MASTER OF BIOMEDICAL IMAGING AND SIGNALS

The purpose of this degree program is to prepare students for leading edge positions in industry in the areas of biomedical imaging and signal processing. The professional Master of Biomedical Imaging and Signals is a course-only degree program that prepares students for professional practice.

The interdisciplinary nature of bioengineering generally involves many facets of electrical and computer engineering. The Department of Electrical and Computer Engineering offers several courses and research opportunities that engage students interested in biomedical engineering. In addition, there are a significant number of courses offered by the Department of Biomedical Engineering and other disciplines at the university which are of great importance to students interested in the professional master's degree in biomedical engineering, with specialization in medical imaging and bio-signals.

The admission requirements for the degree follow the existing admission requirements for other professional master's degrees in the Department of Electrical and Computer Engineering. Students whose accredited B.S. degree is not in electrical and computer engineering may pursue the professional master's degree provided that they have an adequate background and can demonstrate proficiency in the material contained in undergraduate courses equivalent to Illinois Institute of Technology's:

ECE 211	Circuit Analysis I	3
ECE 213	Circuit Analysis II	4
ECE 218	Digital Systems	4
ECE 307	Electrodynamics	4
ECE 308	Signals and Systems	3
ECE 311	Engineering Electronics	4
BIOL 107	General Biology Lectures	3
MATH 251	Multivariate and Vector Calculus	4
MATH 252	Introduction to Differential Equations	4
MATH 374	Probability and Statistics for Electrical and Computer Engineers	3

A student may demonstrate proficiency by successfully completing the courses or by demonstrating satisfactory performance in one or more special examinations administered by the department.

Students can pursue a professional master's degree in the area of biomedical imaging and signals by completing the required core and elective courses, including at least two ECE and one BME elective courses.

Curriculum

Requirement	Credits
Minimum Credits Required	30
Maximum 400-Level Credit	12
Minimum 500-Level Credit	18
Maximum Short Course ECE 700-Level Credit	4
Maximum Transfer Credit	9

Code	Title		Credit Hours
Required Core Courses			**(12)**
ECE 481	Image Processing		3
or ECE 565	Computer Vision and Image Processing		
ECE 437	Digital Signal Processing I		3
or ECE 569	Digital Signal Processing II		
ECE 511	Analysis of Random Signals		3
Select one course from the following:			3
BIOL 430	Human Physiology	3	
BME 450	Animal Physiology	3	
BME 453/553	Quantitative Physiology	3	
Imaging Elective Courses			**(3-6)**
Select one or two courses from the following:			3-6
BME 537	Introduction to Molecular Imaging	3	

BME 538	Neuroimaging	3	
ECE 597	Special Problems	3	
or BME 597	Special Problems		
Signals Elective Courses			**(6-15)**
Select a minimum of two courses from the following:			6-15
ECE 437	Digital Signal Processing I	3	
ECE 481	Image Processing	3	
ECE 501	Artificial Intelligence and Edge Computing	3	
ECE 505	Applied Optimization for Engineers	3	
ECE 510	Internet of Things and Cyber Physical Systems	3	
ECE 565	Computer Vision and Image Processing	3	
ECE 566	Machine and Deep Learning	3	
ECE 567	Statistical Signal Processing	3	
ECE 568	Digital Speech Processing	3	
ECE 569	Digital Signal Processing II	3	
ECE 597	Special Problems	3	
or BME 597	Special Problems		
General Electives			**(0-9)**
Select zero to nine credit hours of courses from ECE 400-799			0-9

With adviser's approval, students may take up to two senior (400-level) or graduate level courses in engineering, math, or science.