

Course Syllabus: BIOL 4010/6010 (Special Topics)

Theory and Practice of Scanning Electron Microscopy CRN 21217 and 21238; MW 1:00 – 1:50 p.m. (BC 1024) in BC 1025, MW 2:00 – 3:50 p.m.

Instructor: Dr. Russ Goddard, BC 2090, 249-2642

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Course Web Page: <http://www.valdosta.edu/~rgoddard/>

Office Hours: Tues.-Thurs. 2:00 - 3:30 p.m. or by appointment

Course Catalog Description: BIOL 4450, Theory and practice of scanning electron microscopy, 2-2-4.

Prerequisite: BIOL 3200 and 3250 or consent of the instructor (**for 6450:** admission into the graduate program).

General principles of scanning electron microscopy operation and theory with comparison to light optics in a laboratory intensive environment. Topics include fixation and preparation of samples for standard, low voltage, low vacuum and high resolution SEM.

Recommended Texts:

Bozzola, J.J., and L.D. Russell. 1999. Electron Microscopy, Principles and Techniques for Biologists. Jones and Bartlett, Boston, MA.

Or, Goldstein et. al. 2003. Scanning electron microscopy and x-ray microanalysis, 3e. Kluwer Academic/ Plenum

BIOL 4010 and 6010 (50 pts): Since the SEM represents a tool for acquiring high quality research data, students must propose a research topic that could be studied using the equipment and procedures learned in the course. Students will research the literature and take preliminary photographs of any specimens that fit into a scientifically valid study. Students will give a 10 min PowerPoint presentation on their proposal at the end of the course. Graduate students in BIOL 6450 will present their proposals before the end of the fourth week of class.

BIOL 6010 (100 pts): Graduate students are expected to propose a research topic early in the course to study (see previous assignment) and will develop this proposal into a research paper using original image data obtained using the instrumentation in this course. A research paper with significant literature review (citations) and original data will be submitted (50 pts) and a 30 min research presentation (50

Tentative Lecture and Laboratory Schedule:

	Lecture:	Tentative Schedule
<u>Week</u>	<u>Topics covered: Assigned</u> <u>Reading:(Chapter:pages)</u>	<u>Laboratory Exercise:</u>
	Introduction and history of microscopy, Biological Specimen Preparation, Fixation	Safety in the Microscopy Laboratory, Fixation and preparation of specimens for SEM