

Mechatronic Systems Engineering and Biomedical Engineering

September 2026 (for students who entered first year in September 2025 or later)

Year 2

Term A

NMM 2270A	Applied Mathematics for Engineering II
MSE 2200Q	Engineering Shop Safety Training
MSE 2201A	Introduction to Electrical Instrumentation
ECE 2205A	Electric Circuits
MME 2202A	Mechanics of Materials
MME 2204A	Thermodynamics I
CS 1037A	Computer Science Fundamentals II
BME 3201A	Fundamentals of Biomedical Engineering Design

Term B

NMM 2276B	Applied Mathematics for Electrical & Mechanical Eng. III
MSE 2202B	Introduction to Mechatronic Design
MSE 2233B	Circuits and Systems
MME 2213B	Engineering Dynamics
MME 2273B	Introduction to Fluid Mechanics and Heat transfer

Year 3

Term A

MSE 3301A	Materials Selection and Manufacturing Processes
MSE 3310A	Electric Motors and Drives
ECE 3330A	Control Systems
MME 3381A	Kinematics & Dynamics of Machines
Biology 1001A	Biology for Sciences I
BME 3301	Neural Systems Engineering

Term B

MSE 2221b	Computational Methods in Mechatronic Systems Engineering
MSE 3302B	Sensors and Actuators
ECE 3331B	Signals and Systems
MME 3360B	Finite Element Methods in Mechanical Engineering
MME 3380B	Mechanical Components Design
Biology 1002B	Biology for Sciences II
One 0.5-credit Biomedical Science elective	

NOTES:

Some electives may not be offered in a given academic year. Consult the appropriate Department for an accurate listing. Courses that do not appear on the lists below require special permission from the Program.

Healthcare Non-technical Electives

Anthropology 2240A/B	Evolution, Ecology & Human Health
Anthropology 2290F/G	Cultures of Health and Healing
Economics 2169F/G	Economics of Health Care
GSWS 2244	Women and Health
History 2818F/G	Plague and Death from Antiquity to the 18 th Century
History 2819F/G	How Epidemics Change the Way We Live
History 2195A/B	Epidemics in North America
Law 3101A/B	Healthcare Law
Philosophy 2272F/G	Bioethics and Disability
Philosophy 2715F/G	Health Care Ethics
Political Science 2276F/G	The Politics of Health Care
Psychology 2036A/B	The Psychology of Physical Health and Illness
Psychology 2135A/B	Cognitive Psychology
Religious Studies 2239F/G	Christian Bioethics
Sociology 2179A/B	Promotion of Community Health
Sociology 2180A/B	Development of Health Inequalities
Writing 3222F/G	Pathology to Pathography: Advanced Healthcare Communication

Biomedical Sciences Electives

Anatomy and Cell Biology 2200A/B	Systemic Anatomy of the Human Body
Biochemistry 3385A/B	Human Biochemistry
Biochemistry 3386A/B	Clinical Biochemistry
Biology 2382A/B	Cell Biology
Biology 2581A/B	Genetics
Chemistry 2213A/B	Organic Chemistry
Chemistry 2223A/B	Organic Chemistry of Biological Molecules
Communication Sciences and Disorders 4417A/B	Hearing Science
Health Science 2300A/B	Systemic Approach to Functional Anatomy
Health Science 3300A/B	Anatomy of the Human Body
Kinesiology 2000A/B	Physical Activity and Health
Medical Biophysics 4700A/B	Case Studies in Medical Biophysics

Year 4

Term A

Biochem 2280A	Biochemistry and Molecular Biology
ECE 2277A	Digital Logic Systems
ECE 4455A	Biomedical Systems Analysis
Physiology 2130	Human Physiology
SS 2141A	Applied Probability and Statistics for Engineers
One 0.5-credit Biomedical Science elective	
One 0.5-credit Healthcare non-technical elective	

Term B

BME 3303B	Cellular Systems Engineering
ECE 3375B	Microprocessors and Microcomputers
MME 4469B	Biomechanics of the Musculoskeletal System
Physiology 2130	Human Physiology
One 0.5-credit Biomedical Science elective	
One 0.5-credit Healthcare non-technical elective	
One 0.5-credit BME technical elective	

Year 5

Term A

MSE 4401A	Robotic Manipulators
MSE 4499	Mechatronic Design Project
BME 4400E	Biomedical Engineering Research Thesis (1.5-credit course)
ECE 4445A	Introduction to Digital Image Processing
ELI 4110F	Engineering Ethics, Sustainable Development and the Law
One 0.5-credit Healthcare non-technical elective	

Term B

MSE 4499	Mechatronic Design Project
ECE 4460B or ECE 4469B	Real-Time and Embedded Systems or Applied Control Systems
BME 4400E	Biomedical Engineering Research Thesis (1.5-credit course)
ELI 3000B or ELI 3100B or ELI 4200B or ELI 4300B or ELI 4400B	Managing the Innovation Process or Planning and Project Management or The Entrepreneurial Environment or Risk Assessment and Management or Strategic Innovation Commercialization
Two 0.5-credit BME technical electives	

Medical Biophysics 4730A/B	Disease Markers and Precision Medicine
Medical Science 4931F/G	Selected Topics in Medical Science
Physiology 3140A/B	Cellular Physiology
Psychology 2220A/B	Intro. to Behavioural & Cognitive Neuroscience

Biomedical Engineering (BME) Technical Electives

AISE 4025A/B	Intro. to Computer Assisted Surgery
CBE 4421A/B	Intro. to Biomaterials Engineering
CBE 4422A/B	Nanobiotechnology
CBE 4423A/B	Tissue Engineering
ECE 4438A/B	Advanced Image Processing and Analysis
ECE 4445A/B	Intro. to Digital Image Processing
Medical Biophysics 3330F/G	Human Biomechanics with Biomedical Applications
Medical Biophysics 3518B	Introduction to Molecular Imaging
Medical Biophysics 3720A	In Vivo Medical Imaging
Medical Biophysics 3820B	Photonics in Medicine and Biology
Medical Biophysics 4720A	Applied Medical Imaging
MME 4470B	Medical Devices and Assistive Technologies