FLORIDA ATLANTIC UNIVERSITY
Department of Biomedical Engineering
College of Engineering & Computer Science

M.S. IN BIOMEDICAL ENGINEERING WORKSHEET

Program Core Courses (12 Credits, 4 courses out of 8*)

Course No.	Course Name	Semester
CAP 5768	Introduction to Data Science	
BME 5405	BME Cell Biology and Physiology	
BME 5537	Bioimaging	
BME 6105	Biomaterials	
BME 5521	Bio-signal Processing	
BME 5742	Biosystems Modeling and Control	
BME 6585	BioMEMS	
BME 6334	Tissue Engineering	

***: All these courses are part of technical elective group A as well. If four courses are taken as the core, the other four can be taken as technical electives.**

Thesis Option:

BME 6971	Master's Thesis Biomedical engineering (6 credits)	
BME 6905	Directed Independent Study. *A maximum of 3 credits of directed independent study may be applied toward the master's degree.*	
CGS 5937	**Graduate Seminar (0) credits/ Mandatory**	

Non-Thesis Option:

CGS 5937	**Graduate Seminar (0) credits/ Mandatory**	

Electives:
Non-Thesis Option: 18 credits of electives (at least 9 credits from Group A below).

Thesis Option: 12 credits of electives (at least 9 credits from Group A below)

Group A: Engineering, Computer Science, and Biomedical Engineering Electives

Electrical Engineering and Computer Science, Mechanical Engineering, and Biomedical Engineering Electives
(No **limit** on the number of courses that can be chosen from the list below) [+]

Course No.	Course Name	Semester
BME 4503C	Biomedical Instrumentation	
BME 5052L	Biomedical Engineering LAB	
BME 5200/BME 4201	Orthopedic biomechanics	
BME 5360/BME 4363	Neuromechanics	
BME 5282/BME 4509	Bio-Signal Processing	
BME 5405	Biomedical Engineering, Cell Biology, and Physiology	
BME 5425	Introduction to Nanobiotechnology	
BME 5537/BME 4536	Bioimaging	
BME 5567	Electron Microscopy	
BME 5586C/BME 4583C	Microfabrication Technology	
BME6105/ BME 4100	Biomaterials	
BME 6935	Computational Modeling Brain &Behavior	
BME 4733/ BME 5719	Modeling in Biomedical Eng Finite Element Analysis in BME	
BME 5742	Biosystems Modeling and Control	
BME 5914C/BME 4070C	Methods in Biomedical Engineering Research	
BME 6324/BME 4326	Stem Cell Engineering	
BME 6334/ BME 4332	Tissue Engineering	
BME 4361/BME 6362	Neural Engineering	
BME 6425	Computational Modeling of Biological Neural Networks	
BME 6572/BME 4571	Nanotechnology	
BME 6585/BME 4581	Advanced Topics in Microfluidics & BioMEMS	
BME 6762/ BME 4930	Bioinformatics: Biomedical Perspectives	
BME 4276C/ BME 6275	Applied Biorobotics Advanced Biorobotics	
BME 4930 BME 5930 BME 6935	Special Topics Biomedical Engineering	
BME 6935 COT 6930 BME 6930	Introduction to Biosensing and Biophotonics Computational Data-Driven Modeling Therapeutics	
CAP 5615	Introduction to Neural Networks	
CAP 6411	Foundations of Vision	
CAP 6619	Deep Learning	
CAI 5006	Foundations of Artificial Intelligence for Non-majors	
CAP 5796	Foundations of Data Engineering for Non-majors	
CIS 5653	Foundations of Cloud Computing for Nonmajors	
CIS 5775	Foundations of Cybersecurity for Nonmajors	
COP 5085	Foundations of programming for nonmajors	
CAP 5625	Computational Foundations of Artificial Intelligence	
CAP 6415	Computer Vision	
CAP 6618	Machine Learning for Computer Vision	
CAP 6629	Reinforcement Learning	

+ : Any other graduate-level courses offered by BME, EECS, OME, and CEGE can be considered a technical group A elective by permission of the program's advisor.

