
   - CSUS 200 Introduction to Sustainability 3
### PART I – NEW PROGRAMS AND PROGRAM CHANGES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ECE 101</td>
<td>Introduction to Electrical and Computer Engineering</td>
<td>1</td>
</tr>
<tr>
<td>ECE 201</td>
<td>Circuits and Systems I</td>
<td>3</td>
</tr>
<tr>
<td>ECE 202</td>
<td>Circuits and Systems II</td>
<td>3</td>
</tr>
<tr>
<td>ECE 203</td>
<td>Electric Circuits and Systems Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ECE 230</td>
<td>Digital Logic Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>ECE 280</td>
<td>Electrical Engineering Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EGR 100</td>
<td>Introduction to Engineering Design</td>
<td>2</td>
</tr>
<tr>
<td>EGR 102</td>
<td>Introduction to Engineering Modeling</td>
<td>2</td>
</tr>
<tr>
<td>ENE 280</td>
<td>Principles of Environmental Engineering and Science</td>
<td>3</td>
</tr>
<tr>
<td>ENT 205</td>
<td>Pests, Society and Environment</td>
<td>3</td>
</tr>
<tr>
<td>FOR 101</td>
<td>Michigan’s Forests</td>
<td>3</td>
</tr>
<tr>
<td>FOR 202</td>
<td>Introduction to Forestry</td>
<td>3</td>
</tr>
<tr>
<td>FOR 204</td>
<td>Forest Vegetation</td>
<td>3</td>
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<tr>
<td>FOR 222</td>
<td>Forestry Field Methods</td>
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<tr>
<td>FW 101</td>
<td>Fundamentals of Fisheries and Wildlife Ecology and Management</td>
<td>3</td>
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<tr>
<td>FW 110</td>
<td>Conservation and Management of Marine Resources</td>
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</tr>
<tr>
<td>FW 181</td>
<td>Introduction to Science, Technology, the Environment, and Public Policy</td>
<td>3</td>
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<tr>
<td>FW 207</td>
<td>Great Lakes: Biology and Management</td>
<td>3</td>
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<tr>
<td>GLG 200</td>
<td>Introduction to Environmental Science and Global Change</td>
<td>4</td>
</tr>
<tr>
<td>GLG 201</td>
<td>The Dynamic Earth</td>
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<tr>
<td>ME 201</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>ME 222</td>
<td>Mechanics of Deformable Solids</td>
<td>3</td>
</tr>
<tr>
<td>ME 280</td>
<td>Graphic Communications</td>
<td>2</td>
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<tr>
<td>MSE 200</td>
<td>Materials and Society</td>
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<tr>
<td>MSE 250</td>
<td>Materials Science and Engineering</td>
<td>3</td>
</tr>
<tr>
<td>MSE 260</td>
<td>Electronic, Magnetic, Thermal, and Optical Properties of Materials</td>
<td>3</td>
</tr>
<tr>
<td>MTH 133</td>
<td>Calculus II</td>
<td>4</td>
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<tr>
<td>MTH 234</td>
<td>Multivariable Calculus</td>
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<tr>
<td>MTH 235</td>
<td>Differential Equations</td>
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<tr>
<td>PHY 183</td>
<td>Physics for Scientists and Engineers I</td>
<td>4</td>
</tr>
<tr>
<td>PHY 184</td>
<td>Physics for Scientists and Engineers II</td>
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<tr>
<td>PHY 191</td>
<td>Physics Laboratory for Scientists, I</td>
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<tr>
<td>PHY 192</td>
<td>Physics Laboratory for Scientists, II</td>
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<tr>
<td>PHY 215</td>
<td>Thermodynamics and Modern Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHY 231</td>
<td>Introductory Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHY 232</td>
<td>Introductory Physics II</td>
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<td>PHY 251</td>
<td>Introductory Physics Laboratory I</td>
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<td>PHY 252</td>
<td>Introductory Physics Laboratory II</td>
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<tr>
<td>PLB 105</td>
<td>Plant Biology</td>
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<tr>
<td>PLB 106</td>
<td>Plant Biology Laboratory</td>
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<tr>
<td>PLB 203</td>
<td>Biology of Plants</td>
<td>4</td>
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<tr>
<td>PLB 218</td>
<td>Plants of Michigan</td>
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<tr>
<td>STT 180</td>
<td>Introduction to Data Science</td>
<td>4</td>
</tr>
<tr>
<td>STT 200</td>
<td>Statistical Methods</td>
<td>3</td>
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<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>
</tbody>
</table>

Effective Fall 2024.
12. Change the administrative responsibility of the Bachelor of Arts degree in Interdisciplinary Studies in Social Science: Social Science Education from the College of Social Science to the Department of History.

Effective Fall 2024.

13. Change the name of the Bachelor of Arts degree in Interdisciplinary Studies in Social Science: Social Science Education to History: Social Studies Education in the Department of History. The Teacher Education Council (TEC) approved this request at its January 22, 2024 meeting.

No new students are to be admitted to the Bachelor of Arts degree in Interdisciplinary Studies in Social Science: Social Science Education effective Fall 2024. No students are to be readmitted to the Bachelor of Arts degree in Interdisciplinary Studies in Social Science: Social Science Education effective Fall 2024. Effective Fall 2024, coding for the Bachelor of Arts degree in Interdisciplinary Studies in Social Science: Social Science Education will be discontinued and the program will no longer be available in the College of Social Science. Students admitted to the major prior to Fall 2024 will be awarded a Bachelor of Arts degree in Interdisciplinary Studies in Social Science: Social Science Education in the College of Social Science. Students admitted to the major Fall 2024 and forward will be awarded a Bachelor of Arts degree in History: Social Studies Education in the Department of History.

Effective Summer 2024.

