

Biochemistry Colloquium

Chem 688

Primary Instructor: Kelly Drew, 474-7190, kdrew@alaska.edu
Department of Chemistry and Biochemistry
Murie 218

Office Hours: please contact instructor via email or phone

Meeting Time: Wednesday, 11:45 pm – 12:45 pm, Murie 230

Text: *The Grant Application Writer's Workbook* <http://www.grantcentral.com/workbooks/national-institutes-of-health/>
Other reading material will be distributed during course

Course Description:

This 1 credit course provides a set of practical skills to succeed as a professional scientist in the increasingly competitive environment in higher education, academia, or private industry. The colloquium will focus on Fundamentals of Experimental Design

- SciNote
- hypothesis testing
- understanding the fundamental thoughts underlying the scientific method
- applying these concepts to experimental design
- critical skills in support of experimental design – data management, logistics, note taking, SOP
- research ethics –transparency in reporting

Course Goals:

- Introduce and guide students through development and implementation of a research project using SciNote
- Explain the fundamentals of hypothesis testing and experimental design and gain practice in defining hypothesis and designing experiments to test a hypothesis.
- Judge a science fair and discuss with class examples of hypothesis testing and good experimental design.
- Discuss case studies in research ethics that could be related to topics discussed above

Learning Outcomes: Spring 2018

- master use of SciNote as your primary laboratory notebook
- be able to state a purpose for each experiment. State the hypothesis for the experiment and explain how your experimental design tests this hypothesis.
- discuss cases that illustrate examples where poor laboratory practice became an ethical violation.

Instructional Methods: The course is composed of group discussions and participation. Group discussion is graded from attendance, willingness to voice a question, comment or opinion and ability to keep the discussion focused and to leave time for others to speak. Participation is graded from the number and timeliness of SciNote laboratory reports. SciNote reports are graded on a nominal scale of 0 or 1. The score is 1 if the report is completed on time and is available as scheduled for discussion and 0 if it is not available for discussion.

Grading:

Students will be evaluated on the basis of discussion (50%) and participation (50%). Grades are A (90-100%), B (80-90%), C (70-80%), D (60-70%), F (<60%)

Course Policies:

Attendance: Attendance is expected for all students. Active student participation is expected and will account largely for the grade.

Ethical Considerations:

The Chemistry Department's policy of cheating is as follows: *"any student caught cheating will be assigned a course grade of F. The student's academic advisor will be notified of this failing grade and the student will not be allowed to drop the course"*.

Plagiarism Policy:

Plagiarism is defined as the use of "other" intellectual property without proper reference to the original author. Intellectual property includes all electronic, spoken or print media ***thus any information taken of the web is included under this statement***. Students are expected to cite all sources used in oral and written presentations. Cases of plagiarism will be taken seriously with a grade 0 for the particular assignment. Severe cases may be referred to the Department Chair or Dean or class failing considered.

Services –Support, Disabilities:

Support services will be provided by the University of Alaska Library system, online resources and the instructor. Additional services are available through Student Support Services (<http://www.uaf.edu/sssp/>) at UAF. We will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide accommodations for students with disabilities.

Course materials

<https://scinote.net/>

<https://scinote.net/mobile/>

<https://scinote.net/tutorials/>

https://grants.nih.gov/policy/research_integrity/index.htm

- [Guidelines for Scientific Record Keeping in NIH Intramural Labs](#) 
- [RCR Casebook: Stories about Researchers Worth Discussing](#) 
- [Short Video Case Studies](#) 
- ["The Lab: Avoiding Research Misconduct" Interactive Case Study](#) 

17-Jan	Drew	Syllabus, Overview, IACUC, IRB
24-Jan	Kuhn	Paper vs. Electronic Notebooks
31-Jan	Kuhn	Standard Operating Procedures
7-Feb	Drew	Defining a purpose, hypothesis and experimental design
14-Feb	Drew	Guidelines for Scientific Record Keeping in NIH Intramural Labs
21-Feb	Kuhn	SciNote -1
28-Feb	Kuhn	SciNote -2
7-Mar	Kuhn	SciNote- 3
14-Mar	Duffy	RCR Casebook: Stories about Researchers Worth Discussing
21-Mar	Drew	SciNote -review; hypotheses in grants and published literature
28-Mar	Duffy	Short Video Case Studies
4-Apr	Drew	Discuss hypotheses and experimental design from science fairs and literature
11-Apr	Drew	Hypothesis and experimental design in your work -presentations
18-Apr	Drew	Review literature and critique hypothesis and experimental design
25-Apr	Duffy	discuss cases that illustrate examples where poor laboratory practice became an ethical violation.