NUS National University of Singapore | Department of Biomedical Engineering Faculty of Engineering

Biomedical Engineering Elective Modules (32 MCs/8 modules)
Students have the option to embark on one of the 3 Pathways below.
They may choose not to follow any of the Pathways.

Pathway #1 - Engineering Research Pathway:	Pathway #2 – Innovation and Entrepreneurship:	Pathway #3 - Engineering Professional Pathway:
For those interested in a research career - Concurrent BEng/MSc - Solid fundamentals to prepare for PhD studies either locally or overseas - Top students admitted to GEP to accelerate and given global exposure - Mandatory participation in UROP - IA in RIs, corporate /govt research labs locally or overseas - Opportunities to engage with top researchers /professors Research Focus Areas: 1.Biomaterials/Tissue Engineering & Repair 2.Biomechanics/Computational Bioengineering 3.Nanobioengineering 4.Biosignal Processing/Bioimaging 5.Biorobotics	Deep engineering fundamentals, plus: - Design thinking, systems thinking, work across disciplines, team work, communication, innovation, entrepreneurship - Delivered through experiential learning and service learning - IA through NOC, iLEAD and similar programs - Engagement with entrepreneurs, captains of industry Opportunities for students to further develop their Year 2 and Year 3 design projects into a more viable product.	For those interested in a professional engineering career in private or public sector: - Strong fundamentals in engineering principles related to discipline of study - Extensive engagement with industry through internships and project work - Preparation for professional registration (PEB, IES, etc.) Three main sectors are: •MedTech •Healthcare •Biologics

Pathway #1 - Engineering Research Pathway: For those interested in a research career	Pathway #2: For those interested in innovation and entrepreneurship	Pathway #3 - Engineering Professional Pathway: For those interested in a professional engineering career in private or public sectors		
Modules to be advised by respective mentors/supervisors	**Engineering Design and Innovation**	**MedTech**	**Healthcare**	**Biologics**
BN2001 Independent Study	BN4201 Musculo-skeletal Biomechanics	BN2001 Independent Study	BN2001 Independent Study	BN2001 Independent Study
BN3202 Musculo-Skeletal Biomechanics	BN4203 Rehabilitation Engrg	BN3201 Introduction to Biomechanics-to rename Musculo-Skeletal Biomechanics	BN3201 Introduction to Biomechanics-to rename Musculo-Skeletal Biomechanics	BN3402 Bio-Analytical Methods in Bioengineering
BN3401 Biomedical Electronics & Systems	BN4404 Biomicroelectromechanical Systems-BioMEMs	BN3401 Biomedical Electronics & Systems	BN3401 Biomedical Electronics & Systems	BN3501 Equilibrium & Kinetic Bioprocesses
BN3402 Bio-Analytical Methods in Bioengineering	BN5104 Quantitative Physiology Principles in Bioengineering	BN3501 Equilibrium & Kinetic Bioprocesses	BN4201 Musculoskeletal Biomechanics	BN4301 Principles of Tissue Engineering
BN3501 Equilibrium & Kinetic Bioprocesses	BN5208 Quality Management and Regulatory Systems	BN4202 Biofluid Dynamics	BN4203 Rehabilitation Engineering	BN4403 Cellular Bioengineering
BN4109 Special Topics in Bioengineering	BN5210 Biosensors & Biochips	BN4404 Biomicroelectromechanical Systems-BioMEMs	BN4402 Electrophysiology	BN5201 Advanced Biomaterials
BN4201 Tissue Biomechanics	EG1603 TIP - Product & Business Plan Competition (2 MCs)	BN5201 Advanced Biomaterials	BN4406 Biophotonics and Bioimaging	BN5203 Advanced Tissue Engineering
BN4202 Biofluids Dynamics	EG2201A Design Thinking in Grand Engineering Challenges – Part 1	BN5205 Computational Biomechanics	BN5207 Medical Imaging Systems	BN5208 Quality Management and Regulatory Systems
BN4203 Rehabilitation Engineering	EG2603 TIP - Product & Business Plan Development (2 MCs)	BN5208 Quality Management and Regulatory Systems	BN5208 Quality Management and Regulatory Systems	LSM2103 Cell Biology
BN4301 Principles of Tissue Engineering	MT2001 Experiencing Engineering Leadership	BN5210 Biosensors & Biochips	ME3162 Manufacturing Processes	MT3001 Systems Thinking and Engineering
BN4402 Electrophysiology	MT3001 Systems Thinking and Engineering (4MCs)	ME3162 Manufacturing Processes	MT3001 Systems Thinking and Engineering	MT5007 Management of Technological Innovation
BN4403 Cellular Bioengineering	MT5001 Intellectual Property Management	MT3001 Systems Thinking and Engineering	MT5007 Management of Technological Innovation	
BN4404 Biomicroelectromechanical Systems-BioMEMs	MT5003 Creativity and Innovation	MT5007 Management of Technological Innovation		
BN4406 Biophotonics and Bioimaging	MT5006 Strategic and New Product Development			
BN5104 Quantitative Physiology Principles in Bioengineering	MT5007 Management of Technological Innovation			
BN5201 Advanced Biomaterials				
BN5202 Advanced Tissue Biomechanics				
BN5203 Advanced Tissue Engineering				
BN5205 Computational Biomechanics				
BN5206 Biosignal Processing and Analysis				
BN5207 Medical Imaging Systems				
BN5208 Quality management and regulatory systems				
BN5209 Neurosensors and Signal Processing				
BN5210 Biosensors & Biochips				
BN5209 Neurosensors and Signal Processing				
BN5210 Biosensors & Biochips				
LSM2103 Cell Biology				

Note: The list may change from time to time