



**KENTUCKY STATE
UNIVERSITY**

MASTER OF SCIENCE IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY (MEST)

Background of the program

Global environmental problems are among the biggest challenges of the 21st century. Environmental issues involving water pollution, soil degradation, and natural resource depletion have created new challenges of global warming, food insecurity, and economic and political turmoil across the globe. Understanding the principles, processes, and causes of these environmental problems requires comprehensive science and research-oriented curricula to understand the science underlying these problems and develop solutions.

Agricultural (including poultry and livestock) and tree farming, forest management, and a mining-based economy are rapidly changing in Kentucky. As the workforce attempts to find alternative, profit-maximizing, and sustainable land management practices, higher education must consider shifting trends of current and future job opportunities towards technology-oriented ones for optimizing resources. A significant component of future job opportunities and challenges will involve resource conservation, finding a sustainable nexus of food energy and water, AI, data and technology-savvy environmental policies & practices, efficient use of current energy sources, and development of alternative energy sources.

More environmental scientists, problem-solving professionals, and policymakers who can integrate scientific knowledge, interdisciplinary approaches, technology, and data analytics are needed to solve current environmental problems in Kentucky and worldwide. KSU's Master of Science in Environmental Science and Technology (MEST) is designed to address this demand.

Goal and Program Learning Outcomes

The goal of KSU's MEST degree program is the pursuit and dissemination of environmental knowledge and technology. The revised MES program broadens the scope of scientific and technological studies of the environment through the offering of innovative curricula grounded on the existing MES courses, faculty expertise, research, and laboratory capacity, as well as feedback received from former MES students, AFE/MES Retreat, and campus-wide review workshop organized by CPE and Gray Associates in Summer 2023. The revised curricula include courses to teach fundamentals of environmental science, hydrology, Environmental Research methods, plant, water, and soil instrumentation, Ecosystems and Biome Science, bioremediation, toxicology and waste management, resources economics, environmental law, and policy, as well as application of GIScience Technology and Remote Sensing techniques. The revised program emphasizes basic and applied environmental and ecological science research and teaching (through the Capstone course) using case studies, land degradation, and ecosystem change data from Central and Eastern Kentucky. Graduates of the KSU MEST program are expected to

hold positions as environmental scientists, policy analysts, inspectors/regulators in state and local government agencies, and industries, as well as continue a career path to pursue doctoral programs at other universities.

The new MEST program is expected to grow fast by recruiting domestic students from diverse undergraduate backgrounds and various geographic locations. The program is designed to attract competitive students who have interests in blending science and technology for meaningful employment, a commitment to humanity, sustainable resource management, and problem-solving.

Certificates in the Master of Science in Environmental Science and Technology Program

The Master of Science in Environmental Science and Technology offers three certificate programs that allow students to focus on specific areas of environmental science and technology, which will assist in greater job readiness and competitiveness after graduation. These certificates are available to anyone with a bachelor's degree who wishes additional training and can be completed by any student regardless of area of study.

Graduate Research Assistantships

A number of graduate research assistantships are available for qualified full-time MEST thesis option students. Some of these assistantships are funded by state and federal agencies. MEST graduate research assistantship recipients are required to work 20 hours per week during the school year and 37.5 hours per week during the summer to receive a stipend.

Admission

The interdisciplinary nature of the program will allow students with diverse undergraduate backgrounds to enroll in the MEST program. All applicants (part-time and full-time) must meet the minimum standards for admission to graduate study at Kentucky State University. However, applicants are admitted into the specific graduate program to which they apply. It should be noted that successful completion of a college mathematics course (e.g., statistics, algebra, etc.) is required as part of their undergraduate degree regardless of their major. The MEST Graduate Admissions Committee will use the following materials for admission considerations:

- Applicants write a personal statement outlining their goals and career objectives. The application is through our application portal and it can be found <https://www.kysu.edu/student-success-and-retention/admissions/apply-to-ksu.php>.
- Transcripts: Copies of all official transcripts must be sent to the Office of Graduate Studies.
- GRE scores are not required.
- Three letters of recommendation (professional and/or academic) on official letterhead with a signature must be sent to graduate.studies@kysu.edu
- A resume

The following types of admission will be available to candidates for the MEST program:

1. **Regular:** Requirements for this unconditional admission are:
 - a. A complete application package, including official transcripts, test scores, and letters of recommendation.

- b. A baccalaureate degree from an institution in the United States with regional accreditation or a foreign institution with equivalent accreditation.
 - c. Satisfactory completion of course prerequisites for the MEST program.
 - d. An overall undergraduate grade-point-average of 3.0 (on a 4.0 scale).
 - e. TOEFL (Internet Based 70), IELTS (6.0) or Duolingo (100) score is required for international students.
2. **Provisional:** If an applicant is unable to provide all the necessary documents before the application deadline prior to matriculation but otherwise meets the admissions criteria, he/she may be granted provisional admission. Provisional admission may not be permitted for more than one semester, and all credentials must be received before the end of the semester in which the student has registered. Students must meet all regular admissions requirements to move from provisional status to regular admission status.
 3. **Non-degree:** Non-degree seeking status is allowed for students that wish to take graduate courses or pursue a certificate but do not intend to seek the MEST degree. The student must hold a baccalaureate degree from an accredited institution. Non-degree seeking students need to complete an application for admission to graduate studies through our application portal.

