

## **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:**

	<b>Lecture:</b>	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