

**M.S. IN BIOENGINEERING WORKSHEET**

Name: \_\_\_\_\_ Z#: \_\_\_\_\_ Advisor: \_\_\_\_\_

Date of Admission: \_\_\_\_\_ Undergraduate Institution/Year: \_\_\_\_\_

GPA: \_\_\_\_\_ Major: \_\_\_\_\_ GRE/Year: \_\_\_\_\_

**Deficiency Requirements** (Not counted in the total program credits)

- PCB 3063 can be taken at any time during the program; however it must be taken prior to BSC 6935 Biotechnology Lab.
- Programming requirement must be met prior to taking the following Engineering and Computer Science courses: Data Mining, Medical Information Systems, Bio-Signal Processing, Introduction to Neural Networks, and more electives.

Course No.	Course Name	Semester	Grade
PCB 3063	Genetics (4 credits) <span style="float: right;">Live only</span>		
COP 2220	Intro to Programming in C (optional for students with non-engineering background) <span style="float: right;">Live only</span>		

**Program Core Courses (12 Credits)**

Course No.	Course Name	Semester	Grade
BME 5000	Introduction to Bioengineering		
BME 5742	Biosystems Modeling and Control		
BME 6762	Bioinformatics: Bioengineering Perspectives		
BSC 6935	Biotechnology Lab (Contact Dr. Binninger/ binninge@fau.edu)		

**Electives:**

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

Non Thesis Option: 21 credits of electives (at least 12 credits from Group A below)

**Group A: Engineering, Computer Science and Bioengineering Electives**

**Computer and Electrical Engineering and Computer Science and Mechanical Engineering Bioengineering Electives**

(No limit on the number of courses that can be chosen from the list below)

Course No.	Course Name	Semester	Grade
BME 6324	Stem Cell Engineering		
BME 6334	Tissue Engineering		
BME 6905	Directed Independent Study (3 credits) <b>(Mandatory for all Non-Thesis Students)</b> (It must be taken no earlier than two semesters prior to graduation.)		
BME 6971	Master's Thesis (6 credits) <b>(THESIS OPTION)</b>		
CAP 5615	Introduction to Neural Networks		
CAP 6411	Foundations of Vision		
CAP 6512	Evolutionary Computing		
CAP 6673	Data Mining & Machine Learning		
COT 6930	Data Mining and Bioinformatics		
COT 5930	Medical Information Systems		
EEE 5425	Nano Biotechnology		
EEL 5661	Robotic Applications		
EEL 5934	Bio-Signal Processing		
EEL 6819	Neural Complex and Artificial Neural Networks		
EEL 6935	Automatic Biometrics		
EEL 6935	Medical Imaging		
EML 6930	Biomaterials		

EML 6930	Introduction to Microfluidics and BioMEMS		
EML 6930	Introduction to Robotics		
OTHER	APPROVED BY ADVISOR		
OTHER	APPROVED BY ADVISOR		

**Computer and Electrical Engineering and Computer Science *Other* Electives** (Limit of 6 credits)

Course No.	Course Name	Semester	Grade
CAP 6010	Multimedia Systems		
CAP 6415/ EEL 6935	Computer Vision		
CAP 6777	Web Mining		
CAP 6778	Advanced Data Mining & Machine Learning		
COP 6726	New Directions in Database Systems		
COP 6728	Visual Information Retrieval		
COP 6731	Theory & Implementation of Database Systems		
COT 5930	Digital Image Processing		
EEE 5502	Digital Processing of Signals		
EEE 6585	Digital Processing of Speech Signals		
EEL 5654	Control Systems 2		
EEL 5613	Modern Control		
EEL 6819	Neural Complex and Artificial Neural Networks		
OTHER	APPROVED BY ADVISOR		
OTHER	APPROVED BY ADVISOR		

**Mechanical & Ocean Engineering Electives** (Limit of 6 credits)

Course No.	Course Name	Semester	Grade
BME 6222	Molecular Cellular & Tissue Biomechanics		
BME 6572	Nanotechnology		
BME 6638	Fields Forces and Flows in Biological Systems		
EIN 5603C	Industrial Automation		
EML 6930	Biomechanics		
EML 6930	Controls		
EOC 6630	Signal Processing		
EOC 6635	Engineering Data Analysis		
OTHER	APPROVED BY ADVISOR		
OTHER	APPROVED BY ADVISOR		

