

Syllabus  
BIO 534 Scanning Electron Microscopy

**INSTRUCTOR**

Justin K. Williams, Ph.D.

Office hours MW 2-3 Lee Drain 140. Other times available on request

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Class Time M: 5-8 p.m. (subject to change)

Attendance is mandatory

**Text: Scanning Electron Microscopy and X-ray Microanalysis**

Joseph Goldstein et al.

**GRADING**

**Test**

Lecture test	20%
Proficiency Exam on machine	10% must make a 90% to use machine on own Student can take test up to 3x's
X-Ray analysis	10%
Sample preparation	10%
Project 1	20%
Project 2	10%
Participation	7.5%
Conduct	7.5%
Grade of Slides from students	5%

The purpose of this class is to introduce students to the applied and theoretical aspects of scanning electron microscopy, energy dispersive and X-ray microanalysis techniques as they apply to the characterization of materials and biological samples. General use and imaging will be addressed, as well as advanced imaging, and sampling techniques. Students will be required to attend the lecture, participate in classroom discussion, and complete assignments and examinations. Personal projects will include the preparation, imaging, and analytical analyses of their own samples. The primary project will be assigned by Dr. Williams the secondary project must be approved by Dr. Williams by the time listed in the attached calendar. If a student does not have their own samples, they can be provided by Dr. Williams. 10 minute presentations of the project results are required at the end of the semester (see attached calendar).

## Calendar

January 28 First Day Introduction/ Class Room

February 4<sup>th</sup> SEM set up; Electron bean and lens

February 11 Sample Preparation and coating

February 18 Imaging/ X-ray analysis

February 25 Lecture Test/ Class Room

March 3 Set up times with instructor for individual lessons

March 10<sup>th</sup> No class Spring Break

March 17<sup>th</sup> Set up times with instructor for individual lessons

March 24<sup>th</sup> Proficiency Exam

March 31<sup>st</sup> Proficiency Exam

April 7 Work on your projects

April 14<sup>th</sup> Work on your projects

April 21<sup>st</sup> Work on your projects

April 28<sup>th</sup> Work on your projects

May 5 Present Projects (May divide into 2 days).

CHAIN OF COMMAND SEM: In case machine is not working follow this list of Chain of Command. If no one is available and you can not get an image after running through trouble shoot list, turn machine off and wait to contact an individual on list (starting from 1).

- 1) Dr. Justin Williams                      4-1552 (Unavailable MW 9-10; W 12-6).
- 2) Dr. Jerry Cook                            4-1540
- 3) Kevin Callahan

DR. Cook's lab: The SEM is in Dr. Tami Cook's lab, **do not disturb** any equipment in her lab. **Do not use the computers in lab**, there is a dissecting scope available for use to prepare samples. I will show you which scoop that you can use. Failure to follow rules will result in a 0% for conduct grade.

SEM: The Scanning electron Microscope is an expensive piece of equipment, it is not a toy. Do not photo any specimen that is not approved by the instructor. Placing specimens in machine that are not suitable and are not approved will result in 0% for conduct and specimen preparation.