



Doctor of Philosophy Program Competencies

Environmental Health, Occupational Health, and Toxicology

Upon graduation, a student with a Doctor of Philosophy in Environmental Health, Occupational Health, and should be able to...

Environmental and Occupational Hygiene Track

1. Critically evaluate characteristics and trends in U.S. agriculture.
2. Integrate and analyze available data resources on agricultural production and populations to reduce agricultural and environmental injuries and illnesses.
3. Critically evaluate agricultural safety programs and their strengths and weaknesses.
4. Categorize environmental factors that affect the health of a community, including the biological effects of these exposures.
5. Develop strategies to implement public health policy to control risk.
6. Develop and critique intervention strategies relative to agriculture and the environment.
7. Critically evaluate data to propose strategies to reduce environmental health hazards.
8. Identify and apply effective risk communication strategies and techniques to solve environmental health problems.
9. Critically synthesize current literature to formulate research questions
10. Critically evaluate data to develop methods of risk assessment and control.
11. Apply risk assessment and control methods in a field study
12. Design and execute a field study of occupational and environmental health hazards

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Occupational Biomechanics Track

1. Apply the principles of biomechanical analysis to common work tasks.
2. Integrate basic anatomical and mechanical principles to the analysis of human movement in common work tasks.
3. Critically evaluate biomechanical data of an individual during common work tasks.
4. Utilize instrumentation and techniques to measure and analyze movement to address public health issues and to conduct occupational biomechanical research.
5. Critically evaluate the need for and the limitations of occupational biomechanics in the analysis of standards for manual materials handling.
6. Execute appropriate biomechanical principles to current models and guidelines used in occupational ergonomics.
7. Critically evaluate data to propose future research in the development of new models and ergonomic guidelines.
8. Critically analyze and evaluate performance in occupational settings to avoid injury and improve performance.
9. Integrate and apply appropriate theories to describe and analyze human movement, with emphasis on variability of human movement, the acquisition of motor skills, and external factors that can affect motor performance.
10. Develop and apply appropriate experimental and clinical tools and procedures to assess motor control.
11. Articulate how the nervous system is associated with motor control and its functions.
12. Critically evaluate how attentional processes can influence motor performance.



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Toxicology Track

1. Assess responses to environmental and occupational toxins.
2. Implement dose-response characteristics to correlate a chemical exposure with a toxic response.
3. Predict the severity of a toxic response to a particular toxicant by using the principles of absorption and distribution
4. Critically analyze data to correlate targeted organ toxicity with a specific toxicant exposure.
5. Implement epidemiological data and risk assessment protocols to predict the toxic responses to environmental and workplace exposures.
6. Assess government regulatory policies and their impact on industries and on human health.
7. Critically evaluate the scientific toxicological literature.
8. Formulate appropriate research questions based on critical evaluation of scientific literature.
9. Develop doctoral-level proficiency in oral and written assessment.
10. Design experimentation to determine the relationship between a specific chemical exposure and a toxic response.