14. Change the requirements for the Bachelor of Arts degree in History: Social Studies Education in the Department of History. The Teacher Education Council (TEC) approved this request at its January 22, 2024 meeting.

a. Under the heading Requirements for the Bachelor of Arts Degree in History: Social Studies Education make the following changes:

1) Replace item 3. b. with the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAH 201</td>
<td>United States and the World (D)</td>
<td>4</td>
</tr>
<tr>
<td>IAH 202</td>
<td>Europe and the World (I)</td>
<td>4</td>
</tr>
<tr>
<td>IAH 203</td>
<td>Latin America and the World (I)</td>
<td>4</td>
</tr>
<tr>
<td>IAH 204</td>
<td>Asia and the World (I)</td>
<td>4</td>
</tr>
<tr>
<td>IAH 205</td>
<td>Africa and the World (I)</td>
<td>4</td>
</tr>
<tr>
<td>IAH 210</td>
<td>Middle East and the World (I)</td>
<td>4</td>
</tr>
</tbody>
</table>

2) In item 3. d. add the following course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HST 489</td>
<td>Seminar in Digital History (W)</td>
<td>3</td>
</tr>
</tbody>
</table>

3) Delete items 3. e. and 3. f. and add the following new item 3. e.:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEP 240</td>
<td>Introduction to Exceptional Learners</td>
<td>3</td>
</tr>
<tr>
<td>TE 101</td>
<td>Social Foundations of Justice and Equity in Education</td>
<td>3</td>
</tr>
<tr>
<td>TE 102</td>
<td>Pedagogy and Politics of Justice and Equity in Education</td>
<td>3</td>
</tr>
<tr>
<td>TE 150</td>
<td>Reflections on Learning</td>
<td>3</td>
</tr>
<tr>
<td>TE 302</td>
<td>Literacy and Adolescent Learners in School and Community Contexts</td>
<td>3</td>
</tr>
<tr>
<td>TE 325</td>
<td>Clinical Experience in Social Studies Education I</td>
<td>3</td>
</tr>
<tr>
<td>TE 341</td>
<td>Teaching and Learning of (Bi)Multilingual Learners</td>
<td>3</td>
</tr>
<tr>
<td>TE 425</td>
<td>Clinical Experience in Social Studies Education II</td>
<td>3</td>
</tr>
<tr>
<td>TE 426</td>
<td>Seminar in Social Studies Education I</td>
<td>3</td>
</tr>
<tr>
<td>TE 427</td>
<td>Seminar in Social Studies Education II</td>
<td>3</td>
</tr>
<tr>
<td>TE 428</td>
<td>Student Teaching Internship in Social Studies Education</td>
<td>6</td>
</tr>
</tbody>
</table>

Effective Fall 2024.
15. Change the name of the Bachelor of Arts degree in Child Development: Birth to Kindergarten and Special Education to Child Development and Early Childhood Education: Birth to Kindergarten and Special Education in the Department of Human Development and Family Studies. The Teacher Education Council (TEC) approved this request at its January 22, 2024 meeting.

No new students are to be admitted to the Bachelor of Arts degree in Child Development: Birth to Kindergarten and Special Education effective Summer 2024. No students are to be readmitted to the Bachelor of Arts degree in Child Development: Birth to Kindergarten and Special Education effective Fall 2024. Effective Summer 2024, coding for the Bachelor of Arts degree in Child Development: Birth to Kindergarten and Special Education will be discontinued and the program will no longer be available in the Department of Human Development and Family Studies. Students admitted to the major prior to Summer 2024 will be awarded a Bachelor of Arts degree in Child Development: Birth to Kindergarten and Special Education in the Department of Human Development and Family Studies. Students admitted to the major Summer 2024 and forward will be awarded a Bachelor of Arts degree in Child Development and Early Childhood Education: Birth to Kindergarten and Special Education in the Department of Human Development and Family Studies.

Effective Summer 2024.

16. Change the requirements for the Bachelor of Arts degree in Child Development and Early Childhood Education: Birth to Kindergarten and Special Education in the Department of Human Development and Family Studies. The Teacher Education Council (TEC) approved this request at its January 22, 2024 meeting.

a. Under the heading Requirements for the Bachelor of Arts Degree in Child Development and Early Childhood Education: Birth to Kindergarten and Special Education, make the following changes in item 3.:

(1) Delete the following course:
CEP 451 Models of Special Education Administration and Services 3

Add the following course:
CEP 351 Special Education Law and Policies 3

(2) Delete the following course:
TE 301 Children’s Literacy Development (W) 3

Add the following course:
TE 301A Children's Literacy Development PK-3 (W) 3

Effective Summer 2024.

17. Change the name of the Bachelor of Arts degree in Human Capital and Society to Human Resources and Labor Relations in the Department of Resources and Labor Relations.

No new students are to be admitted to the Bachelor of Arts degree in Human Capital and Society effective Summer 2024. No students are to be readmitted to the Bachelor of Arts degree in Human Capital and Society effective Fall 2024. Effective Summer 2024, coding for the Bachelor of Arts degree in Human Capital and Society will be discontinued and the program will no longer be available in the Department of Human Resources and Labor Relations. Students admitted to the major prior to Summer 2024 will be awarded a Bachelor of Arts degree in Human Capital and Society in the Department of Human Resources and Labor Relations. Students admitted to the major Summer 2024 and forward will be awarded a Bachelor of Arts degree in Human Resources and Labor Relations in the Department of Human Labor and Relations.

Effective Summer 2024.
18. Change the requirements for the Bachelor of Arts degree in Human Resources and Labor Relations in the Department of Human Resources and Labor Relations.

a. Under the heading Requirements for the Bachelor of Arts Degree in Human Resources and Labor Relations, make the following changes in item 3. d.:

(1) Under General add the following course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRLR 490</td>
<td>Special Topics in Human Resources and Labor Relations</td>
<td>3</td>
</tr>
</tbody>
</table>

Effective Summer 2024.

19. Change the requirements for the Bachelor of Arts degree in Political Science (General) in the Department of Political Science.

a. Under the heading Requirements for the Bachelor of Arts Degree in Political Science (General) make the following changes:

(1) Under item 3. a. change the credits of ‘PLS 200’ from ‘4’ to ‘3’.

(2) Under item 3. b. change the credits of ‘PLS 201’ from ‘4’ to ‘3’.

(3) Under item 3. d. change the credits of ‘PLS 422 and PLS 481’ from ‘4’ to ‘3’.

