Effective Date 2020-2021

Agricultural and Environmental Systems – Natural Resources and Environmental Systems, MS
College of Agriculture & Environmental Sciences

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The Master of Science in Agricultural and Environmental Systems within the Natural Resources and Environmental Systems concentration provides a solid foundation in the fundamental biological and biochemical sciences related to natural and renewable resources, bioprocessing, food systems sustainability including the underlying principles of horticulture, agro-ecology, environmental remediation and protection, plant and soil health, mushroom science and biotechnology. Thesis research or project research is a degree requirement in one of these knowledge areas under the direction of a graduate faculty member. Graduates are expected to be analytical in their thinking and applied in their focus.

Additional Admission Requirements:

- Students must have good background in basic sciences (Biology, Chemistry and Physics).
- A GRE score – recommended but not required.

Program Outcomes:

- The production of advanced agricultural scholars that obtain professional and leadership roles with agricultural and environmental related entities. Additional outcomes include individuals that pursue doctoral studies and the valuable scholarly works produced by graduates of the program, through thesis and capstone project endeavors.

Degree Requirements
Total credit hours: 30

Core Courses:
- Required hours (9): AGRI 604/ABM 705, AGRI 700, AGRI 780

Thesis Option
Thesis Course:
- NARS 797 - 6 hours
Concentration Area Electives:
- Concentration Area Elective Courses - 15 hours

Non-Thesis, Project Option
Non Thesis Project Course:
- NARS 796 - 3 hours
Concentration Area Electives:
- Concentration Area Elective Courses - 18 hours
### Natural Resources and Environmental Systems Concentration

#### Course selections:

- **AGRI-604**: Experimental Methods in Research
- **EASC-610**: Sustainable Earth Credit
- **EASC-620**: Environmental Studies I
- **EASC-621**: Environmental Studies II
- **HORT 600**: Advanced Techniques for Horticultural Crop Improvement
- **HORT 602**: Grapes and Small Fruits
- **HORT-610**: Commercial Greenhouse Production
- **HORT 620**: Vegetable Production Credit
- **NARS 600**: Mycology and Fungal Biotechnology
- **NARS 601**: Plant Pathology & Modern Approaches to Plant Disease Control
- **NARS 703**: Principles of Entomology and Pest Management
- **NARS 604**: Crop Ecology
- **NARS 605**: Breeding of Crop Plants
- **NARS 608**: Special Problems in Natural Resources
- **NARS 610**: Applied Spatial Statistics and GIS
- **NARS 618**: Fundamentals of Agroforestry
- **NARS 685**: Special Topics
- **NARS 700**: Plant Pathology
- **SLSC 621**: Soil Microbiology
- **SLSC 632**: Soil Physics
- **SLSC 633**: Soil Genesis, Classification and Land Use
- **SLSC 634**: Soil Environmental Chemistry
- **SLSC 640**: Wetland Management
- **HORT 700**: Plant Biotechniques
- **AGEN 701**: Soil and Water Engineering II
- **SLSC 710**: Soils of North Carolina
- **AGEN 714**: Applied Hydrogeology
- **SLSC 715**: Soil Mineralogy
- **SLSC 717**: Methodology in Soil, Plant and Water Analysis
- **EASC 718**: Applied Environmental Microbiology
- **NARS 789**: Graduate Seminar in Natural Resources
- **NARS 777**: Special Problems
- **SLSC 727**: Soil Fertility and Plant Nutrition
- **SLSC 734**: Applied Environmental Chemistry
Directory of Graduate Faculty

- Aryal, Niroj, PhD., Kansas State University; Assistant Professor, Environmental engineering, water use modeling, conservation and hydrology.
- Bhowmik, Arnab, PhD, North Dakota State University; Assistant Professor, Soil science and soil microbiology, sustainable cropping systems.
- Dingha, Beatrice N., PhD, Auburn University; Research Associate Professor, Urban and storage systems entomology, food safety, Integrated Pest Management.
- Gayle, Godfrey A., PhD, North Carolina State University; Professor, Water resources engineering. Emeritus
- Isikhuemhen, Omoanghe S., Institute of Microbiology, Prague; Research Professor, Mycology, mushroom biology & biotechnology.
- Jackai, Louis E.N., PhD, University of Illinois at Urbana-Champaign; Professor & Graduate Program Coordinator, Nutritional and applied insect ecology, vegetable crop entomology, Integrated Pest Management.
- Randle, William M., PhD., University of Minnesota; Professor, Plant breeding, genetics, nutrient management of crop plants.
- Shahbazi, Abolghasem, PhD, Pennsylvania State University; Professor, Bioprocess engineering and waste recycling, Agricultural and Biological Engineering.
- Uzochukwu, Godfrey A., PhD, University of Nebraska-Lincoln; Professor, Soil mineralogy, land use and classification, earth science.
- Wang, Lijun, PhD, National University of Ireland; Professor, Bioprocess engineering; bioenergy and modeling.
- Yang, Guochen, PhD, University of Nebraska-Lincoln; Research Professor, Tissue culture, micro-propagation, plant growth regulation.