1: Core Requirements
All students must take:
- Foundations of Environmental Science (BIOL 5030)
- Statistics (see options in core course descriptions)
- Biology Seminar (BIOL 5860)

2: Distribution Requirements
All PhD students must take 4 classes from at least 3 of the groups (A – E):
All MS students must take 1 class from 3 of the 5 groups (A – E):

A: Ecology & Evolution
- Evolution (BIOL 5260)
- Ecosystem Science (GEOG 5960)
- Community Ecology (BIOL 5051)
- Foundations of Eco. Theory (BIOL 5050)

B: Physical & Chemical Science
- Global Environmental Change (GEOG 5700)
- Environmental Modeling (GEOG 5400)
- Environmental Chemistry (BIOL 5120)
- Techniques in Env. Analysis (BIOL 6390)

C: Environmental Health
- General Toxicology (BIOL 5370)
- Computational Epidemiology (CSCE 5820)
- Medical Geography (GEOG 5140)
- Health GIS (GEOG 5960)

D: Social Science
- Teaching Life Science (BIOL 5045)
- Environmental Ethics (PHIL 5000)
- Env Impact Assessment (BIOL 5100)
- Ecological Risk Assessment (BIOL 6400)
- Philosophy of Ecology (PHIL 5010)

E: Organismal Biology
- Insect Biology (BIOL 5070)
- Comparative Animal Physiology (BIOL 5505)
- Plant Physiology (BIOL 5503)
- Ornithology (BIOL 5800)
- Ichthyology (BIOL 5005)
- Mammalogy (BIOL 5005)

3: Electives (selected with advising committee)
All students must take:
A series of electives approved by her/his committee
- MS: 6 hours of thesis research
- PhD: 12 hours of dissertation research

4: PhD Concentration (optional)
Students may choose to concentrate in five areas:
- Ecology & Conservation Biology
- Toxicology
- Geoscience
- Human Ecology

Hour Requirements
Students w/o Master’s Degree = 72 hours
Student’s w/ Master’s Degree = 42 hours
Master’s Degree = 36 hours

* By instructor consent only.
The Environmental Science Curriculum
We have divided up the Environmental Science (ES) curriculum into three components with an optional fourth component for PhD students, which are the core requirements, the distribution requirements, electives, and concentration electives (PhD only).

Core Requirements
Although ES is inherently broad because of its interdisciplinary perspective on solving environmental problems, there are some experiences that all ES graduate students must have during their time at UNT. These include a Foundations of Environmental Science course, and graduate level statistics course, and participation in the biology research seminar series.

Distribution Requirements
What makes ES different from its parent disciplines is its interdisciplinarity. Our curriculum guarantees breadth through its distribution requirements. The program is distributed across five thematic groups: Ecology and Evolution, Physical and Chemical Sciences, Environmental Health Sciences, Social Sciences, and Organismal Biology. MS students must take three distribution courses from three different theme groups. PhD students must take four distribution courses from at least three different groups.

Electives
To round the curriculum, students design their degree plan through consultation with their major professor and their advisory committee. The final degree plan must be signed by all committee members, and approved by the ES Graduate Coordinator, the Chair of Biological Sciences, and the Dean of the Toulouse Graduate School.

Concentrations (PhD only, optional)
Students may elect to specialize into one of four areas, such that a concentration is listed on their transcript when she/he graduates. The four concentrations are Ecology and Conservation Biology, Geoscience, Human Ecology, and Toxicology. Please select the hyperlinks to find more information about the requirements of each concentration.

PhD Concentrations
Ecology and Conservation Biology Concentration
Ecology is the scientific study of relationships between organisms and environments, and conservation biology is the study of Earth’s biodiversity with the mission of protecting species, habitats, and ecosystems. At UNT students can elect to concentrate in Ecology and Conservation Biology within the Environmental Science PhD, such that the graduate’s transcript reads “PhD in Environmental Science with a concentration in Ecology and Conservation Biology.” Students in the Environmental Science PhD program desiring an Ecology and Conservation Biology Concentration must take five of the following courses: Biol 5005 (Wildlife Ecology and Conservation), Biol 5040 (Advanced Ecology), Biol 5050 (Foundations of Ecological Theory), Biol 5051+5052 (Community Ecology), Biol 5260 (Principles of Evolution), Geog 5380 (Applied Paleozoology in Conservation), Geog 5960 (Ecosystem Science), Phil 5010 (Seminar in Philosophy of Ecology), Biol 5053/Phil 6780 (Subantarctic Biocultural Conservation). Classes taken for elective core-group credit (e.g., Ecosystem Science or Principles of Evolution) may additionally count in the concentration. Other courses may be included in the concentration with approval of the major professor and the Environmental Science Graduate Coordinator. Additionally, graduate doctoral committees are required to have three members from Biological Sciences or the
Institute of Applied Science; at least one committee member must be a faculty member in the Department of Biological Sciences.