(4) Under item 3. f. change ‘Complete a minimum of four’ to ‘Complete a minimum of five’ and change the credits of ‘PLS 422 and PLS 481’ from ‘4’ to ‘3’.

(5) Under item 3. g., International Politics, delete the following course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLS 362</td>
<td>American Foreign Policy and National Security</td>
<td>3</td>
</tr>
</tbody>
</table>

Effective Fall 2024.

20. Change the requirements for the Bachelor of Arts degree in Political Science-Prelaw in the Department of Political Science.

a. Under the heading Requirements for the Bachelor of Arts Degree in Political Science-Prelaw make the following changes:

(1) Under item 3. a. change the credits of ‘PLS 200’ from ‘4’ to ‘3’.

(2) Under item 3. b. change the credits of ‘PLS 201’ from ‘4’ to ‘3’.

(3) Under item 3. e. change the credits of ‘PLS 422 and PLS 481’ from ‘4’ to ‘3’.

(4) Under item 3. g. change ‘Complete a minimum of three’ to ‘Complete a minimum of four’ and change the credits of ‘PLS 422 and PLS 481’ from ‘4’ to ‘3’.

(5) Under item 3. h., International Politics, delete the following course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLS 362</td>
<td>American Foreign Policy and National Security</td>
<td>3</td>
</tr>
</tbody>
</table>

Effective Fall 2024.
21. Change the requirements for the **Bachelor of Arts** degree in **Public Policy** in the Department of Political Science.

   a. Under the heading **Requirements for the Bachelor of Arts Degree in Public Policy** make the following changes:

   (1) In item 3. a. (1) change the credits of ‘PLS 200’ from ‘4’ to ‘3’.

   (2) In item 3. a. (2) change the credits of ‘PLS 201’ from ‘4’ to ‘3’.

   (3) In item 3. a. (5) change the requirement from ‘Complete a minimum of three’ to ‘Complete a minimum of four’ and delete the following courses:

```
    PLS 331 Political Parties and Interest Groups          3
    PLS 362 American Foreign Policy and National Security  3
```

   (4) In item 3. a. (6) change the credits of ‘PLS 422 and PLS 481’ from ‘4’ to ‘3’.

   **Effective Fall 2024.**

22. Change the requirements for the **Bachelor of Arts** degree in **World Politics** in the Department of Political Science.

   a. Under the heading **Requirements for the Bachelor of Arts Degree in World Politics** make the following changes:

   (1) Under item 3. a. (1) change the credits of ‘PLS 200’ from ‘4’ to ‘3’.

   (2) Under item 3. b. (2) change the credits of ‘PLS 201’ from ‘4’ to ‘3’.

   (3) Under item 3. a. (4) change ‘Complete a minimum of four’ to ‘Complete a minimum of five’ and delete the following course:

```
    PLS 362 American Foreign Policy and National Security  3
```

   (4) Under item 3. a. (5) change the credits of ‘PLS 422 and PLS 481’ from ‘4’ to ‘3’.

   **Effective Fall 2024.**

23. Change the requirements for the **Bachelor of Arts** degree in **Psychology** in the Department of Psychology.

   a. Under the heading **Requirements for the Bachelor of Arts Degree in Psychology** make the following changes:

   (1) In item 4. a. add the following course:

```
    MTH 116 College Algebra and Trigonometry           5
```

   **Effective Fall 2024.**
24. Change the requirements for the Bachelor of Science degree in Psychology in the Department of Psychology.

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

   (1) In item 5. a. add the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS 162</td>
<td>Organismal and Population Biology</td>
<td>3</td>
</tr>
<tr>
<td>BS 182H</td>
<td>Honors Organismal and Population Biology</td>
<td>3</td>
</tr>
<tr>
<td>LB 145</td>
<td>Biology II: Cellular and Molecular Biology</td>
<td>5</td>
</tr>
</tbody>
</table>

   Effective Fall 2024.
PART II - NEW COURSES

DEPARTMENT OF ACCOUNTING AND INFORMATION SYSTEMS

ITM 843   Career Management
Spring of every year. 1(1-0) R: Open to graduate students in the Business Data Science and Analytics Major or approval of department.
Career development theory through experiential and skill-based learning--focused on the unique requirements of the Data Science and Analytics industry. Active practice of career management, networking, negotiation, goal setting, and development planning skills.
Offered first half of semester.
Effective Spring Semester 2024

ITM 887   Analytics Proseminar
Spring of every year. 1(1-0) R: Open to graduate students in the Business Data Science and Analytics Major or approval of department.
External speaker perspectives and/or lectures on topics related to the field of business data science and analytics.
Effective Spring Semester 2025

COLLEGE OF ARTS AND LETTERS

XA 111   Introduction to Accessibility in Experience Architecture
Fall of every year. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course. RB: Completion of Tier I Writing Requirement
Introduction to experience architecture and humanities-focused understanding of accessibility and disability theories and practices. Interdisciplinary introduction to principles and products to improve accessibility. Discussion of the ethics of human and technology interactions for accessibility.
SA: AL 111
Effective Spring Semester 2024

XA 291   Special Topics
Fall of every year. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. P: (XA 242) and completion of Tier I writing requirement R: Open to students in the Experience Architecture Major.
Researching and designing special topics in Experience Architecture. Topics vary.
Effective Spring Semester 2024

XA 491   Special Topics
Fall of every year. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. P: (XA 242) and completion of Tier I writing requirement R: Open to undergraduate students in the Experience Architecture Major and open to graduate students.
Researching and designing advanced special topics in Experience Architecture. Topics vary.
Effective Fall Semester 2024

DEPARTMENT OF BIOSYSTEMS AND AGRICULTURAL ENGINEERING

BE 475 International Studies in Biosystems Engineering
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department; application required.
REINSTATEMENT Study abroad emphasizing biosystems and agricultural engineering issues affecting food, energy, environment, and health 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
DEPARTMENT OF COMMUNICATION

COM 903  Advanced Research Methods in Communication
Fall of every year. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. P: COM 901 and COM 902 or approval of department RB: COM 801 and COM 802 R: Open to doctoral students.
Advanced communication methods including but not limited to computational communication, network analysis, and communication neuroscience.
Effective Fall Semester 2024

