

Computer graphics for biologists

Course: BSC 6936-013

Instructor: Dr. Stephen Kajiura

Office: Sanson 215; hours: Tue, Wed 1:30 – 4:30pm

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Email: kajiura@fau.edu

Phone: 561-297-2677

An overview of how computer graphics are employed in the life sciences.

Lecture schedule:

Wed 6:00 – 9:00 pm

SC 108

Jan 10 – Apr 25, 2007

See attached schedule for details

Content:

This hands-on graduate course will introduce students to how computer graphics are used in biological sciences for illustration, data extraction, and presentation. Each class will integrate formal lecture sessions with hands-on application at a computer. Enrollment is limited to the number of computers available. All instruction will be on the Macintosh platform and familiarity with the Mac OSX operating system is a course prerequisite. Students will be exposed to the following software: iPhoto, Photoshop, ImageJ, Illustrator, iMovie, Quicktime and Powerpoint. Familiarity with these programs is not required, although it is beneficial.

The lectures will introduce students to raster graphics and how they can be manipulated to facilitate data extraction. Considerable time will be spent on how to capture biologically meaningful photographs since the quality of the data is dependent upon the quality of the image. Students will then be taught how to utilize image analysis software to extract data from the photographs. The second half of the course will examine how vector graphics are used for illustration. Students will learn how to prepare figures for publication, prepare a poster and a media-rich Powerpoint talk. An introduction to video editing will complete the suite of tools to which the students will be exposed.

Students will be graded on their final presentation, their critique of other presentations and their participation in class discussions.

Final presentation:

Each student will present a conference-ready Powerpoint talk (12 min) incorporating photographs, vector graphics and a video clip. The other members of the class will critique the technical aspects of the presentation and provide constructive feedback. With permission of the instructor, a student may be able to substitute a conference poster for the talk. The poster will be subjected to the same class critique.

Students with disabilities:

In compliance with the Americans with Disabilities Act (ADA) students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in SU 133, x73880, and follow all OSD procedures.

Lecture	Topic
1	Introduction to raster graphics
2	Scanning – for print and screen
3	Scientific photography – exposure, composition
4	Scientific photography – macro, digital image size
5	Image enhancement – Photoshop basics
6	Image enhancement – Photoshop intermediate
7	Data extraction – ImageJ
8	Introduction to vector graphics
9	Vector graphics – Illustrator basics
10	Vector graphics – Illustrator intermediate
11	Printing for publication
12	Introduction to video editing
13	Effective presentations – Powerpoint
14	Student presentations
15	Presentation critiques

Tentative schedule – the instructor reserves the right to reassign the order of the lectures.