

**Course Subject, Number and Title**

BIOCHEM 729.011, "Biochemical Communication"

**Credits**

2

**Canvas Course URL**

TBD

**Course Designations and Attributes**

Graduate level course

**Meeting Time and Location**

Fall semester, MW, 8:50am to 9:40am, 1116 Biochemistry

**Instructional Mode**

All face-to-face

**Specify how Credit Hours are met by the Course**

This class meets for two 50-minute class periods each week over the fall semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc.) for about 2 hours out of the classroom for every class period. The syllabus includes additional information about meeting times and expectations for student work.

**INSTRUCTORS**

Dr. Katherine Henzler-Wildman

Dr. Robert Landick

**Instructor Availability**

Office hours for Dr. Henzler-Wildman Mon 11:00am-1:00pm or by appointment

**Instructor Email/Preferred Contact**

henzlerwildm@wisc.edu

**OFFICIAL COURSE DESCRIPTION****Course Description**

Designed to introduce students to written and visual communication of biochemical research, both to other scientists and to general audiences, including: how to recognize and adapt work to different audiences; how to construct a scientific argument and the different strategies used for

research reports, reviews, and proposals; and how to create figures and posters that clearly convey scientific data and concepts. Students will also be introduced to the peer review process and revision of scientific writing. An intensive writing component requires students to produce multiple written and visual documents on the topic of their thesis research.

### **Requisites**

Declared in Biochemistry PhD graduate program

## **LEARNING OUTCOMES**

- Differentiate different types of scientific writing, including the goals, audience and components of research papers, review articles, and proposals
- Analyze the structure of scientific arguments
- Write about their own research and field of science, both retrospectively (research papers and review articles) and prospectively (proposal), utilizing the strategies previously identified to synthesize data or the literature, organize the work, and construct a convincing scientific argument at the appropriate level for the target audience to demonstrate mastery of these concepts
- Create figures that clearly, accurately, and concisely convey scientific information to support the written words
- Revise their scientific writing to improve clarity, organization, language, and to better achieve the rhetorical goals of the piece
- Develop a scientific poster to visually and orally communicate scientific data and results
- Compose one piece targeted to non-scientists

## **GRADING**

- Analysis and critique of published work and posters (17%)
  - *Analysis of types of journals in your field (2%)*
  - *Critique of a scientific paper (5%)*
  - *Critique of figures from a paper (5%)*
  - *Poster critique (5%)*
- Writing assignments (30%) plus revisions (10%)
  - *Abstract (5%)*
  - *Written specific aims for a grant proposal (5%) plus revision (5%)*
  - *Written significance and innovation for a grant proposal (5%) plus revision (5%)*
  - *Written approach for one aim of grant proposal (5%)*
  - *Written mini-review of the scientific field of your thesis research (10%)*
- Visual assignments (18%)
  - *Two figures (8%)*
  - *Poster (10%)*
- Piece for non-scientists (10%)
- In-class work and participation in class and mock study sections (15%)
  - *Participation in short in-class assignments (3%)*
  - *Participation in mock study sections (4% for each study section). Each student is required to provide a short written critique of the proposal sections under review for two of their peers, which they will orally present and discuss in the style of an NIH study*

*section. Students will be evaluated on their identification and ability to provide feedback on substantive problems in the science or structure of the scientific arguments in each proposal.*

- Class will be graded on a curve
  - 90 – 100% A
  - 85 – 90% AB
  - 80 – 85% B
  - 75 – 80% BC
  - 70 – 75% C
  - No D is given for this class
  - 0 – 69% F

### **REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS**

- “Writing in the Life Sciences: A Critical Thinking Approach” by Laurence Greene
- “Writing in the Sciences: Exploring Conventions of Scientific Discourse” by Ann Penrose and Steven Katz (optional)
- American Chemical Society Style Guide (optional)

### **HOMEWORK & OTHER ASSIGNMENTS**

- Assigned readings should be completed before class so that you can actively participate in class discussions and in-class analysis of scientific communication and in-class practice in producing written and visual work to communicate scientific results and ideas.
- Homework assignments will be submitted online through the canvas course page (abstract, mini-review, critiques & analyses, figures), via dropbox (grant proposals to be shared for mock study section, piece for non-scientists), or through in-person presentation during class (poster) depending on the assignment