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CSE 801C  Introduction to Python Programming
Fall of every year. Spring of every year. 3(2-2) R: Not open to students in the Department of Computer Science and Engineering. Not open to students with credit in CSE 231.
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

DEPARTMENT OF EARTH AND ENVIRONMENTAL SCIENCES

GLG 200  Introduction to Environmental Science and Global Change
Fall of every year. Spring of every year. 4(3-2)
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 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 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.
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)
Introduction to natural resources in the context of the coming energy transition. Overview of the key concepts, challenges, and opportunities associated with natural resource origin, management, energy transition, and environmental sustainability.
Effective Fall Semester 2024
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)) or (LB 171 and LB 171L)) and (STT 200 or STT 201 or STT 231)
Introduction to field methods in enviro sciences, conceptual design, sample collection, and analysis. 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 (CEM 142 or CEM 152 or CEM 182H or LB 118) and (PHY 174 or PHY 184 or PHY 222 or PHY 232 or PHY 294H or LB 274) R: Not open to freshmen. Not open to students with credit in GLG 444.
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 118) and (PHY 174 or PHY 184 or PHY 222 or PHY 232 or PHY 294H or LB 274) and (MTH 124 or MTH 132 or MTH 152H or LB 118) R: Not open to freshmen. Not open to students with credit in GLG 445.
Effective Spring Semester 2024

GLG 828  Biogeochemical Cycles Through Time
Fall of even years. 3(3-0) RB: Introductory chemistry or equivalent
Introduction to chemical tracers for elucidating biogeochemical process on multiple timescales. 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  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) Not open to students with credit in GLG 444.
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.
Effective Spring Semester 2024

GLG 845  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) Not open to students with credit in GLG 445.
Surface and internal properties and processes of planets and their natural satellites, asteroids, 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.
Effective Spring Semester 2024
PART II – NEW COURSES

DEPARTMENT OF ECONOMICS

EC 423   Model-Based Data Analytics
Fall of every year. 3(3-0) P: EC 420
Modern statistical learning and predictive modeling, applications and analysis of economic models and data, regression analysis, classification.
Effective Fall Semester 2024

DEPARTMENT OF FISHERIES AND WILDLIFE

FW 102   Succeeding in Fisheries and 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.
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.
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

DEPARTMENT OF HISTORY

HST 366   Modern Southeast Asia
Spring of even years. 3(3-0)
Effective Fall Semester 2024

SCHOOL OF HUMAN RESOURCES AND LABOR RELATIONS

HRLR 490   Special Topics in Human Resources and Labor Relations
Spring of every year. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. P: HRLR 201 or approval of department
Special issues in human resources and labor relations.
Effective Fall Semester 2024

SCHOOL OF JOURNALISM

JRN 429   Social Media News and Information
Fall of every year. 3(3-0) P: Completion of Tier I Writing Requirement R: Open to undergraduate students. Not open to students with credit in JRN 821.
New technologies relevant to journalism. Assessing impact on the field. Use of these technologies in their work.
Effective Fall Semester 2024
MSU COLLEGE OF LAW

LAW 501P  State and Local Taxation
On Demand. 0 to 6 credits. R: Open to students in the MSU College of Law.
State and local taxation in the United States, with special emphasis on constitutional
limitations and the mechanics of taxing income, sales, and property.
SA: LAW 572B
Effective Spring Semester 2024

LAW 534A  Media Law
On Demand. 0 to 6 credits. R: Open to Law students in the MSU College of Law.
Introduction to the law that applies to the media as it gathers and disseminates information
in a democratic society.
Effective Spring Semester 2024

LAW 540F  Law and the Family in the Digital Age
On Demand. 0 to 6 credits. RB: ((LAW 541E or concurrently) or (LAW 541F or concurrently)) or Prior
coursework in Family Law R: Open to students in the MSU College of Law.
Recent changes in society and the increasing use of technology like smart devices, social
media, and surveillance technology has changed and shaped family law. Examine how law
is responding to these changes or failing to respond and the consequences for one of the
foundational institutions of society.
Effective Spring Semester 2024

LAW 593M  Shareholder Democracy
On Demand. 0 to 6 credits. P: LAW 500M or concurrently R: Open to students in the MSU College of
Law.
Legal issues related to increasing shareholder engagement in corporate decision-making.
Effective Spring Semester 2024

DEPARTMENT OF MATHEMATICS

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)
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.
REINSTATEMENT  Continuation of MTH 829. Topics include Phragmen-Lindelof method, Analytic continuation
and Riemann surfaces, Hadamard's theorem, Runge's theorem, Weierstrass factorization
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
**COLLEGE OF NURSING**

NUR 914 Biostatistics for the APRN
Fall of every year. Spring of every year. 3(3-0)
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 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.
Aspects of Osteopathic care that 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

**DEPARTMENT OF PHILOSOPHY**

PHL 482 Topics in Ethics in Science
Spring of every year. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. RB: Completion of one IAH course or one philosophy course
Ethical issues in scientific research. Topics such as human subject research, the use of animals in research, dangerous research, community-based research.
Effective Fall Semester 2024

**DEPARTMENT OF PSYCHOLOGY**

PSY 399 Psychology Service and Engagement
On Demand. 1 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P: PSY 101 or approval of department R: Approval of department.
Preparation and participation in service that supports domestic or international community needs. Reflection and application of psychological theory and research.
Effective Fall Semester 2024

**DEPARTMENT OF PUBLIC HEALTH (CS MOTT)**

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
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
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
PART II – NEW COURSES

DEPARTMENT OF RELIGIOUS STUDIES

REL 108   Black Religious Worlds  
Fall of even years. 3(3-0)  
Survey of Black religious expressions, beliefs, and communities, including, African traditional religions, Slave Religion, Black Christianity, Conjure, Hoodoo, Vodou, Islam, and Catholicism.  
Effective Fall Semester 2024

REL 411   Modern Jewish Thought (W)  
Spring of even years. 3(3-0) P: Completion of Tier I Writing Requirement R: Not open to freshmen or sophomores.  
REINSTATEMENT Representative Jewish thought from the Enlightenment to the present.  
Effective Fall Semester 2024