**Geoscience Concentration**

*Geoscience* is the scientific study of Earth processes from an interdisciplinary perspective that combines perspectives from Geography, Geology, Biology, Ecology, Chemistry, and other disciplines. At UNT students can elect to concentrate in Geoscience within the Environmental Science PhD, such that the graduate’s transcript reads “PhD in Environmental Science with a concentration in Geoscience.” Students in the Environmental Science PhD program desiring a Geoscience Concentration must take five of the following courses: Geog 5400 (Environmental Modeling), Geog 5630 (Soils Geomorphology), Geog 5700 (Global Environmental Change), Geog 5750 (Surfacewater Hydrology), Geog 5850 (Introduction to Groundwater Hydrology), Geog 5960 (Introduction to Remote Sensing), or Biol 6320 (Remote Sensing). Classes taken for elective core-group credit (e.g., Environmental Modeling or Global Environmental Change) may additionally count in the concentration. Other courses may be included in the concentration with approval of the major professor and the Environmental Science Graduate Coordinator. Additionally, graduate doctoral committees are required to have three members from Biological Sciences or the Institute of Applied Science; at least one committee member must be a faculty member in the Department of Biological Sciences.

**Human Ecology Concentration**

*Human ecology* is the interdisciplinary study of human – environment interactions. At UNT students can elect to concentrate in Human Ecology within the Environmental Science PhD, such that the graduate’s transcript reads “PhD in Environmental Science with a concentration in Human Ecology.” Students desiring a Human Ecology Concentration must take five of the following courses in addition to meeting the foundation and core-group requirements: Geog 5160 (Foundations of Geographic Thought), Phil 5000 (Environmental Ethics), Biol 5100 (Introduction to Environmental Impact Assessment), Anth 5031 (Ethnographic and Qualitative Methods), Anth 5400 (Environmental Anthropology), Anth 5701 (Ethnoecology), Geog 5960 (Ecosystem Science), Phil 5010 (Seminar in Philosophy of Ecology), Biol 5053/Phil 6780 (Subantarctic Biocultural Conservation). Classes taken for elective core-group credit (e.g., Ecosystem Science or Introduction to Environmental Impact Assessment) may additionally count in the concentration. Other courses may be included in the concentration with approval of the major professor and the Environmental Science Graduate Coordinator. Additionally, graduate doctoral committees are required to have three members from Biological Sciences or the Institute of Applied Science; at least one committee member must be a faculty member in the Department of Biological Sciences.

**Toxicology**

*Toxicology* is the scientific study of the effects of chemicals on organisms; in environmental science, the focus tends to be on the distribution, effect, and fate of chemicals in the environment. At UNT students can elect to concentrate in Toxicology within the Environmental Science PhD, such that the graduate’s transcript reads “PhD in Environmental Science with a concentration in Toxicology.” Students in the Environmental Science PhD program desiring a Toxicology Concentration must take five of the following courses: Biol 5005.001 (Molecular Toxicology), Biol 5120 (Environmental Chemistry), Biol 5340 (Biochemistry and Molecular Biology of the Gene), Biol 5370 (General Toxicology), Biol 5380 (Fundamentals of Aquatic Toxicology), Biol 5505 (Comparative Animal Physiology), Biol 5720 (Sediment Toxicology), or Biol 6400 (Ecological Risk Assessment), two of which must be toxicology classes (Biol 5005.001, 5370, 5380, 5720). Classes taken for elective core-group credit (e.g., Environmental Chemistry or General Toxicology) may additionally count in the concentration. Other courses may be
included in the concentration with approval of the major professor and the Environmental Science Graduate Coordinator. Additionally, graduate doctoral committees are required to have three members from Biological Sciences or the Institute of Applied Science; at least one committee member must be a faculty member in the Department of Biological Sciences.