# ***National Education Entrance Standard vs. Practice Standards***

| National Standard Course Category | UofL Course (Undergraduate Courses 2022/23) | Knowledge Requirement for a Practice Area | | | |
|---|---|---|---|---|---|
| (credits required) | 2022/2023 Program Requirements for B.Sc in Agricultural Studies (Courses in Bold Type Meet the Knowledge Requirement for that Subject in a Practice Standard) | Agricultural Marketing and Sales | Crop Production | Livestock Production | Rangeland and Pasture Management |
| ***Foundational Natural Sciences*** | | | | | |
| *(15 credits required)* | Biology 1010 - Cellular Basis of Life | | | | |
| | Biology 1020 - Diversity of Life | | | | |
| | **Biology 2000 - Principles of Genetics** | | | √ | |
| | Biology 2200 - Principles of Ecology | | | | |
| | Biology 2300 - Cell Biology | | | | |
| | Chemistry 1110 - Chemistry for Life Sciences I | | | | |
| | Chemistry 2120 - Chemistry for Life Sciences II | | | | |
| | Geography 2065 - Physcial Geology | | | | |
| | Physics 1050 - Introduction to Biophysics | | | | |
| | | | | | |
| ***Senior Agrology*** | | | | | |
| *(24 credits required)* | Agric Studies 4300 - Advanced Modeling of Agricultural Systems | | | | |
| | **Biology 3420 - Animal Physiology** | | | √ | |
| | **Biology 3460 - Plant Physiology** | | √ | | |
| | Biology 3560 - Integrated Plant Biology | | | | |
| | Biology 3700 - Ecosystem Ecology | | | | |
| | Biology 3710 - Populaton Ecology | | | | |
| | Biology 3720 - Community Ecology | | | | |
| | Biology 4570 - Plant Breeding and Genetics | | | | |
| | Geography 3210 - Food Systems Analysis | | | | |
| | **Geography 4060 - Agricultural Soil Management** | | √ | | |
| | **Geography 4065 - Irrigation Science** | | √ | | |
| | Geography 4400 - Advanced Hydrology | | | | |
| | Geography 4725 - Advanced Remote Sensing | | | | |
| | Geography 4740 - Advanced Geographical Information Systems | | | | |
| | | | | | |
| ***Introductory Agrology*** | | | | | |
| *Intro Agrology + Senior Agrology = 60 credits required)* | Agric Studies 1000 - The Evolution of Agriculture | | | | |
| | Agric Studies 3300 - Modeling of Agricultural Systems | | | | |
| | **Environmental Science 2000 - Fundamentals of Environmental Science** | | | √ | |
| | Geography 2030 - Geomorphology | | | | |
| | Geography 2300 - Weather and Climate | | | | |
| | Geography 2700 - Geographical Data and Analysis | | | | |
| | Geography 2735 - Introduction to Geographical Information Science | | | | |
| | Geography 3075 - Environmental Resources Management | | | | |
| | **Geography 3080 - Soils** | | √ | √ | |
| | **Geography 3400 - Hydrology** | | | √ | √ |
| | Geography 3720 - Remote Sensing | | | | |
| | Geography 3740 - Geographical Information Systems | | | | |
| | ***The following courses may or may not be Agrology related:*** | | | | |
| | Agricultural Studies 2000 unspecified (LC technical term) | | | | |
| | Agricultural Studies 2000 unspecified (LC technical term) | | | | |
| | Agricultural Studies 2000 unspecified (LC technical term) | | | | |
| | Agricultural Studies 3000 unspecified (LC technical term) | | | | |
| | Agricultural Studies 3000 unspecified (LC technical term) | | | | |
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# ***National Education Entrance Standard vs. Practice Standards***