DEPARTMENT OF TEACHER EDUCATION

TE 903   Social Justice Teacher Education: Pedagogy, Theory, and Practice  
Fall of every year. 3(3-0) P: TE 901 and TE 902 R: Open to doctoral students.  
Multiple epistemological, ontological, and pedagogical perspectives of a pedagogy of social justice teacher education; rationale for and design of courses, programs and other experiences for prospective and practicing teachers to develop practices that foster equity and justice; examining the politics of teaching and learning as a teacher educator.  
Effective Fall Semester 2024

DEPARTMENT OF WRITING, RHETORIC, AND CULTURES

WRA 308   Invention in Writing  
Fall of odd years. 3(3-0) P: (WRA 202 or concurrently) or (WRA 260 or concurrently) R: Open to students in the Professional and Public Writing Major or approval of department.  
REINSTATEMENT Theory and practice of invention and creative practices in professional and public writing. Strategies and theories for brainstorming, ideating, and innovating in civic and professional writing contexts. Orientation toward wide range of knowledges and approaches to knowledge-making and writing.  
SA: AL 308  
Effective Spring Semester 2024
PART III – COURSE CHANGES

COLLEGE OF ARTS AND LETTERS

AL 111   Introduction to Accessibility in the Humanities
Fall of every year. 1(1-0)
Introduction to humanities-focused understanding of accessibility and disability theories and practices. Interdisciplinary introduction to principles and products to improve accessibility. Discussion of the ethics of human and technology interactions for accessibility.
DELETE COURSE
Effective Fall Semester 2024

BIOLOGICAL SCIENCE PROGRAM

BS 182H   Honors Organismal and Population Biology
Fall of every year. 3(3-0) Interdepartmental with Plant Biology, 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 2024

BS 192H   Honors Organismal and Population Biology Laboratory
Fall of every year. 2(1-3) Interdepartmental with Plant Biology, 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 2024

THE ELI BROAD COLLEGE OF BUSINESS

BUS 491   Special Topics in Business
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to juniors or seniors in the Eli Broad College of Business and The Eli Broad Graduate School of Management and not open to students in the School of Hospitality Business. R: Open to undergraduate students in the Accounting major or in the Business - Admitted major or in the Finance Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major or approval of college.
Advanced study of interrelatedness of business functions not typically found in the business academic departments.
Effective Fall Semester 2024

MBA 845   Integrative Action Projects
Fall of every year. Spring of every year. 1 to 2 credits, 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to MBA students.
Multi-day intensive action-based learning experience in which students apply business theories and concepts to real business issues.
Effective Fall Semester 2023
DEPARTMENT OF CHEMICAL ENGINEERING AND MATERIALS SCIENCE

CHE 433  Process Design and Optimization I
Fall of every year. 4(6-0) 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 2024

DEPARTMENT OF EARTH AND ENVIRONMENTAL SCIENCES

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 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. 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 Summer Semester 2024

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 Summer Semester 2024

DEPARTMENT OF ECONOMICS

EC 425  Law and Economics (W)
Fall of every year. 3(3-0) Interdepartmental with Finance P: (EC 251H or EC 301) and Completion of Tier I Writing Requirement Application of economic analysis to the law. Property rights, takings, the Coase Theorem. The economics of regulation, crime and punishments, liability law, and public choice.
Effective Fall Semester 2024
DEPARTMENT OF EPIDEMIOLOGY AND BIOSTATISTICS

EPI 812  Causal Inference in Epidemiology: Foundations of Population Health  
Fall of every year. 3(3-0) P: EPI 810 P: EPI 810 or EPI 829 or approval of department RB: 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 Summer Semester 2024

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 Fall Semester 2024

DEPARTMENT OF FINANCE

FI 250  Careers in Finance  
Fall of every year. Spring of every year. 1(1-0) R: Open to sophomores or juniors in the Business-Admitted major or in the Finance Major or approval of department. R: Open to freshmen or sophomores or juniors in the Business - Admitted major and open to freshmen or sophomores or juniors in the Finance Major or approval of department.  
Exploration of the various specialty areas within the field of finance, including career options for new college graduates and employment trends. Understanding the minors offered to supplement the major, the student organizations that augment classroom learning, and the professional certifications desired by employers.  
Request the use of the Pass-No Grade (P-N) system.  
Effective Fall Semester 2024

DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION

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 Summer Semester 2024

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 2024
DEPARTMENT OF GEOGRAPHY, ENVIRONMENT, AND SPATIAL SCIENCES

GEO 208   Physical Geography of the National Parks  
Fall of odd years. On Demand. 2(2-0)  
Physical features such as geology, landforms, biota, and waters of United States and Canadian national parks, forests, seashores and lakeshores. Emphasis on formation and distribution.  
Effective Fall Semester 2024

GEO 211   Environmental Policy and Practice  
Fall of every year. Spring of every year. 3(3-0)  
Systematic study of environmental policy and resource management practices in the United States and the broader global context, emphasizing geographical and other social sciences perspectives.  
Effective Fall Semester 2024

GEO 286   Undergraduate Research in Geography  
Fall of even years. On Demand. 3(3-0)  
Supervised research on a topic or topics determined by the instructor. Applications of geographic tools and theory.  
Effective Fall Semester 2024

GEO 414   Geography of Transportation  Transportation Systems and Sustainable Cities  
Fall of odd years. Spring of odd years. 3(3-0) Interdepartmental with Urban Planning, Urban Planning Interdepartmental with Civil Engineering, Supply Chain Management, Urban Planning.  
Urban Planning P: GEO 113 RB: GEO 113  
Spatial principles of transportation. Theories of interaction, network structures, and location-allocation models. Role of transport and transport planning.  
Effective Fall Semester 2024

GEO 415   Location Theory and Land Use Analysis  
Fall of even years. 3(3-0) Interdepartmental with Urban Planning, Urban Planning P: GEO 113 or UP 201 RB: EC 201 or EC 202  
Classical and neoclassical, static and dynamic models of industrial location and spatial organization. Land rent theory. Central place theory. Multi-locational organization. Growth transmission.  
DELETE COURSE  
Effective Fall Semester 2024

