Chemistry Graduate Studies

Professional Science Master’s Cell and Gene Therapy Sciences

Option in Master of Science in Pharmaceutical Chemistry

Department of Chemistry & Environmental Science
College of Science and Liberal Arts
ABOUT THE COLLEGE OF SCIENCE AND LIBERAL ARTS
The College of Science and Liberal Arts (CSLA) is dedicated to instruction in the physical, biological, and mathematical sciences as well as traditional liberal arts disciplines. CSLA is home to internationally renowned research centers and award winning researchers, and partners with departments throughout NJIT to explore emerging frontiers and expand interdisciplinary initiatives in a diverse range of areas that include genomics, neuroscience, ecology, biomechanics, solar physics, photonics, environmental science, applied mathematics and statistics, materials science, technical communication and digital media.

WHY STUDY CELL AND GENE THERAPY SCIENCES AT NJIT?
NJIT is uniquely situated among the greatest concentration of biotechnology and pharmaceutical activities in the world, with over 400 private and public biopharmaceutical companies thriving around the NJ Area. Opportunity is right outside our door The mission of NJIT’s professional Cell and Gene Therapy Sciences option in the MS Pharmaceutical Chemistry program is to prepare scientists and engineers for dynamic careers in the biopharmaceutical industry. The program will focus on providing integrated coursework and training in current biotechnology industry practices, with a specific focus on applied cell and gene therapy. Our approach, relying on the input of our industrial advisory board, will ensure that our program will keep students up-to-date on the latest biotechnology industry changes and challenges and prepare them to work in this growing and exciting industry. The professional Cell and Gene Therapy Sciences program will provide a solid grounding in science and engineering, with an industry focus, facilitating the tailoring of coursework to meet individual career goals.

PROFESSIONAL SCIENCE MASTER’S
This program option is affiliated with the PSM National Office. The objective of this option is to create leaders with strong communication and management skills in addition to strong technical knowledge in cell and gene therapy sciences for the rapidly changing biopharmaceutical industry. This option is designed for working professionals or students who already have acquired some professional experience.

CURRICULUM
The Cell and Gene Therapy Sciences option consists of five core courses, three professional courses, one elective course, and one experiential course for a total of 30 credits. For degree requirements consult the graduate catalog: catalog.njit.edu/graduate/.

CORE COURSES (15 CREDIT HOURS)
- BIOL 605 Principles of Bioscience Processing
- BIOL 606 Applied Bioprocessing and Immunological Based Therapies
- CHEM 673 Biochemistry
- CHEM 777 Principles of Pharmaceutical Chemistry
- CHEM 714 Pharmaceutical Analysis

REQUIRED PROFESSIONAL COURSES (9 CREDIT HOURS)
Select three of the following courses:
- EM 631 Legal Aspects in Environmental Engineering
- EM 633 Legal aspects of Health and Safety
- EM 634 Legal, Ethical & Intellectual Property
- EM 636 Project Management
- EVSC 613 Environmental Problem Solving
- EVSC 614 Quantitative Environmental Risk Assessment
- EVSC 623 Environmental Health
- FIN 600 Corporate Finance I
- IE 615 Industrial Hygiene and Occupational Health
- HRM 601 Organizational Behavior
- MGMT 620 Management of Technology
- PTC 601 Adv. Professional & Technical Communication
- PTC 620 Proposal Writing
- PTC 725 Writing for Publication

ADMISSIONS REQUIREMENTS
BS degree in the chemical, biological or pharmaceutical sciences or engineering preferred. GRE for all full-time applicants. Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) for all international students not holding a degree from a U.S. postsecondary institution. Minimum scores: Internet-based TOEFL – 79, computer-based TOEFL – 213, paper-based TOEFL – 550, IELTS – 6.5 with no sub-score lower than 6.0.

REQUIRED EXPERIENTIAL COURSE (3 CREDIT HOURS)
CHEM 595 Practicum in Cell and Gene Therapy Sciences

ELECTIVE COURSES (3 CREDIT HOURS)
Select one of the following courses:
- CHEM 601 Special Topics in Chemistry I
- CHEM 658 Adv. Physical Chemistry
- CHEM 661 Instrumental Analysis Laboratory
- CHEM 700B Master’s Project
- CHEM 702 Special Topics in Chemistry II
- CHEM 716 Integrated Drug Development & Discovery
- CHEM 719 Drug Delivery Systems
- CHEM 737 Comp. Chemistry & Molecular Modeling
- CHEM 748 Nanomaterials
- EVSC 616 Toxicology for Engineers & Scientists
- MATH 663 Introduction to Biostatistics
- PHB 610 Biotechnology: Processes & Products
- PHB 615 Bioseparation Processes
- PHEN 500 Pharmaceutical Engineering Fundamentals I
- PHEN 601 Principals of Pharmaceutical Engineering
- PHEN 604 Validation & Reg. Issues in Pharmaceutical I
- PHEN 618 Principles of Pharmacokinetics & Drug Delivery

Rutgers Newark courses
- R120 572 Concepts in Pharmaceutical Drug Development
- R160 515 Chemical Structure Determination

Rutgers Biomedical and Health Sciences (RBHS) courses
- GSDN 5113 Gene Expression

FOR FURTHER INFORMATION, CONTACT:
Graduate Programs,
Department of Chemistry and Environmental Science
www.njit.edu/cellgenetherapy
CSLA@njit.edu

TO APPLY CONTACT:
Office of Graduate Admissions
973-596-3300, or apply on-line at
http://www.njit.edu/admissions/apply-online.php