Department of Plant and Soil Sciences

Doctor of Philosophy

PHD in Microbiology

Earth is microbial: Bacteria, archaea, viruses, protists, and fungi are the largest store of biomass on the planet, and represent nearly all of its biodiversity. They store massive genetic resources that can be used to solve challenges faced by our rapidly growing human population. Microbes will be key to developing more sustainable energy generation and material synthesis, improving human health and wellness, and satisfying increased food demands of larger human populations in the face of limited environmental resources. The faculty of the University of Delaware (UD) Microbiology Graduate Program are already addressing these challenges in five separate colleges and thirteen departments. By bringing these faculty and resources together to train the next generation of microbiologists, with stakeholder guidance to develop an innovative educational program, the Microbiology Graduate Program will serve as a model for interdisciplinary enterprises at UD.

Our faculty are already making significant contributions to the Grand Challenges outlined in Delaware Will Shine, the blueprint for UD’s continued development as a premier learner-centered university.  The program faculty and students are engaged in the Grand Challenges in Improving Health and Wellness, Innovating Energy and Environmental Solutions, and Ensuring Safety and Security. Furthermore, the activities of the program and its interdisciplinary nature will contribute to our Welcoming and Collaborative Campus Community, Innovative Educational Design, and Multidisciplinary Research and Scholarship, and Community Engagement, three of the strategic initiatives detailed in Delaware Will Shine.

**The goals of this graduate program are to:**

•        Recruit and retain a diverse pool of high-quality graduate students in Microbiology

•        Recruit and retain diverse, high-quality Microbiology faculty invested in cutting-edge student training

•        Rigorously deliver foundational concepts in genome-enabled Microbiology via a core curriculum

•        Provide rigorous electives to support broad exploration beyond the core curriculum

•        Foster professional skills in trainees, enabling them to succeed in multiple career paths

•        Facilitate cross-departmental and cross-college research collaborations

•        Identify and develop new tracks/concentrations as suggested by student/stakeholder interest

•        Proactively engage the advisory committee (see below) to assess program goals, curriculum, and to generate external support.

New courses: PLSC611

PLSC811

* Curriculum
  1. **ANFS - 635 - Animal Virology (3cr.)**
  2. **ANFS - 636 - Immunology of Domestic Animals (3cr.)**
  3. **ANFS - 639 - Food Microbiology (4cr.)**
  4. **ANFS - 649 - Food Biotechnology (4cr.)**
  5. **ANFS - 655 - The Gut Microbiome: Microbial and Host Perspectives (4cr.)**
  6. **ANFS - 671 - Paradigms in Cell Signaling (3cr.)**
  7. **BISC - 850 - Advanced Topics in Biology (1cr.)**
  8. **CHEG - 621 - Metabolic Engineering (3cr.)**
  9. **CHEM - 641 - Biochemistry (3cr.)**
  10. **CIEG - 644 - Microbiology of Engineered Systems (3cr.)**
  11. **GEOL - 645 - Geomicrobiology (3cr.)**
  12. **MAST - 616 - Methods in Molecular Biology (3cr.)**
  13. **MAST - 625 - Microbial Physiology and Diversity (3cr.)**
  14. **MAST - 626 - Microbial Molecular Genetics (3cr.)**
  15. **MAST - 634 - Marine Molecular Sciences (3cr.)**
  16. **MEDT - 650 - Medical Biochemistry (4cr.)**
  17. **MEDT - 690 - Clinical and Molecular Cell Biology (3cr.)**
  18. **PLSC - 619 - Soil Microbiology (4cr.)**

Preview Curriculum View Curriculum Schema View Curriculum Courses

**Administrative Fields (Do not Edit)**

Resolution:

WHEREAS, the proposed Doctor of Philosophy in Microbiology provides a new interdisciplinary graduate course of study that highlights the importance of systems-based approaches to solving critical, timely issues surrounding the contributions of microbes in human, animal, plant and environmental health, and

WHEREAS, the proposed Doctor of Philosophy in Microbiology will allow students a well-rounded depth and breadth of understanding in microbiological research, including informatics and data analysis approaches, as well as the development of expertise in an area of study involving Applied Microbiology, Host-Microbe Interactions, Environmental Microbiology, or Microbiology Physiology and Genetics, and

WHEREAS, the proposed program builds upon the research strength, education resources and research infrastructure from Departments across the Colleges of Agriculture & Natural Resources, Arts & Sciences, Engineering, Earth, Ocean & Environment, and Health Sciences, and

WHEREAS, the proposed program contributes to the scholarly and educational missions of the University—to increase and disseminate scientific, humanistic, and social knowledge for the benefit of the larger society and to produce graduates who are prepared to make meaningful contributions towards safeguarding human, plant, animal and environmental health globally and locally, and

WHEREAS, the proposed program fosters interdisciplinary research and educational collaboration across campus, providing a critical component to University’s Grand Challenges in environment, life and health sciences, and serving as a pillar of UD's Delaware Will Shine, be it therefore

RESOLVED, that the Faculty Senate approves provisionally, for five years, the establishment of a new program leading to the Doctor of Philosophy in Microbiology effective September 1, 2019.