DEPARTMENT OF HISTORY

HST 418   History and Art through Technology  History and Art through Technology (W)  
Fall of every year. 3(3-0) Interdepartmental with History of Art P: (HST 201 or HST 251 or HA 101 or HA 210) and completion of Tier I writing requirement P: Completion of Tier I Writing Requirement R: Not open to freshmen.  
Approaches in History and Art History to visual, material, textual, and other historical sources using digital technologies to explore a particular region, time period, or thematic topic.  
Effective Fall Semester 2024

DEPARTMENT OF HUMAN DEVELOPMENT AND FAMILY STUDIES

HDFS 138   Introduction to Financial Literacy  
Fall of every year. 2(1-0) R: Open to freshmen or sophomores. Not open to students with credit in HDFS 238.  
Design, develop, and integrate a comprehensive plan to achieve financial goals. Topics will have an immediate impact on everyday life to achieve financial freedom and success.  
Effective Fall Semester 2024
HDFS 812  Adolescence in the Family: Ecological Perspectives  
Adolescence and Emerging Adulthood in Ecological Context  
Spring of even years. 3(3-0)  
Ecological factors that influence family functioning and adolescent outcomes.  
SA: FCE 812  
Effective Fall Semester 2024

HDFS 847  Theories of the Family  
Spring of every year. 3(3-0) RB: HDFS 845  
Perspectives on the family. Relationships of theory, research, and practice.  
SA: FCE 847  
DELETE COURSE  
Effective Fall Semester 2024

SCHOOL OF HUMAN RESOURCES AND LABOR RELATIONS

HRLR 201  Human Capital and Society  Human Capital, Human Resources, and Labor Relations  
Fall of every year. Summer of every year. 3(3-0)  
Human capital and society from cultural, organizational, and worker perspectives.  
Interdisciplinary and professional aspects of human resources and labor relations.  
Effective Fall Semester 2024

HRLR 315  Research Methods and Analysis  
Fall of every year. Spring of every year. 3(3-0) P: STT 200 or STT 201  
Social science research methodology and analysis techniques as applied to human capital issues.  
Social science research methodology and analysis techniques as applied to human resources and labor relations issues.  
Effective Fall Semester 2024

HRLR 316  Economics of Human Capital  Economics of Human Capital and Human Resources  
Fall of every year. 3(3-0) P: EC 201  
Economic and strategic aspects of human capital analysis and development in organizations.  
Foundational economic concepts related to the labor market, individuals’ human capital investment decisions, and organization-level human resource considerations.  
Effective Fall Semester 2024

HRLR 420  Comparative Human Capital Systems  Comparative Human Resources and Labor Relations Systems  
Fall of every year. 3(3-0) P: HRLR 313 and (HRLR 201 or concurrently)  
Institutional networks and practices in human capital systems in selected countries. Labor and employment laws, employment relations, and human resources practices.  
Effective Fall Semester 2024

HRLR 465  Capstone in Human Capital and Society  Capstone in Human Resources and Labor Relations  
Fall of every year. Spring of every year. 3(3-0) P: (HRLR 201 and HRLR 315 and HRLR 313 and HRLR 314 and (HRLR 410 or concurrently)) and completion of Tier I writing requirement  
Comparative and international employment relations. Contemporary labor market trends and issues. High performance work systems and organizational effectiveness. Diverse stakeholders and worker outcomes.  
Effective Fall Semester 2024

HRLR 493  Internship in Human Capital and Society  Internship in Human Resources and Labor Relations  
Fall of every year. Spring of every year. Summer of every year. 3 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: HRLR 201 R: Open to undergraduate students in the College of Social Science or approval of school. Not open to students with credit in SSC 493.  
Faculty-guided internship in field related to human capital & society  
Request the use of the Pass-No Grade (P-N) system.  
Effective Fall Semester 2024
HRLR 494  Undergraduate Research in Human Capital and Society  
Undergraduate Research in Human Resources and Labor Relations  
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 8 credits in all enrollments for this course. P: HRLR 201 and (HRLR 315 or concurrently) R: Open to undergraduate students in the College of Social Science or approval of school. Not open to students with credit in SSC 494.  
Faculty-guided undergraduate research in disciplines encompassed in human capital and society. Faculty-guided undergraduate research in disciplines encompassed in human resources and labor relations.  
Effective Fall Semester 2024

DEPARTMENT OF MANAGEMENT

MGT 817  Managing the Learning Organization  
Fall of every year. Spring of every year. Summer of every year. 1 to 3 credits. P: MGT 810 or concurrently R: Open to master's students in the Eli Broad College of Business and The Eli Broad Graduate School of Management.  
Assessing knowledge, skills, and abilities within the organization. Matching future employee skill needs with appropriate learning strategies. Linking employee knowledge, skills, and abilities with overall organizational strategies. Exploration of processes by which individuals, teams, and organizations acquire new knowledge, skills, and understanding. Focuses on the role of management and leadership in facilitating learning, generating new ideas, and connecting the learning process to strategic initiatives.  
Effective Fall Semester 2024

DEPARTMENT OF MARKETING

IBUS 211  Business and Culture Seminar  
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 undergraduate students in the Accounting major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Supply Chain Management Major or in the Business-Admitted major or in the Business-Preference major or in the Marketing Major or approval of college.  
International speaker series providing an overview of the business and cultural environment in a particular world region.  
SA: MKT 211  
Effective Spring Semester 2024

IBUS 292  Special Topics In Business Abroad  
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to undergraduate students in the The Eli Broad College of Business or in the Accounting major or in the Business-Admitted major or in the Business-Preference major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major or approval of college.  
Education abroad emphasizing an introduction to the functional fields in business abroad and their interrelationships. Review of fundamental concepts and principles of business abroad.  
SA: BUS 292  
Effective Spring Semester 2024
IBUS 310  International Business
Fall of every year. Spring of every year. Summer of every year. 3(3-0) R: Open to juniors or seniors in the Accounting major or in the Business - Admitted major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Supply Chain Management Major or in the Marketing Major or in the Applied Engineering Sciences Major.
SA: MSC 310, MKT 310 SA: MKT 310, MSC 310
Effective Spring Semester 2024

