



John G. Rangos, Sr.  
School of Health Sciences

## ENGINEERING

### Biomedical Engineering and Nursing – BS/BSN Dual Degree – 206 Credits

In most cases, courses listed in bold must be taken in the exact semester indicated; all other courses are interchangeable.

Duquesne University is pleased to announce the FIRST dual undergraduate degree in biomedical engineering and nursing in the U.S. Biomedical Engineers are charged with advancing healthcare treatment for diagnostic and therapeutic purposes. A health care background with requisite clinical experience will greatly enhance a biomedical engineer's ability to solve clinical problems. The dual BME/BSN degree is cost effective as it provides additional clinical knowledge and skills via a holistic nursing approach in a five-year format.

The biomedical engineering/nursing major will gain a deep clinical perspective and will learn to develop technologies and solve real clinical problems as a result of this novel and forward-thinking dual degree program. Nurses are in the best position to assess the functional health status and technology needs of patients given their close interactions with patients. The biomedical engineering/nursing major will develop technologies to assist patients and create efficiencies for nurses in the hospital, outpatient, and home care arenas, and also develop life-saving technologies for developing countries in a cost-effective manner.

#### Fall of 1st Year – 17 Credits

**BMED-100 Intro to Biomed Engineering (3 cr.)**  
**CHEM-121/L/R Gen Chemistry I/Lab/Rec (4/1 cr.)**  
**MATH-115 Calculus I (4 cr.)**  
**PHYS-211/L/R General Analytical Physics I/  
Lab/Rec (3/1 cr.)**  
UCOR-103 IPE Health Research Skills (1 cr.)

#### Fall of 2nd Year – 18 Credits

**BIOL-111/L Biology I/Lab (4/0 cr.)**  
**BIOL-207/8 Anatomy and Physiology I/Lab (3/1 cr.)**  
**BMED-201 Biomed Electronics & Instr I (3 cr.)**  
**MATH-215 Calculus III (4 cr.)**  
UCOR-101 Thinking & Writing Across the Curric (3 cr.)

#### Fall of 3rd Year – 18 Credits

**BMED-210 Thermodynamics (3 cr.)**  
**BMED-310 Biomedical Signals and Systems (3 cr.)**  
**BMED-430 Engineering Computation (3 cr.)**  
**MATH-301 Intro Probability & Statistics I (3 cr.)**  
**UPNS-103 Nutrition for Wellness (3 cr.)**  
Faith and Reason Theme Area (3 cr.)

#### Spring of 1st Year – 16 Credits

**BMED-110 Intro to Programming for Engineers (3 cr.)**  
**CHEM-122/L/R Gen Chemistry II/Lab/Rec (4/1 cr.)**  
**MATH-116 Calculus II (4 cr.)**  
**PHYS-212/L/R General Analytical Physics II/  
Lab/Rec (3/1 cr.)**

#### Spring of 2nd Year – 17 Credits

**BIOL-112/L Biology II/Lab (4/0 cr.)**  
**BIOL-209/10 Anatomy and Physiology II/Lab (3/1 cr.)**  
**BMED-202 Biomed Electronics & Instr II (3 cr.)**  
**MATH-314 Differential Equations (3 cr.)**  
UCOR-102 Imaginative Literature & Critical Writing (3 cr.)

#### Spring of 3rd Year – 19 Credits

**BIOL-203/4 Introductory Microbiology/Lab (3/1 cr.)**  
**BMED-220 Introduction to Biomaterials (3 cr.)**  
**BMED-320 Biofluid Mechanics (3 cr.)**  
**MATH-302W Intro Probability & Statistics II (3 cr.)**  
**UPNS-113 Human Development and Health Promotion  
Across the Lifespan (3 cr.)**  
Social Justice Theme Area (3 cr.)



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### Fall of 4th Year – 16 Credits

UPNS-119 Contemporary Professional Nursing  
and Technology (3 cr.)  
UPNS-124 Cultural Issues in Health Care (3 cr.)  
UPNS-200 Fundamentals of Nursing Practice  
and Clinical Ethics (6 cr.)  
UPNS-218 Health Assessment (4 cr.)

### Spring of 4th Year – 18 Credits

UPNS-309 Pharmacology (3 cr.)  
UPNS-323 Adult Health and Illness (6 cr.)  
UPNS-411W Nursing Ethics Across the Lifespan (3 cr.)  
Global Diversity Theme Area (3 cr.)  
Theology Core (3 cr.)

### Summer of 4th Year – 12 Credits

BMED-490 Research in Biomedical Engineering (3 cr.)  
BMED Elective (3 cr.)  
BMED Elective (3 cr.)  
UPNS-423 Evidence-Based Approaches to Professional Nursing Practice (3 cr.)

### Fall of 5th Year – 17 Credits

BMED-440W Biomedical Engineering Capstone I (5 cr.)  
UPNS-326 Pathophysiology for Nursing Practice (3 cr.)  
UPNS-339W Genetics in Nursing & Health (3 cr.)  
UCOR-132 Basic Philosophical Questions (3 cr.)  
Creative Arts Theme Area (3 cr.)

### Spring of 5th Year – 20 Credits

BMED-441W Biomed Engineering Capstone II (5 cr.)  
BMED Elective (3 cr.)  
UPNS-344 Nursing for Children's Health (3 cr.)  
UPNS-348 Nursing for Maternal-Newborn Health (3 cr.)  
UPNS-355 Behavioral Health (3 cr.)  
UPNS-357 Population Health (3 cr.)

### Summer of 5th Year – 18 Credits

UPNS-400 Critically Ill Adult (6 cr.)  
UPNS-422 Role Preparation II (3 cr.)  
UPNS-426 Leadership and Management in Clinical Environment (6 cr.)  
UPNS-430 Gerontological Nursing Practice (3 cr.)

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IMPORTANT NOTE: The material contained herein is subject to change, and this publication cannot be considered an agreement or contract between individual students and the School. The Rangos School of Health Sciences reserves the right to alter or amend the terms, conditions, and requirements herein, and to eliminate programs or courses as necessary. Once enrolled, students should consult on a regular basis with their Faculty Mentor and/or Academic Advisor for specific information regarding academic policies pertaining to their respective program.