

# Nanomedicine, Graduate Certificate (Online)

The Graduate Certificate in Nanomedicine is a part-time program designed to introduce scientists, engineers, and physicians to interdisciplinary problem solving in nanomedicine. This experiential learning program is ideal for individuals seeking careers in biotechnology, pharmaceutical, biomedical, or clinical fields. Students study both fundamental and applied aspects of nanomedicine and then apply this knowledge to designing strategies for nanomedicine innovation, translation, and commercialization.

## Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

### Core Requirements

Code	Title	Hours
<b>Required Core</b>		
NNMD 5270 or NNMD 5271	Foundations in Nanomedicine: Therapeutics Foundations in Nanomedicine: Diagnostics	3
<b>Electives</b>		
Complete 9 semester hours from the following electives. At least 5 semester hours must be Nanomedicine (NNMD) coursework:		9
NNMD 5272	Nanomedicine Seminar (may be repeated)	
NNMD 5310	Bioethics in the Age of Artificial Intelligence	
NNMD 5370	Nanomedicine Research Techniques	
NNMD 5380	Electron Microscopy Techniques	
NNMD 5470	Nano/Biomedical Commercialization: Concept to Market	
NNMD 5570	Preclinical and Clinical Study Design	
NNMD 5580	Nanodrug Delivery Systems: Design, Visualization, and Modeling	
NNMD 5590	RNA Therapeutics	
NNMD 6370	Nanomedicine Experiential Capstone	
NNMD 6390	Experiential AI Capstone	
NNMD 6984	Independent Research	
<i>AI-Driven Innovation</i>		
BIOT 5900	Emerging Innovations in Biotechnology and Pharma	
BIOT 6900	AI-Powered Biotech Workflows: From Discovery to Clinic	
PHSC 5905	Artificial Intelligence and Machine Learning in Drug Discovery: Concepts and Applications	
<i>Commercialization and Regulatory Affairs</i>		
BIOT 5219	The Biotechnology Enterprise	
BIOT 5220	The Role of Patents in the Biotechnology Industry, Past and Future	
BIOT 5225	Managing and Leading a Biotechnology Company	
BIOT 5920	Foundations in Vaccine Regulatory Science	
BIOT 6290	Foundation in Quality for Biotechnology	
BIOT 6310	CGMP Statutes and Regulation	
BIOT 6320	Design and Development of Biopharmaceuticals	
BIOT 6340	Sterile Manufacturing Operations	
<i>Drug Delivery</i>		
BIOL 5821	Cell and Gene Therapies	
CHEM 5648	Chemical Principles and Application of Drug Metabolism and Pharmacokinetics	
CHME 5160	Drug Delivery: Engineering Analysis	
CHME 7350	Transport Phenomena	
PMST 6252	Pharmacokinetics and Drug Metabolism	
PMST 6254	Advanced Drug Delivery Systems	
<i>Laboratory Research</i>		
BIOT 5145	Biotechnology Lab Skills	
BIOT 5840	Cell and Gene Therapy Lab	
<i>Nanomaterials Design and Application</i>		

BIOE 5410	Molecular Bioengineering
BIOE 5411	Applied Molecular Bioengineering
BIOE 5820	Biomaterials
BIOL 6131	CRISPR: Gene Editing Fundamentals
BIOT 5630	Cell Culture Applications for Biopharmaceuticals
BIOT 5700	Molecular Interactions of Proteins in Biopharmaceutical Formulations
BIOT 5750	Molecular Approaches in Biotechnology
BIOT 5810	Cutting-Edge Applications in Molecular Biotechnology
BIOT 5910	Vaccines and Immunization
BIOT 5930	Molecular Tools for Vaccine Design
CHEM 5610	Polymer Chemistry
CHEM 5630	Nucleic Acid Chemistry
CHEM 5640	Biopolymeric Materials
CHME 5631	Biomaterials Principles and Applications
CHME 5683	Introduction to Polymer Science
PHSC 6216	Human Physiology and Pathophysiology
PHSC 6290	Biophysical Methods in Drug Discovery
PHYS 5260	Introduction to Nanoscience and Nanotechnology
PHYS 7731	Physics of Biological Processes and Living Systems I

### Program Credit/GPA Requirements

12 total semester hours required

Minimum 3.000 GPA required