

HOMELAND SECURITY SCIENCES, MASTER OF SCIENCE (0413)

Program Coordinator

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This multidisciplinary program prepares science and technology professionals for careers in the Homeland Security area. The program features hands-on research components to enable students to apply their training to real-world problems.

Applied Physics in Homeland Security (APHY) Concentration involves study of physical threats and applications of physics and chemistry to detect, quantify, prevent and (if needed) decontaminate radiological, nuclear, explosive, and chemical threats as well as threats due to earth and space weather threats.

The Cybersecurity Concentration provides real-world focused, hands-on cybersecurity training that covers in-demand skills such as cybersecurity fundamentals, Linux essentials, ethical hacking and penetration testing, network defense and countermeasures, computer forensics, and cybersecurity policy.

The EMDS concentration involves awareness and management of emergency preparation and response to natural and technological hazards, and terrorism.

- Applied Physics in Homeland Security Sciences (APHY)
- Cybersecurity (CYBE)
- Emergency Management Disaster Science (EMDS)

Program Admission

For the APHY and EMDS Concentrations, in addition to Graduate Studies requirements, admission to the program requires a Bachelor's degree in related STEM-H field or approval of the program administrator.

For the Cybersecurity Concentration, in addition to Graduate Studies requirements, admission to the program requires a Bachelor's degree in an information-technology related area or the student must score at the satisfactory level on an information technology general aptitude assessment or complete CIT 310 and CIT 312 with a C-grade or better or equivalent.

Graduate Studies Admission

Please refer to the admission section (<http://catalog.wku.edu/graduate/admission/>) of this catalog for Graduate Studies admission requirements.

Program Requirements (30 hours)

Applied Physics in Homeland Security Sciences (APHY) Concentration

Code	Title	Hours
PHYS 560	Introduction to Physics Applications in Homeland Security	3
CIT 550	Interdisciplinary Cybersecurity	3
EMDS 500	Emergency Management Policy and Practices	3

CHEM 560	Chemical Agents and Explosives	3
PHYS 599	Thesis Research / Writing	6
Electives ¹		
Select 12 hours from the following:		12
PHYS 565	Optical Detection Methods of Biological and Chemical Agents	
PHYS 570 & PHYS 571	Nuclear / Radiological Detection and Remediation and Nuclear / Radiological Detection and Remediation Laboratory	
PHYS 590 & PHYS 591	Physical Principles of CBE Detection and Remediation and Physics CBE Detection and Remediation Laboratory	
PHYS 598	Graduate Seminar	
PH 584	Principles of Environmental Health	
EOHS 571	Air Quality Management	
EOHS 572	Environmental and Occupational Epidemiology	
EOHS 577	Environmental Toxicology	
EOHS 580	Solid and Hazardous Wastes	
EOHS 595	Public Health Management of Disasters	
GEOS 575	GIS Analysis and Modeling	

Total Hours 30

Cybersecurity (CYBE) Concentration

Code	Title	Hours
PHYS 560	Introduction to Physics Applications in Homeland Security	3
CIT 550	Interdisciplinary Cybersecurity	3
EMDS 500	Emergency Management Policy and Practices	3
CHEM 560	Chemical Agents and Explosives	3
CIT 552	Cybersecurity Fundamentals	3
CIT 554	Operating Systems for Cybersecurity	3
CIT 556	Ethical Hacking and Penetration Testing	3
CIT 558	Cybersecurity Defense & Countermeasures	3
CIT 560	Incident Response & Digital Forensics	3
CIT 562	Cybersecurity Programs and Policies	3

Total Hours 30

Emergency Management Disaster Science (EMDS) Concentration

Code	Title	Hours
PHYS 560	Introduction to Physics Applications in Homeland Security	3
CIT 550	Interdisciplinary Cybersecurity	3

EMDS 500	Emergency Management Policy and Practices	3
CHEM 560	Chemical Agents and Explosives	3
EMDS 501	Understanding Natural and Technological Disaster Risks	3
EMDS 502	Terrorism, Violence, Resiliency, and Response	3
EMDS 503	Advanced Disaster Planning, Management, and Preparedness	3
Electives ¹		
Select 9 hours from the following:		9
EMDS 504	Trends in Disaster Preparedness and Management	
EMDS 505	Continuity of Operations Programs	
EMDS 506	Critical Infrastructure Assessment and Protection	
EMDS 510	Incident Meteorology for Safety Professionals	
RSA 515	Recreation and Sport Facility Development	
RSA 538	Facility and Event Security Management	
PH 581	Applied Methods in Public Health Practice/Field Epidemiology	
Total Hours		30

¹ Electives determined by the student's specialized area of study and subject to approval by the student's departmental advisor.

Emergency Management Disaster Science Concentration Experiential Credit Option

Students admitted to the Homeland Security Sciences (HSS) Master's program may apply to receive graduate credit for successful completion of advanced specialized training and/or professional certifications delivered / awarded by or in conjunction with federal or state accredited emergency services entities.

Examples of entities whose programs may qualify include:

- Federal Bureau of Investigations
- Federal Bureau of Alcohol, Tobacco, Firearms, and Explosives
- U.S. Department of Homeland Security
- U.S. Environmental Protection Agency
- Various branches of the Military including National Guard and Reserves
- Federal and State Emergency Management Agencies

The before mentioned training and/or certifications must have been awarded as part of their professional career development during active service or employment and must be directly aligned to course content within the existing HSS master's program.

Graduate credit of up to twelve hours is possible for the master's degree level. Submissions for credit must include a detailed description of the content including active contact hours. Examples of acceptable documentation may include a syllabus, catalog, or an official certificate

of successful completion. A minimum of 40 contact hours of submitted training must be documented for each 3 hours of graduate credit.

Credit equivalency will be assessed on a case-by-case basis upon review of the student's application for credit. The evaluation will be conducted by a faculty member within the program, and their recommendation submitted to the appropriate Department Head or Associate Dean for approval.