**Group B: Science Electives**

**Biology Electives:** (Limit of 9 credits)

Course No.	Course Name	Semester	Grade
BSC 6458C	Bioinformatics (Counts as Bioengineering Elective) (4 credits)		
BSC 6936	Practical Cell Neuroscience (Special Topics)		
MCB 6930	Advanced Topics in Microbiology		
PCB 6236	Advanced Immunology		
PCB 6849	Cellular Neuroscience and Disease		
OTHER	APPROVED BY ADVISOR		
OTHER	APPROVED BY ADVISOR		

**Chemistry Electives: (Limit 6 credits)**

Course No.	Course Name	Semester	Grade
BCH 5415	Biochemistry of the Gene		
BCH 6740	Advanced Biochemistry		
CHM 6157	Instrumentation		
CHM 6720	Kinetics and Energetics of Reaction		
OTHER	APPROVED BY ADVISOR		
OTHER	APPROVED BY ADVISOR		

**Complex Systems and Brain Science (Limit of 6 credits)**

Course No.	Course Name	Semester	Grade
ISC 5453	Nonlinear Dynamic Systems		
ISC 5465	Cognitive Neuroscience		
ISC 5930	Neural Time Series Analysis		
ISC 6447	Noninvasive Brain Recording		
ISC 6452	Cognition and Complex Systems		
ISC 6460	Computational Neuroscience 1		
ISC 6464	Computational Neuroscience 2		
ISC 6930	Special Topics		
PSB 6345	Neuroscience 1		
PSB 6346	Neuroscience 2		
OTHER	APPROVED BY ADVISOR		
OTHER	APPROVED BY ADVISOR		

**Physics and Math Electives (Limit 6 credits)**

Course No.	Course Name	Semester	Grade
MAP 6211	Intro to Dynamical Systems and Chaos		
MTG 6418	Dynamical Systems, Chaos and Computing		
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		
OTHER	APPROVED BY ADVISOR		

**Group C: Other Electives (Limit of 6 credits)****College of Business**

Course No.	Course Name	Semester	Grade
ENT 6196	Biotechnology Business Development [Counts as Bioengineering Elective]		
OTHER	APPROVED BY ADVISOR		
OTHER	APPROVED BY ADVISOR		

**College of Medicine**

Course No.	Course Name	Semester	Grade
BMS 6523	Autonomic Function and Diseases (Medicine)		
GMS 6301	Macromolecules & Human Disease		
GMS 6302	Molecular Basis of Disease & Therapy		
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 6848	Adult Neurogenesis		
PCB 6885	Physiology of the Heart		
OTHER	APPROVED BY ADVISOR		
OTHER	APPROVED BY ADVISOR		

**Admission to Candidacy/Online Plan of Study:** Students must apply for candidacy as soon as they are eligible. 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 student's advisor.

**A student is eligible to apply for candidacy/online 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 degree program.

Students working toward the MS (thesis option) degree may not register for thesis until their Plan of Study has been approved.

**A MINIMUM OF AT LEAST 18 CREDITS OF 6000 LEVEL COURSES MUST BE TAKEN TO MEET PART OF THE REQUIREMENTS FOR THE DEGREE.**

**Other Requirements:**

**Thesis Option:** No more than 3 credits of directed independent study may be applied toward the master's degree.

**Non-Thesis Option:** No more than 6 credits of directed independent study may be applied toward the master's degree.

**Research Portfolio**

1. All students must maintain a departmental online Research Portfolio, in which they place files such as MS Thesis copy, papers, technical reports, design-oriented homework assignments and likewise material. The Research Portfolio will be inspected by the Graduate Advisor before graduation.
2. Non-thesis students must take 3 credits of EEL 6905 Directed Independent Study, intended as a one semester mini-research project done under the guidance of one of the Engineering faculty. The research must produce, at the least, a technical report that should be placed in the student's online research portfolio.

**Research-Oriented DIS: Semester Taken** \_\_\_\_\_ **Research Advisor** \_\_\_\_\_

**Research Portfolio:** \_\_\_\_\_ **Inspected by:** \_\_\_\_\_

**GPA (at least 3.0)** \_\_\_\_\_

**Advisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_