

# 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.

CBRNE Concentration involves study of physical threats and applications of physics and chemistry to detect, quantify, prevent and decontaminate radiological, nuclear, biological, explosive and chemical 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.

- CBRNE Defense (CBRN)
- Cybersecurity (CYBE)
- Emergency Management Disaster Science (EMDS)

## Program Admission

For the CBRNE and EMDS Concentrations, in addition to the Graduate School 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 the Graduate School 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 School Admission

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

## Program Requirements (30 hours)

### CBRNE Defense 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     |
| <b>Electives</b> <sup>1</sup> |   |       |

Select 12 hours from the following: 12

|                     |  |
|---------------------|--|
| PHYS 506            | Overview of Homeland Security  |
| 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   |
| CHEM 572 & CHEM 573 | Detection/Analysis of Chemical Agents and Explosives Lecture and Detection/Analysis of Chemical Agents and Explosives Laboratory |
| 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  |
| <b>Total Hours</b>  | <b>30</b>  |

### Cybersecurity 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     |
| <b>Total Hours</b> | <b>30</b>   |       |

### 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         |
| <b>Electives <sup>1</sup></b>      |  |           |
| 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 |           |
| <b>Total Hours</b>                 |  | <b>30</b> |

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