## SAMPLE SCHEDULE

<b>SCIENTIFIC LITERATURE</b>				
<b>Meet</b>	<b>Instructor</b>	<b>Topic</b>	<b>Reading</b>	<b>Homework</b>
W 9/4/19	Henzler-Wildman	Audience, types of scientific writing, journals	Ch.1	Types of journals – due 9/9
M 9/9/19	Henzler-Wildman	Review articles, reading for relevance, analyzing research studies, rhetorical goal and audience for a review	Ch.3 p.97-128, Ch.8 p437-452	Start mini-review – due 10/2
W 9/11/19	Henzler-Wildman	Constructing a scientific argument	Ch.3 p.128-146	
M 9/16/19	Henzler-Wildman	Writing papers – organizing content, abstracts	Ch.4 p.149-187, p.203-209	Write an abstract – due 9/23
W 9/18/19	Henzler-Wildman	Writing papers – the sections of a research paper	Ch.8 p.380-436	
M 9/23/19	Henzler-Wildman	Reviewing papers, writing a critique	Ch.5	Paper analysis- due 9/30
W 9/25/19	Henzler-Wildman	Revising scientific writing (1 of 2) – logic, paragraphs, sentences, scientific conventions	Ch.6-7	
M 9/30/19	Henzler-Wildman	Revising scientific writing (2 of 2) – logic, paragraphs, sentences, scientific conventions	Ch.6-7	<i>Revise your mini-review before turning it in for grading</i>
<b>PROPOSALS</b>				
<b>Meet</b>	<b>Instructor</b>	<b>Topic</b>	<b>Reading</b>	<b>Homework</b>
W 10/2/19	Landick	Funding agencies, reading an RFP	P&K Ch.7	
M 10/7/19	Landick	Writing proposals, aims		Draft aims – due 10/14
W 10/9/19	Landick	Writing proposals, significance approach		
M 10/14/19	Landick	Rigor and Reproducibility – What does that mean?		

W 10/16/19	Landick	How does study section work? Guidelines and ethics for reviewers		
M 10/21/19	Landick	<i>Mock study section #1</i> , critique Aims		Revise Aims, draft Significance (innovation) due 11/4– think about how this differs from your mini-review
W 10/23/19	Landick	What's a biosketch? Narrative? All those other pieces of a grant proposal		
<b>FIGURES</b>				
<b>Meet</b>	<b>Instructor</b>	<b>Topic</b>	<b>Reading</b>	<b>Homework</b>
M 10/28/19	<i>Multiple</i>	Designing effective figures – communicating ideas and results clearly	Ch.4 p.188-202	<i>Not required but highly recommended:</i> attend PyMOL, Illustrator or Photoshop workshop
W 10/30/19	<i>Multiple</i>	Designing an effective figure – displaying structures and data on a structure in a meaningful way		Critique the figures from the paper you analyzed previously – due 11/6
M 11/4/19	<i>Multiple</i>	Designing an effective figure – gels and images		
W 11/6/19	<i>Multiple</i>	Designing an effective figure – quantitative data, charts and plots, error bars		
M 11/11/19	<i>Multiple</i>	<i>Mock study section #2</i> , critique Aims and Significance		Revise Significance, draft Approach for 1 Aim, due 11/20
W 11/13/19	<i>Multiple</i>	Writing effective figure captions		Make 2 figures: 1 data figure, 1 cartoon/ schematic/

				summary/ expected outcome - due 11/25
M 11/18/19	<i>Multiple</i>	Industrial and translational reading/writing: Memos, patents, project reports		
W 11/20/19	<i>Multiple</i>	Communicating with non-scientists (1 of 2): Elevator pitch, TED talk, webpage, newspaper/magazine report of a discovery	P&K Ch.6	
M 11/25/19	<i>Multiple</i>	Communicating with non-scientists (2 of 2): Elevator pitch, TED talk, webpage, newspaper/magazine report of a discovery	P&K Ch.6	Produce a short piece for non-scientists – due 12/11
W 11/27/19	<i>Multiple</i>	<i>Mock study section #3, critique Significance and Approach</i>		Poster critique – due 12/4
M 12/2/19	<i>Multiple</i>	Poster design and presentation	P&K Ch.6	Make a poster – you should already have an abstract and figures from the previous assignments – due 12/11
W 12/4/19	<i>Multiple</i>	Giving a scientific talk (1 of 2)		
M 12/09/19	<i>Multiple</i>	Giving a scientific talk (2 of 2)		
W 12/11/19	<i>Multiple</i>	Poster presentations		

## RULES, RIGHTS & RESPONSIBILITIES

- See the Guide's [Rules, Rights and Responsibilities](#)

## ACADEMIC INTEGRITY

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to [studentconduct.wiscweb.wisc.edu/academic-integrity/](http://studentconduct.wiscweb.wisc.edu/academic-integrity/).

## ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

**McBurney Disability Resource Center syllabus statement:** "The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA." <http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php>

## DIVERSITY & INCLUSION

**Institutional statement on diversity:** "Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world." <https://diversity.wisc.edu/>