Degree Requirements

The MEST program is made up of 36 credits including thesis or capstone project work. It should be noted that the capstone project is typically less comprehensive than a traditional master's thesis, so students choosing this option are required to take two additional elective courses. Students interested in pursuing the master's degree full-time should plan to spend about two years in residence. Students in the online MEST program will complete all classes and capstone research without needing to be on campus.

Thesis Option

The purpose of the thesis option is to demonstrate the student's ability to investigate a research topic and report the findings in proper scientific publication style. This enables the student to gain experience in a specific area of environmental science and to report research results in a publishable document. The program has a student handbook that gives more specific requirements for the formatting and process that need to be followed. It is distributed at the orientation at the beginning of your first semester. Experience in the literature review, experimental design, data collection, statistical analysis, and manuscript preparation are obtained by students completing the thesis option. Students who intend to further their graduate education (e.g., obtain a doctoral degree) should choose this option because doctoral programs often require students to demonstrate their ability to successfully complete a master's thesis. Required courses and a thesis topic must be approved by the student's graduate committee.

Capstone Project Option

Graduate students enrolled in the non-thesis option are required to complete a capstone project as determined by their major professor and approved by their committee. The MEST graduate student Handbook provides specifics on formatting and other requirements and is available to all students during their first semester. Examples might include a literature review, a public service project, or Cooperative Extension work. A detailed proposal is submitted for approval to the student's committee before the

project is conducted, and a final project report must be approved by the student's committee.

Time Limitation of Assistantships

Graduate students are expected to complete the requirements for the M.S. Degree within two years. Graduate Research Assistantships (GRA's) are generally awarded yearly for a maximum period of 2.5 years. The master's degree program must be completed within six years of initial enrollment as a degree-seeking graduate student. Please also see Section II under Graduate Academic Regulations and Policies in this publication.

Graduate Committee

The Graduate Committee consists of three School of Agriculture and Natural Resources (SANR) faculty members, and it can include one additional member from outside of SANR. Students are required to hold their first committee meeting during their first semester and present a thesis/capstone proposal in the second semester of study.

The major professor will guide the student on research, analysis, writing, and other scholarly aspects of the work. Members of the student's committee contribute, but the primary responsibility is that of the major professor.

Submission of a thesis or Capstone manuscript is defined as the time at which the first complete draft of such is submitted to the major professor for review. After the major professor approves the draft for committee revision, the student will then submit the manuscript for critical review by the committee. Each may suggest improvements and refuse approval pending additional work. When committee members and the major professor sign the Approval Page, they certify that the thesis or capstone manuscript is clear and accurate, that it represents an original and worthwhile contribution, that the suggestions made by them are incorporated into the final work, and that the work conforms to the standards of Kentucky State University College of Agriculture, Health, and Natural Resources (CAHNR). No faculty member will sign a thesis until it is of foremost quality and meets all requirements. The major professor and committee members must sign their names personally. There can be no temporary substitute members and no other person may sign a committee member's name on an Approval Page, even with the authorization of the committee member involved and the major professor. Electronic signatures are allowed for students completing their degree online.

Written Comprehensive Exams

All MEST students pursuing a thesis or capstone track will complete a written comprehensive exam to be administered by the faculty mentor with questions from the student's faculty mentor and committee members. This exam must be administered before the student defends and must have a majority of the committee members award a passing grade to the questions they have provided.

Core Courses

Code	Title	Hours
ENV 501	Fund. of Environ. Science	3
ENV 502	Population/Community Ecology	3
ENV 503	MES Student Team Project	3
Select one of the following:		3
ENV 506	Exper. Design & App. Stats.	
ENV/AQU 509	Biostatistics	
ENV 511	Energy & the Environment	3
Select one of the following:		9-21

Capstone Project Option

Thesis Option		
ENV 600	MES Research	1-6
ENV 601	MES Thesis	1-3
Total Hours		26-45

Thesis Option

Code	Title	Hours
ENV 600 & ENV 601	MES Research and MES Thesis	9
Select 12 credit hours of elective courses		12
Total Hours		21

Capstone Project Option

Code	Title	Hours
ENV 699	MES Capstone Research Proj	3-6
Select 15 credit hours of electives		15
Total Hours		18-21

Elective Courses

Code	Title	Hours
ENV 507	Agroforestry	3
ENV 508	GIScience & Tech Applic.	3
ENV/AQU 513	Aquatic Ecology	4
ENV 515	Environmental Ethics	3
ENV 516	Environmental Justice	3
ENV 517	Environ & Resource Econom	3
ENV 519	Sustainable Agriculture Sys (moved from below)	3
ENV 525	Organic Agriculture	3
ENV 535	Urban Agriculture	3
ENV 540	Ornamental/Landscape Plant Pro	3
ENV 542	Plant Prop. & Prod. Systems	3
ENV 545	Molecular Tech Envir/Aqua Stud	3
ENV 550	Human Health/Environment	3
ENV 551	Livestock Production Practices	3
ENV 555	Food Safety and Microbiology	3
ENV 560	Agricultural & Environ. Policy	3
ENV 565	Environmental Law	3
ENV 585	Special Topics in AFE	3
ENV 589	Remote Sensing of the Env.0	3
ENV 595	Envir Sci/Bioremediation Tech	3