| National Standard Course Category | UofL Course (Undergraduate Courses 2022/23) | Knowledge Requirement for a Practice Area | | | |
|---|---|---|---|---|---|
| (credits required) | **2022/2023 Program Requirements for B.Sc in Agricultural Studies** (Courses in Bold Type Meet the Knowledge Requirement for that Subject in a Practice Standard) | **Agricultural Marketing and Sales** | **Crop Production** | **Livestock Production** | **Rangeland and Pasture Management** |
| ***Economics*** | | | | | |
| *(3 credits required)* | Economics 1010 - Introduction to Microeconomics | | | | |
| | | | | | |
| ***Mathematics or Statistics*** | | | | | |
| *(3 credits required)* | **Statistics 1770 - Introduction to Probability and Statistics** | | **√** | | |
| | Mathematics 1010 - Introduction to Calculus | | | | |
| | Mathematics 1560 - Calculus I | | | | |
| | Mathematics 1565 - Accelerated Calculus I | | | | |
| | | | | | |
| ***Communications*** | | | | | |
| *(3 credits required)* | *No course identified in Program Requirements for B.Sc Agric Studies* | | | | |
| | | | | | |
| | | ***The Following Subjects Are Not Listed in the B.Sc Agricultural Studies Program Requirements But Are <u>Also Required</u> to Qualify for the P.Ag in the Following Practice Areas (Each subject must be 3-credit equivalent course)*** | | | |
| | | **Agricultural Marketing and Sales** | **Crop Production** | **Livestock Production** | **Rangeland and Pasture Management** |
| | | **Introductory Communications** | **Introductory Crop Science** | **Introductory Animal Science** | **Plant Identification/Taxonomy** |
| | | **At least <u>two</u> of the following:** | **At least <u>one</u> of the following:** | **Species-Specific Production Systems** | **Invasive Species and Weeds** |
| | | *Introductory Crop Science* | *Annual Crops* | **Animal Health and Welfare** | **Soil Genesis and Classification** |
| | | *Introductory Animal Science* | *Perennial Crops* | **Introductory Animal Nutrition** | **Soil Fertility** |
| | | *Introductory Horticulture* | *Horticultural Crops* | **Feeds and Feeding** | **Range/Pasture Livestock Production** |
| | | *Introductory Agroforestry* | *Agroforestry* | **Advanced Genetics/Genomics** | **Wildlife Ecology and Habitat** |
| | | *Industrial Vegetation Management* | **Soil Fertility** | **Reproductive Physiology** | **Soil Water Management** |
| | | *Agricultural Machinery* | **Irrigated or Dryland Crop Water Use** | **Animal Diseases** | **Forage and Pasture Management** |
| | | *Land Management Technologies* | **At least <u>one</u> of the following:** | **Animal Housing** | **Rangeland Management** |
| | | **Introductory Marketing** | *Weed Science* | **Introductory Agricutlural Economics** | **Rangeland/Pasture Ecology** |
| | | **Introductory Agricultural Economics** | *Agricultural Entomology* | **Animal and Animal Products Marketing** | **Legislation/Policy** |
| | | | *Plant Pathology* | **Micro and Macroeconomics** | |
| | | | **Introductory Agricultural Economics** | **Experimental Design** | |
| | | | **Experimental Design** | | |

# *National Education Entrance Standard vs. Practice Standards*

| National Standard Course Category | UofL Course (Undergraduate Courses 2022/23) | Knowledge Requirement for a Practice Area | | | | |
|---|---|---|---|---|---|---|
| (credits required) | 2022/2023 Program Requirements for B.Sc in Environmental Science (Courses in Bold Type Meet the Knowledge Requirement for that Subject in a Practice Standard) | Assessment, Remediation, and Management of Contaminated Land | Environmental Monitoring | Land Reclamation | Water Resources Planning and Management | Land Conservation and Management |
| ***Foundational Natural Sciences*** | | | | | | |
| *(15 credits required)* | Biology 1010 - Cellular Basis of Life | | | | | |
| | Biology 1020 - Diversity of Life | | | | | |
| | Biology 2000 - Principles of Genetics | | | | | |
| | **Biology 2200 - Principles of Ecology** | √ | | √ | √ | |
| | Biology 2300 - Cell Biology | | | | | |
| | Biology 3300 - Evolution | | | | | |
| | **Chemistry 1000 - General Chemistry I** | √ | | | √ | |
| | Chemistry 2000 - General Chemistry II | | | | | |
| | Chemistry 2410 - Analytical Chemistry I | | | | | |
| | **Chemistry 2500 - Organic Chemistry I** | √ | | | | |
| | Geology 2065 - Physical Geology | | | | | |
| | Physics 1000 - Introduction to Physics | | | | | |
| | Physics 1050 - Introduction to Biophysics | | | | | |
| | | | | | | |
| ***Senior Agrology*** | | | | | | |
| *(24 credits required)* | **Biology 3460 - Plant Physiology** | √ | | √ | | |
| | **Biology 3560 - Integrated Plant Biology** | √ | √ | √ | √ | √ |
| | Biology 3630 - Field Biology | | | | | |
| | **Biology 3660 - Field Botany** | √ | √ | √ | | √ |
| | Biology 3700 - Ecosystem Ecology | | | | | |
| | Biology 3710 - Populaton Ecology | | | | | |
| | Biology 3720 - Community Ecology | | | √ | | |
| | Biology 4605 - Conservation Biology | | | | | |
| | Biology 4840 - Limnology | | | | | |
| | **Geography 3060 - Glaciology and Glacial Geomorphology** | √ | | | | √ |
| | Geography 3300 - Microclimatology | | | | | |
| | Geography 3710 - Field Techniques in the Earth Sciences | | | | | |
| | Geography 4400 - Advanced Hydrology | | | | | |
| | Geography 4725 - Advanced Remote Sensing | | | | | |
| | Geography 4730 - Spatial Statistics | | | | | |
| | Geography 4740 - Advanced Geographical Information Systems | | | | | |
| | | | | | | |
| ***Introductory Agrology*** | | | | | | |
| *Intro Agrology + Senior Agrology = 60 credits required)* | **Environmental Science 2000 - Fundamentals of Environmental Science** | | | | √ | |
| | **Geography 1000 - Introduction to Physical Geography** | | | | √ | |
| | Geography 2030 - Geomorphology | | | | | |
| | Geography 2090 - Biogeography | | | | | |
| | Geography 2300 - Weather and Climate | | | | | |
| | **Geography 2700 - Geographical Data and Analysis** | | √ | | | |
| | Geography 2735 - Introduction to Geographical Information Science | | | | | |
| | Geography 3075 - Environmental Resources Management | | | | | |
| | **Geography 3080 - Soils** | √ | √ | √ | √ | |
| | **Geography 3400 - Hydrology** | √ | √ | √ | √ | √ |
| | Geography 3720 - Remote Sensing | | | | | |
| | **Geography 3740 - Geographical Information Systems** | | | | √ | √ |
| | ***The following courses may or may not be Agrology related:*** | | | | | |
| | Environmental Studies 2000 unspecified (LC technical term) | | | | | |
| | Environmental Studies 2000 unspecified (LC technical term) | | | | | |
| | Environmental Studies 2000 unspecified (LC technical term) | | | | | |
| | Environmental Studies 3000 unspecified (LC technical term) | | | | | |
| | Environmental Studies 3000 unspecified (LC technical term) | | | | | |
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# *National Education Entrance Standard vs. Practice Standards*

