

**BIOL 8106: TOOLS OF SCIENCE**  
**Spring 2013**

Instructors:     Soojin Yi                                 [Soojin.Yi@biology.gatech.edu](mailto:Soojin.Yi@biology.gatech.edu)  
                  Ingeborg Schmidt-Krey   [Ingeborg.Schmidt-Krey@biology.gatech.edu](mailto:Ingeborg.Schmidt-Krey@biology.gatech.edu)

**Meeting times: Tuesdays 3:05-4:55pm**

**Location:       Cherry Emerson 204**

**Course description and goals:**

The course aims to expose graduate students to some of the tools they will need as scientists and to discuss a variety of concerns and issues that affect all successful scientists and engineers. Additionally, through ethics discussions NSF/NIH requirements for RCR training will be at least partially full-filled. This means that class attendance is obligatory to be able to meet the RCR requirements.

The syllabus will be followed as closely as possible. To accommodate all visitors' busy schedules, however, we might need to make adjustments to the date a specific topic is scheduled for.

**Grading:** The course is graded pass/fail. Attendance is required. In particular, participation in the RCR training components (8 components total) is mandatory. Any unexcused absences will result in a failing grade. If a class absence is expected, the student's advisor needs to write an excuse note (i) detailing the nature of the absence, (ii) detailed plan to compensate for the missed class topic prior to the absence. In addition, another note from the advisor detailing how the advisor and the student completed the class topic missed by the student. When all these documents are collected, the excuse is in effect.

Class participation, such as presenting the case for your group or leading a discussion for the whole class, is critical for this class.

Students will be required to complete a small number of assignments:

- 1) **Reading:** Various short readings will be assigned throughout the semester. We welcome students to bring other readings to the attention of the entire class by email or by bringing interesting articles to class. Some readings are listed in the syllabus and other material will be handed out or available on T-Square.
- 2) **Researching ethics and leading discussions:** When we discuss professional ethics for scientists, students will be asked to find relevant dilemmas, present them to the class, and lead discussions on the successful resolution of these dilemmas.
- 3) **Grant writing:** Students will be asked to write a 'specific aims' page for a chosen research topic. The goal of this exercise is to practice clear and inspirational writing, rather than to provide in depth research plans. The homework will be given on March 5 and due on March 26. Students will read and critique each other's homework.

Spring 2013

## BIOL 8106 class schedule

Wk	Date	Instructor(s)/ guests	Topic	Notes and larger assignments to prepare; additional smaller reading assignments will be added throughout the semester
1	Jan 8	SY/ ISK/ guests	Introduction; How to be a successful PhD student Panel of graduate students: Natasha De Leon Rachel Penczykowski Topics: the place of Georgia Tech grad program; various statistics; timeline; different expectations of different lab environments	
2	Jan 15	SY/ ISK/ guests	How to prepare for written & oral exams; timeline Panel of graduate students: Elsa Zhao Ryan Bloomquist Discussion about example of a successful proposal	
3	Jan 22	ISK/SY	RCR training: Responsibilities and relationships of mentors and mentees; collaborations	Start reading NAS report "On Being A Scientist"
4	Jan 29	SY/ISK	RCR training: Research misconduct RCR training: Conflict of interest and commitment	
5	Feb 5	ISK/SY	RCR training: Animal research and human subjects in research Guest: Barbara S. Henry, Director, Office of Research Compliance, Georgia Tech	
6	Feb 12	SY/ISK	Challenges of diversity: women, minorities, LGBT; policies at GT and elsewhere Panel: Drs. Darlene Wagner, Cara Gomally	
7	Feb 19	Guest/ SY	Careers: tenure track positions Guest: Drs. Julia Kubanek, Michael Goodisman	
8	Feb 26	Guest/ ISK	Careers: jobs at government labs, non- profit organizations Guest: Drs. Joe Mendelson, Jennifer Mickelburg	
9	Mar 5	SY/ISK	How to write a grant	Download NSF/NIH guidelines & examples Homework will be given
10	Mar 12	ISK/SY	Careers: positions with a focus on teaching Guest: Dr. Shana Kerr, Georgia Tech	
11	Mar 19		Spring break –no class	

<b>12</b>	<b>Mar 26</b>	<b>ISK/SY</b>	RCR training: Authorship and publication; peer review processes	Homework due
<b>13</b>	<b>Apr 2</b>	<b>Guest/ ISK/SY</b>	Careers in private industry Guest: TBA	
<b>14</b>	<b>Apr 9</b>	<b>SY/ISK</b>	RCR training: Data acquisition and laboratory tools; management, sharing and ownership of data and research tools; RCR training: Science and Engineering in Society: the scientist and engineer as responsible members of society and ethical issues in research and the environmental and societal impacts of scientific research	
<b>15</b>	<b>Apr 16</b>	<b>ISK/SY guests</b>	Balancing family and career Panel: TBA	
<b>16</b>	<b>Apr 23</b>	<b>ISK/SY</b>	Careers: how to choose a postdoc; tenure track; other discussions	