Electrical Engineering, Computer Science, and Mechanical Engineering (Limit of 3 credits)

Course No.	Course Name	Semester
CAP 6010	Multimedia Systems	
CAP 6415	Computer Vision	
CAP 6512	Evolutionary Computing	
CAP 6635	Artificial Intelligence	
CAP 6673	Data Mining and Machine Learning	
CAP 6777	Web Mining	
CAP 6778	Advanced Data Mining & Machine Learning	
CDA 6122	Evaluation of Parallel and Distributed Systems	
CDA 6214	Structured VLSI design	
CEN 5931	Special Topics in Computer Engineering	
CEN 6930	Special Topics in Computer Engineering	
COP 6726	New Directions in Database Systems	
COP 6728	Visual Information Retrieval	
COP 6731	Theory & Implementation of Database Systems	
PSB 7918	Adv Research in Neuroscience	
EEE 5502	Digital Processing of Signals	
EEE 6585	Digital Processing of Speech Signals	
EEL 5613	Modern Control	
EEL 5654	Control Systems 2	
EEL 5934	Special Topics- Electrical Engineering	
EIN 5603C	Industrial Automation	
EML 6930	Controls	
EOC 6630	Signal Processing	
EOC 6635	Engineering Data Analysis	

Group B: Science Electives (Limit of 6 credits)

Biology Electives:

Course No.	Course Name	Semester
BSC 6417C	Practical Cell Neuroscience	
BSC 6895	Honors AI Applications in Biology	
MCB 6930	Advanced Topics in Microbiology	
PCB 6236	Advanced Immunology	
PCB 5064L	Advanced Genetics Lab	
PCB 5532	Advanced Molecular Cell Biology	
PCB 6045	Conservation Biology	
PCB 6849	Cellular Neuroscience and Disease	
PCB 6456	Experimental design in biometry	
PCB 6933	New Tech in Biomed Science	
PCB 6818	Proteins in health and disease	
EEL 5661	Robotic Applications	

Chemistry Electives:

Course No.	Course Name	Semester
BCH 6740	Advanced Biochemistry	
BCH 6930	Advanced Topics in Biochemistry	
CHM 6157	Instrumentation	
CHM 6277C	Advanced Drug Development	
CHM 6720	Kinetics and Energetics of Reaction	

Complex Systems and Brain Science

Course No.	Course Name	Semester
ISC 5453	Nonlinear Dynamic Systems	
ISC 5465	Cognitive Neuroscience	
ISC 5930	Neural Time Series Analysis (Special Topics)	
ISC 6452	Cognition and Complex Systems	
ISC 6460	Computational Neuroscience 1	
ISC 6930	Special Topics	
PSB 6345	Cellular and Molecular Neuroscience	
PSB 6346	Systems and Integrative Neuroscience	

Physics/Medical Physics and Math Electives

Course No.	Course Name	Semester
MAD 5474	Introduction to Cryptology and Information Security	
MAP 6211	Intro to Dynamical Systems and Chaos	
MTG 6418	Dynamical Systems, Chaos, and Computing	
RAT 6204	Radiation Biology	
RAT 6616	Medical Imaging Physics	
RAT 6628	Radiation Therapy Physics	
RAT 6629	Advanced Photon Beam Radiation Therapy	
RAT 6686	Radiation Physics	
RAT 6687	Nuclear Medical Physics	
STA 5195	Biostatistics	
STA 6857	Applied Time Series Analysis	

College of Business

Course No.	Course Name	Semester
ENT 6016	Venture Creation	
ENT 6196	Biotechnology Business Development [Counts as Biomedical Engineering Elective]	

College of Nursing

Course No.	Course Name	Semester
NGR 6141	Advanced Pathophysiology	

College of Medicine

Course No.	Course Name	Semester
BMS 6523	Autonomic Function and Diseases (Medicine)	
BMS 6601	Fundamentals of General Pathology (Medicine)	
BMS 6736	Brain Diseases: Mechanism and Therapy (Medicine)	
BOT 6735C	Advanced Plant Biotechnology	
GMS 6302	Molecular Basis of Disease & Therapy	
GMS 6513	Pharmacology	
GMS 6735	Molecular Neuropsychopharmacology	
PCB 6207	Advanced Cell Physiology	
PCB 6238	Problem-Based Immunology	
PCB 6705	Molecular Biology of the Cardiovascular System and Cardiac Disease	
PCB 6885	Physiology of the Heart	

Plan of study:
Students should prepare, in consultation with a graduate advisor, the online Plan of Study, i.e., the list of courses, for completing their degree requirements. All courses must be approved by the students' advisor.

A student is eligible to apply for a plan of study when:

1. A minimum of 9 credit hours as a graduate student have been completed.
2. A minimum of 3.0 GPA in all courses attempted as a graduate student has been maintained.

Normally, no more than 15 credit hours of work completed before submitting your Plan of Study will be accepted toward the degree program.

- **Students working toward the MS (thesis option) degree may not register for thesis credits until their Plan of Study has been approved.**
- **A minimum of two 6000-level courses must be met as part of the requirement for the degree.**
- **A maximum of 3 credits of directed independent study may be applied toward both the thesis and non-thesis options of the master's degree.**