| National Standard Course Category | UofL Course (Undergraduate Courses 2022/23) | Knowledge Requirement for a Practice Area | | | | |
|---|---|---|---|---|---|---|
| **(credits required)** | **2022/2023 Program Requirements for B.Sc in Environmental Science (Courses in Bold Type Meet the Knowledge Requirement for that Subject in a Practice Standard)** | **Assessment, Remediation, and Management of Contaminated Land** | **Environmental Monitoring** | **Land Reclamation** | **Water Resources Planning and Management** | **Land Conservation and Management** |
| ***Economics*** | | | | | | |
| *(3 credits required)* | *No course identified in Program Requirements for B.Sc Enviro Science* | | | | | √ |
| | | | | | | |
| ***Mathematics or Statistics*** | | | | | | |
| *(3 credits required* | **Statistics 1770 - Introduction to Probability and Statistics** | √ | | | √ | |
| | Mathematics 1010 - Introduction to Calculus | | | | | |
| | Mathematics 1560 - Calculus I | | | | | |
| | Mathematics 1565 - Accelerated Calculus I | | | | | |
| | | | | | | |
| ***Communications*** | | | | | | |
| *(3 credits required)* | *No course identified in Program Requirements for B.Sc Enviro Science* | | | | | |
| | | | | | | |
| | | ***The Following Subjects Are Not Listed in the B.Sc Environmental Science Program Requirements But Are <u>Also Required</u> to Qualify for the P.Ag in the Following Practice Areas (Each subject must be 3-credit equivalent course)*** | | | | |
| | | **Assessment, Remediation, and Management of Contaminated Land** | **Environmental Monitoring** | **Land Reclamation** | **Water Resources Planning and Management** | **Land Conservation and Management** |
| | | **Hydrogeology** | **Air Quality** | **Soil Genesis and Classification** | **Water Quality** | **Introductory Animal Science OR Zoology** |
| | | **At least <u>one</u> of the following:** | **<u>One</u> of the following:** | **<u>One</u> of the following:** | **<u>One</u> of the following:** | **<u>One</u> of the following:** |
| | | *Environmental Policy* | *Environmental Chemistry* | *Soil Chemistry* | *Soil Conservation and Management* | *Ecophysiology* |
| | | *Environmental Planning* | *Soil Chemistry* | *Soil Fertility* | *Soil Water Conservation* | *Plant Ecology* |
| | | *Enviromental Impact and Mitigation* | *Water Chemistry* | *Soil Physics* | **Land Use Effects On Water** | *Disturbance Ecology* |
| | | *Envirionmental Law* | *Air Chemistry* | *Soil Biology* | **<u>One</u> of the following:** | *Restoration Ecology* |
| | | *Land Use Planning* | **Sampling Methods and Design** | *Soil Conservation* | *Natural Resource Economics* | *Riparian Ecosystems* |
| | | **Soil Genesis and Classificaiton** | **Soil Genesis and Classification** | *Soil Biogeochemistry* | *Environmental Economics* | *Fire Ecology and Management* |
| | | **Remediation Strategies** | **Soil Conservation and Management** | | *Agricultural Economics* | *Landscape Ecology* |
| | | **Soil Chemistry** | **Water Quality** | | **Experimental Design** | *Forest Ecology* |
| | | **Contaminant Behaviour** | **Hydrogeology** | | | *Wildlife Ecology* |
| | | **Ecological and Human Health Risk Assessment** | | | | *Rangeland Ecology* |
| | | **Toxicology** | | | | |
| | | **Plant Nutrition** | | | | |
| | | **Plant Physiology** | | | | |
| | | **Animal Nutrition** | | | | |
| | | **Animal Physiology** | | | | |
| | | **Environmental Sampling Design** | | | | |