IBUS 394  Business Service Learning Abroad
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to undergraduate students in the The Eli Broad College of Business or in the Accounting major or in the Business - Admitted major or in the Business-Preference major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major or approval of college. R: Open to undergraduate students in the Eli Broad College of Business and The Eli Broad Graduate School of Management or approval of college.
   Civil engagement practices and theories. Impact of non-profit organizations, practices of engaged citizenship. Volunteer placements at civic organizations.
SA: BUS 393
Effective Spring Semester 2024

IBUS 492  Advanced Topics Abroad
Fall of every year. Spring of every year. Summer of every year. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to undergraduate students in the The Eli Broad College of Business or in the Accounting major or in the Finance Major or in the Hospitality Business Major or in the Human Resource Management Major or in the Management Major or in the Marketing Major or in the Supply Chain Management Major or approval of college. R: Open to undergraduate students in the Eli Broad College of Business and The Eli Broad Graduate School of Management or approval of college.
   Education abroad emphasizing an advanced study of interrelatedness of business functions abroad not typically found in business academic departments.
SA: BUS 492
Effective Spring Semester 2024

DEPARTMENT OF MATHEMATICS

MTH 396  Capstone in Mathematics for Secondary Education (W)
Spring of every year, Fall 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 2024

COLLEGE OF OSTEOPATHIC MEDICINE

OST 582  Transitions I: Board Preparation Preclerkship Board Preparation
Summer of every year. Spring 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 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 Summer Semester 2024

OST 597 Biomedical Research Structure and Methods
Spring of every year. 2(2-0) 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 Summer Semester 2024

DEPARTMENT OF PLANT BIOLOGY

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
A capstone experience that focuses on current developments and issues in plant biology. Scientific writing and oral presentation.
SA: BOT 499 Effective Summer Semester 2024

DEPARTMENT OF POLITICAL SCIENCE

PLS 200 Introduction to Political Science
Fall of every year. Summer of every year. 4(4-0) 3(3-0)
The science of politics. Theory construction, model building, empirical testing, and inductive inference. Examples from American, international and comparative politics. The scientific study of politics. Examples from American, international, and comparative politics subfields.
Effective Fall Semester 2024

PLS 201 Introduction to Methods of Political Analysis
Fall of every year. Spring of every year. Summer of every year. 4(4-0) 3(3-0)
Philosophy of social science. Principles of research design, measurement, hypothesis testing, measures of association, cross tabulations, and regression analysis.
Effective Fall Semester 2024

PLS 364 Politics of the United Nations and International Organizations
Spring of every year. 3(3-0) Not open to students with credit in MC 322.
Effective Fall Semester 2024

PLS 422 Seminar in Political Science (W)
Fall of every year. Spring of every year. 4(4-0) 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course. A student may earn a maximum of 9 credits in all enrollments for this course. R: (PLS 201) and completion of Tier I writing requirement RB: Political Science major or student with background in political science or international studies.
Variable topics including legislative behavior, policy analysis, political development, human rights, international conflict, foreign policy, international political economy, and constitutionalism.
Effective Fall Semester 2024
PART III – COURSE CHANGES

PLS 481  Undergraduate Research Seminar (W)
Fall of every year. Spring of every year. Spring of every year. 4(4-0) 3(3-0) A student may earn a maximum of 8 credits in all enrollments for this course. A student may earn a maximum of 6 credits in all enrollments for this course. P: (PLS 201 or concurrently) and completion of Tier I writing requirement RB: Political Science major or student with background in political science or international studies.
Advanced research seminar for students in the political science program.
Effective Fall Semester 2024

DEPARTMENT OF PSYCHOLOGY

PSY 280  Abnormal Psychology Psychological Disorders
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: PSY 101 Theory and research on dynamics, characteristics, and treatment of psychological disorders. Therapies and theories of prevention.
Effective Fall Semester 2024

PSY 382  Internship in Psychology
Summer of every year. On Demand. 3 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P: PSY 101 R: Approval of department; application required.
Internship employing knowledge and skills acquired in psychology courses.
Request the use of the Pass-No Grade (P-N) system.
Effective Fall Semester 2024

PSY 401  Expertise and Skill (W)
Fall of every year. 3(3-0) P: PSY 200 and ((PSY 295 or STT 231) and completion of Tier I writing requirement) R: Open to juniors or seniors in the Department of Psychology or in the Cognitive Science Minor.
Contemporary models of expertise and skill acquisition and the role of basic cognitive abilities and capacities in complex performance.
Effective Fall Semester 2024

PSY 409  Psychobiology of Behavioral Development (W)
Spring of every year. 3(3-0) P: (PSY 209 or NEU 300 or IBIO 405) and ((PSY 295 or STT 231) and completion of Tier I writing requirement) R: Open to juniors or seniors in the Department of Psychology or in the Lyman Briggs Neuroscience Coordinate Major or in the Neuroscience Major.
Biological approaches to the understanding of behavioral development in human and non-human animals. Role of the nervous system in this process.
Effective Fall Semester 2024

PSY 410  Neuroscience of Learning and Memory (W)
Fall of every year. 3(3-0) P: (PSY 200 or PSY 209 or PSY 301 or NEU 300 or IBIO 405) and ((PSY 295 or STT 231) and completion of Tier I writing requirement) R: Open to juniors or seniors in the Department of Psychology or in the Cognitive Science Minor or in the Lyman Briggs Neuroscience Coordinate Major or in the Neuroscience Major.
Neural mechanisms responsible for learning and memory. SA: PSY 308
Effective Fall Semester 2024

PSY 411  Hormones and Behavior (W)
Spring of every year. 3(3-0) P: (PSY 209 or NEU 300 or IBIO 405) and ((PSY 295 or STT 231) and completion of Tier I writing requirement) R: Open to juniors or seniors in the Department of Psychology or in the Lyman Briggs Neuroscience Coordinate Major or in the Neuroscience Major.
Current research on biological mechanisms that control motivation in humans and non-human species.
Effective Fall Semester 2024
PART III – COURSE CHANGES

