

## University of Texas at El Paso Syllabus

### Course Title: MME 4190: Biomaterial Implantology

**Class Time:** Spring Semester

Lab sections are Thursdays 2-5pm or Fridays 8:30 -11:30 am. Room: BE 400

**Textbook:** none

**Instructor:**

Thomas Boland, PhD ext: 7992, email: [tboland@utep.edu](mailto:tboland@utep.edu)

**Office hours:** TBA

**Course Description:**

This is a research course. Student teams will work on a tissue engineering research problem. They may design their own materials or use materials provided to them by researchers at UTEP. Students will implant the materials into nude mice, and evaluate the tissue response after 2-6 weeks. Students will learn to conduct basic surgery, harvest tissues, conduct basic histologic analysis and interpret results.

**Course Objectives:**

1. understand the role of animal protocols in research
2. know many modern natural and some synthetic biomaterials
3. learn aseptic technique
4. gain an intuitive understanding of wound healing in presence of materials
5. learn to conduct basic surgery on mice
6. learn how to conduct tissue harvesting, processing, staining, imaging and interpretation
7. learn basic histological technique
8. acquire experience in designing a biomaterials experiment, conduct an in vivo assessment of said biomaterial and interpret, trouble-shoot the results

**ABET Learning Outcomes:**

**“K”:** An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice: Outcome will be met via research report.

POINTS DISTRIBUTION:	Homework:	20%
	Quiz:	10%
	Research Project:	70%

**Approximate Schedule:**

Week	Topic
1	Complete necessary IACUC documents for access to vivarium (CITI, orientation, zoonotic diseases, surgery course)
2	Aseptic technique; Learn to seed cells Overview of various natural biomaterials used in research
3	Aseptic technique; Learn to split cells Overview of various histology stains
4	Mice arrive at lab Basic animal care intro Define a problem to work on
5	Prepare a biomaterial to be implanted
6	Surgery!
7	Familiarizing with tissue processing, embedding, microtome sectioning
8	Familiarizing with tissue staining, microscopy
9	Spring Break
10	1 <sup>st</sup> tissue harvest
11	Tissue analysis
12	Interpretation
13	2 <sup>nd</sup> tissue harvest
14	Tissue analysis
15	Interpretation
16	Data analysis and report
17/18	<b>Review Session Final Report (3 hours): date and location TBD</b>

### **Disability**

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to [cass@utep.edu](mailto:cass@utep.edu), or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at [www.sa.utep.edu/cass](http://www.sa.utep.edu/cass).

### **Academic Integrity**

The instructors expect a commitment to truthfulness, honor and responsibility, without which you cannot earn the trust and respect of others. Therefore, we will not tolerate plagiarism, lying, cheating, or stealing in any form.

**Honor Code: “I, \_\_\_\_\_, hereby pledge that I have read and understood the entire syllabus for the course, MME 4190: Biomaterial Implantology, and I will abide by the policies described above.**