Biology 830 – Scientific Illustration (3 cr. hrs.) E
An introduction to the discipline of scientific illustration. Students will learn the fundamental principles of creating effective illustrations for the purpose of communicating science. A limited set of media types, both traditional and digital, will be explored. The main focus will be on creating the best images for use in research, teaching, journal publications, presentations, and other applications. Copyright and other legal issues will also be discussed.

Pre-requisites: basic knowledge of biological concepts; artistic ability not required.

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Office Hours: Mon., Tues., Wed. 10:30-11:30 am

Required Materials
Graphite media:
  Drawing pencils – medium (HB), hard (6H or 4H), soft (4B or 6B)
  Eraser
  Drawing paper - 8.5” x 11” (pad or single sheets)

Pen-and-ink media:
  Technical pens – any brand (Zig, Faber-Castell, Staedtler, Rapidograph, etc.) with fine points of various sizes (0.2 – 0.65 mm)
  Bristol board - 8.5” x 11” pad or single sheets (Strathmore smooth 300 series, etc.)

Digital media:
  Autodesk Sketchbook Pro – Mac or PC – download free 15-day trial or purchase (~$100)
  http://usa.autodesk.com/adsk/servlet/pc/index?siteID=123112&id=11895121

Optional Materials (you don’t need this stuff, but it might be fun to experiment with!)
  More drawing pencils – varying hardinesses
  Larger sheets of drawing paper and (if you like to draw BIG!)
  More technical pens – varying tip sizes and shapes
  Crowquill pen – Hunt 102 nib
  Brush
  India ink
  Larger sheets of Bristol board
  Graphics tablet (highly recommended)
  Adobe Photoshop – Mac or PC (academic version)
  Adobe Illustrator
Course Objectives

The student outcome objectives for this course are to 1.) become familiar with the discipline of scientific illustration, 2.) learn how images are used to effectively communicate science, and 3) acquire skills for creating images for education or research purposes.

One of the primary purposes of this course is to become familiar with the discipline of scientific illustration. Scientific illustration is an enormous field of study spanning all of the various disciplines of science (biology, chemistry, physics, earth science, astronomy, etc.) as well as most of the diverse media types used by modern artists (graphite, ink, colored pencil, watercolor, acrylic, digital, etc.). It is, of course, virtually impossible to cover all aspects of this vast discipline in the duration of a one semester course. We will focus our attention on the basic principles that apply to all scientific illustrations, the qualities that make an image effective, copyright laws and other legal issues, and the production of science illustrations. Throughout this course, we will be using three primary media types: continuous tone (graphite pencil), black-and-white (technical pen), and computer/digital graphics (Autodesk Sketchbook Pro). Limiting our number of media types will allow us to explore them in greater detail and to acquire a degree of proficiency in each technique. Even though scientific illustration covers the entire gamut of science, we will focus our attention on the field of biology. The format of this course will probably seem very different compared to other science courses you have taken. There will be little emphasis on exams, papers, written assignments, and other traditional forms of assessment. This course is very project oriented. There will be a few small quizzes and/or written assignments, but the majority of points awarded will be for the original illustration projects you create.

Assignments and Grading

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<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tr>
<td>3 Quizzes (10 pts. each)</td>
<td>30</td>
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<tr>
<td>3 Technique Assignments (30 pts. each)</td>
<td>90</td>
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<tr>
<td>1 Discussion Assignment</td>
<td>20</td>
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<tr>
<td>3 Illustrations (100 pts. each)</td>
<td>300</td>
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<tr>
<td>1 Final Illustration</td>
<td>200</td>
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<td><strong>TOTAL</strong></td>
<td><strong>640</strong></td>
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Grading:

93-100% A
90-92 A-
87-89 B+
83-86 B
80-82 B-
77-79 C+
73-76 C
70-72 C-
67-69 D+
63-66 D
60-62 D-
< 60% F
Course Format

Lectures – Lectures will cover basic principles of scientific illustration as a discipline. We will discuss all of the major media types and scientific subjects, qualities of effective scientific illustrations, and important legal issues. Some lectures will cover technique demonstrations and the application of the different media types we will be exploring throughout the semester.

Blackboard Discussions – We will have critical discussions of published scientific illustrations as a means of understanding what makes an image effective at communicating science.

Illustrations will be graded on:

Communicative ability – This is the most important aspect of any scientific illustration. Your image must be effective at communicating a specific scientific concept. Concepts may include, but are not limited to: processes, species identification, form and function, scientific equipment, laboratory procedures, etc.

Design complexity – Your illustration must contain a certain level of detail in order for it to be informative and interesting. Figures that are too simple lack scientific merit.

Scientific accuracy – A scientific illustration must be scientifically accurate. Details are extremely important in science. Science builds upon itself. Inaccurate images, just like inaccurate words, can lead us to incorrect explanations about the natural world.

Aesthetic appeal – There is no reason why a technically accurate illustration cannot also be aesthetically appealing. An image that looks interesting to the viewer attracts attention and curiosity, and therefore increases its communicative potential.