**PSY 413**  
Laboratory in Behavioral Neuroscience (W)  
Fall of every year. 4(2-4) Interdepartmental with Integrative Biology P: (PSY 209) and ((PSY 295 or STT 231) and completion of Tier I writing requirement) R: Open to juniors or seniors in the Department of Psychology or in the Cognitive Science Minor or in the Integrative Biology major or in the Lyman Briggs Neuroscience Coordinate Major or in the Neuroscience Major.  
Theory and laboratory experience in the study of behavioral neuroscience. Relationship among hormones, brain, and behavior.  
SA: PSY 309  
Effective Fall Semester 2024

**PSY 424**  
Child and Family Psychopathology (W)  
Fall of every year. Spring of every year. Summer of every year. 3(3-0) P: (PSY 295) and completion of Tier I writing requirement  
R: Open to juniors or seniors in the Department of Psychology or in the Psychology Disciplinary Teaching Minor.  
Description, etiology, and developmental patterns of behavior problems of children, adolescents, and their families. Child and family interventions.  
Effective Fall Semester 2024

**PSY 444**  
Developmental Psychology: Adolescence Through Youth (W)  
Fall of every year. 3(3-0) P: (PSY 101 and PSY 244 and PSY 295) and completion of Tier I writing requirement  
P: ((PSY 101 and PSY 295) and completion of Tier I writing requirement) and (PSY 238 or PSY 244 or HDFS 225) R: Open to juniors or seniors in the Department of Psychology or in the Youth and Society Minor or in the Psychology Disciplinary Teaching Minor.  
Theory and research in physical, cognitive, emotional, and social development from puberty to early adulthood.  
SA: PSY 344  
Effective Fall Semester 2024

**PSY 455**  
Advanced Topics in Organizational Psychology (W)  
Fall of every year. 3(3-0) P: (PSY 255 and PSY 295) and completion of Tier I writing requirement R: Open to juniors or seniors in the Department of Psychology or in the Bachelor of Arts in Interdisciplinary Studies in Social Science Major or in the Bachelor of Science in Interdisciplinary Studies in Social Science Major.  
Applied research related to human resource issues in work organizations. Selection, training, motivation, leadership, and organizational change.  
Effective Fall Semester 2024

**PSY 493**  
Issues in Psychology (W)  
Fall of every year. Spring of every year. 3(3-0)  
A student may earn a maximum of 6 credits in all enrollments for this course. P: PSY 101 and ((PSY 295 or STT 231) and completion of Tier I writing requirement)  
P: (PSY 101) and ((PSY 295 or STT 231) and completion of Tier I writing requirement) R: Open to juniors or seniors in the Department of Psychology.  
Current information, research, and practice in psychology.  
Effective Fall Semester 2024

**DEPARTMENT OF PUBLIC HEALTH (CS MOTT)**

**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 Summer Semester 2024
DEPARTMENT OF RADIOLOGY

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 Fall Semester 2024

ANTR 355L  Human Gross Anatomy Laboratory
Fall of every year. Spring of every year. Summer of every year. 1(0-3) 2(0-4) P: ANTR 350 or concurrently R: Approval of department. R: Not open to freshmen. 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 Summer Semester 2024

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 Summer Semester 2024

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 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 2024

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 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 Spring Semester 2025
**DEPARTMENT OF ROMANCE AND CLASSICAL STUDIES**

**ITL 250**
Topics in Italian Cultures for English Speakers
*Fall of every year, Spring of every year, Summer of every year.* 3(3-0) A student may earn a maximum of 3 credits in all enrollments for this course. 
*P: Completion of Tier I Writing Requirement*
Analyze diverse forms of culture from Italy and from other countries where Italian is spoken. Read and discuss written and audiovisual materials such as Italian newspapers, films, and TV, among others. Course is conducted in English, but some primary materials are in Italian. Basic introduction in Italian to understand primary materials.
Effective Spring Semester 2024

**LTN 499**
Senior Thesis
*Fall of every year, Spring of every year.* 1(1-0) A student may earn a maximum of 2 credits in all enrollments for this course. 
*P: (LTN 206 or concurrently) or (LTN 208 or concurrently) or (LTN 211 or concurrently) or (LTN 221 or concurrently) or approval of department*
*R: Approval of department. C: LTN 406 concurrently or LTN 408 concurrently or LTN 421 concurrently*
Senior thesis capstone under the direction of a faculty member.
Effective Fall Semester 2024

**SPN 440**
The Structure of Spanish
*Fall of every year, Spring of every year.* 3(3-0) 
*P: SPN 330 and (LIN 200 or LIN 401 or ENG 302) P: SPN 330 and LIN 401*
Overview of linguistic approaches to understanding the Spanish language.
Effective Fall Semester 2024

**SCHOOL OF SOCIAL WORK**

**SW 873**
Social Work in Educational Settings
*Fall of every year, Summer of every year, Fall of every year, Summer of every year.* 3(3-0) 
*RB: Training and/or experience working with children, families and schools. Enrolled in or have graduated from an accredited MSW program. R: Open only to graduate students in the School of Social Work or approval of School. R: Open to graduate students in the School of Social Work or approval of school.*
Roles and functions of social workers within a complex ecological system of home, school, and community. Impact of societal laws and values on the school and on the students' schooling experience. Implications for social work practice involving prevention and intervention with a variety of client systems. Social work practice in educational settings. Overview of theoretical foundation and policy context, educational mandates for students with disabilities, foundations for multi-tiered interventions and evidence-informed practice. Needs of students, families, teachers, administrators, and the larger school community. Challenges/opportunities facing diverse client groups. Social justice, diversity and inequality, human rights. Roles/opportunities of interdisciplinary leadership, collaboration, advocacy.
Effective Spring Semester 2024

**DEPARTMENT OF TEACHER EDUCATION**

**TE 963**
Critical Race Theory in Education
*Spring of even years, Spring of every year.* 3(3-0) 
*R: Open to doctoral students.*
Critical race theory as an analytical framework that provides race epistemology, methodological, and pedagogical approaches to study everyday inequalities in P-20 education.
Effective Fall Semester 2024