# Biology of Health

From the NJIT Department of Biology, the Graduate Certificate in Biology of Health is an exciting program in human biology in health and disease. Students will gain a mechanistic understanding of genetic, cell biological, anatomical, and physiological processes, both at a foundational level and in the context of pathological conditions. They will learn to connect fundamental biological mechanisms with disease states, both at the level of general pathology and in medical case studies.

**Who would be suited to take this program?**

The program is well suited to students with a background in biology or related life sciences.

**What are the Required Courses?**

| Code | Title | Credits |
|---|---|---|
| **Core Courses** | | |
| Select four (4) of the following: | | 12 |
| BIOL 628 | Cell Biology of Disease: Cells Gone Bad | 3 |
| BIOL 643 | Biology of Addiction | 3 |
| BIOL 644 | Physiological Mechanisms | 3 |
| BIOL 646 | Endocrinology | 3 |
| BIOL 648 | Neuropathology | 3 |
| BIOL 650 | Human Anatomy | 3 |
| BIOL 653 | Medical Genetics and Genomics | 3 |
| BIOL 668 | Evolutionary Medicine | 3 |

## What will I learn?

- ***Cell Biology of Disease*** - Brief review of normal physiological function of humans followed by an extensive exploration of the basis of many human diseases at cellular level. The goal is to understand how alterations in normal cell functions affect human physiology by reviewing current research in the field of cell biology.
- ***Biology of Addiction*** - Substance Use Disorder from a biological viewpoint, with aspects of psychological, epidemiological, social and economical factors. Covered are psychopharmacology, structure and function of the nervous system, neurotransmitters and neuromodulators, and specific substances of abuse.
- ***Physiological Mechanisms*** – Analysis of clinical (pathological) case studies to reinforce and extend physiological knowledge, and provide students a strong basis for future studies in biomedical and health related fields.
- ***Endocrinology*** - Covers the entire human endocrine system from both an anatomical and physiological perspective. The development, gross anatomy, regulation and interaction between various endocrine components will be discussed with an emphasis on detailed examinations of endocrine disorders in clinical settings.
- ***Neuropathology*** - Clinical (pathological) case studies of nervous system dysfunction
- ***Human Anatomy*** - Introduction to human anatomy and physiology from an integrative perspective. Students learn the structure and function of human tissues, skeletal system, nervous system, endocrine system, and muscular system from the cellular to organismal levels.
- ***Medical Genetics and Genomics*** - Explores how the field of Genetics has been shaped after the completion of the sequencing of the genomes of humans and a variety of other organisms. Students will be able to describe new technologies that are available in medicine, diagnostics, genetic testing and the generation of genetically modified organisms and evaluate the advantages and current obstacles of these technologies. Through the analysis of case studies and primary literature, students will acquire a real-life knowledge of applications of Genomics in the 21st century.
- ***Evolutionary Medicine*** - Addresses the evolutionary principles and processes underlying many types of disease (both infectious and hereditary/genetic). Covers biology, epidemiological models, and some aspects of human behavior.

## Why study Biology of Health at NJIT?

Biomedical and health-related professions are diversifying way beyond traditional medical and nursing school paths, both in academic and industry settings. At NJIT, the Department of Biological Sciences integrates the study of fundamental biology with a substantial and highly successful commitment to biomedical and pre-medical education, both at the undergraduate and graduate levels, preparing students for diverse professional training opportunities.

## Into what industries might holders of this program find employment?

Health Professions, Education, Biology

## Prerequisites

Applicants should have a bachelor's degree in biology or a related life sciences discipline.

## Related Degree Programs

All courses in this program related to the NJIT MS in Biology (https://www.njit.edu/academics/degree/ms-biology/) and the MS in Biology of Health