BIO 611 Scientific Writing for Biologists
Tuesdays 9:00-10:50, Cooke 651

Instructor
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Office hours: Tuesday 11-12 & Friday 3-4 or by appointment

Description
This is a writing-intensive course intended for second-year graduate students in biology and other life sciences. The course is designed to develop writing skills and an understanding of how to prepare scientific documents. The objectives are:

- To familiarize students with stylistic elements of scientific writing
- To provide students with experience preparing and editing three types of scientific documents – a commentary, a research paper, and a grant proposal

Software
Students should have access to:

Microsoft Office for word processing (or equivalent)
EndNote for managing references and formatting citations (or equivalent)

This software can be downloaded by UB students for free at the following site:
https://www.buffalo.edu/ubit/service-guides/software/downloading.html

Required Book
Writing Science: How to write papers that get cited and proposals that get funded, 2012 by Joshua Schimel

Suggested Books
Scientific Writing and Communication: Papers, Proposals, and Presentations, 2nd ed., 2013 by Angelika H. Hofmann
The Elements of Style, 4th edition, 1999 by William Strunk, Jr. and E. B. White

Evaluation

Students will complete three written assignments, each of which is worth 100 points.
Students will also submit twelve intermediate drafts, each worth eight points, and select an article to review, worth four points.
The total number of points possible is 400.
Grades will be assigned as follows:

A	94-100%
A-	90-93%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D	60-69%
F	59% or lower

Late Assignments

The three major assignments may be submitted late, but the score will be reduced by four points for each day past the due date. The preliminary drafts cannot be submitted late.
In the event of serious illness or personal emergency, assignments may be accepted late for full credit. In such a case, the student must notify the professor by email within 24 hours of the time an assignment is due.
Documentation of the illness or emergency may be requested.

Academic Integrity

UB defines *plagiarism* as, "Copying or receiving material from any source and submitting that material as one's own, without acknowledging and citing the particular debts to the source (quotations, paraphrases, basic ideas), or in any other manner representing the work of another as one's own."
Written submissions on UB Learns will be checked by the Safe Assign feature.
Students who submit written work that is not their own will receive an **F** for the course.

UB's academic integrity policy can be found here:
https://catalog.buffalo.edu/policies/integrity.html

SCHEDULE

Unit 1 Commentary on a Published Paper

Aug 29 What is Scientific Writing?
Story Structure
Paragraph Structure

Sept 5 References and EndNote
Sentence Structure and Flow
Discussion of Perspective by Tholl & Gershenzon

Sept 12 Scientific Style
Word Choice
Discussion of Perspective by Blankenship

Sept 19 Peer Editing of Perspective Pieces

Unit 2 Research Paper

Sept 26 Structure of research articles
Sticky Stories
Figures and Tables

Oct 3 Results section
Materials & Methods section
Discussion of Fire Mello et al.
Peer editing of figures

Oct 10 Discussion section
Introduction section
Discussion of Leach Cowen et al.
Peer editing of results/methods sections

Oct 17 Abstract and Title
Internal structure
Condensing
Peer editing of research papers

Oct 24 Editing strategies
Peer editing of research papers

Unit 3 Research Proposal

Oct 31 Structure of a grant proposal
Overall goal and specific aims

Nov 7 Specific Aims Page
Discussion of sample grant proposals
Peer editing of outlines

Nov 14 Experimental approach section
Discussion of sample grant proposals
Peer editing of specific aims pages

Nov 21 Significance and Innovation
Discussion of sample grant proposals
Peer editing of approach sections

Nov 28 Experimental approach section (review)
Peer editing of proposals

Dec 5 Composing a catchy title
Peer editing of proposals

ASSIGNMENTS

Week	Writing Assignment	Date	Book Chapter	Example Document	Date
1			Schimel 1, 2, 4, 11		Aug 29
2	Select article (4)	Sept 4	Schimel 12, 13	Tholl & Gershenzon	Sept 5
3	Detailed outline (8)	Sept 11	Schimel 14, 15	Blankenship	Sept 12
4	Polished draft to advisor (8)	Sept 18			Sept 19
5	**Perspective (100)**	**Sept 25**	Schimel 3, 8.2		Sept 26
6	Two figures (8)	Oct 2	Schimel 8	Fire Mello et al	Oct 3
7	Results & Methods (8)	Oct 9	Schimel 5-7, 9	Leach Cowen et al	Oct 10
8	Draft of research paper (8)	Oct 16	Schimel 10, 16	Fire & Leach	Oct 17
9	Polished draft to advisor (8)	Oct 23	Schimel 17, 18		Oct 24
10	**Research paper (100)**	**Oct 30**	Russell & Morrison 7		Oct 31
11	Outline of Aims Page (8)	Nov 6	Russell & Morrison 8	Ferkey/Striepen Aims	Nov 7
12	Specific aims page (8)	Nov 13	Russell & Morrison 10, 11	Ferkey Approach	Nov 14
13	Approach for one aim (8)	Nov 20	Russell & Morrison 9	Ferkey/Striepen S&I	Nov 21
14	Significance & Innovation (8)	Nov 27	Russell & Morrison 10, 11	Striepen Approach	Nov 28
15	Draft of research proposal (8)	Dec 4	Russell & Morrison 18		Dec 5
15	Polished draft to advisor (8)	Dec 8			
finals	**Research proposal (100)**	**Dec 15**			

Learning Outcomes Covered in this Course

For the PhD program:

Number	Program Learning Outcome	Depth	Specific Outcome Objectives	Assessment Instrument	Defined Success Level
1	Demonstrate competency in coursework related to biological sciences and the student's area of specialty.	0			
2	Be able to critically read and comprehend original research papers in biology and display proficiency in written & oral communication of scientific information	2	Students will communicate scientific information in three standard scientific formats	Papers 1-3	At least 80% of class earns a B or better
3	Apply the scientific method to answer questions in biology through the design and conduct of hypothesis-driven experimental research projects.	2	Students will prepare a research proposal in which well-designed experiments are described	Paper 3	At least 80% of class earns a B or better
4	Write manuscripts describing experimental results in the standard format for submission to scholarly journals.	2	Students will prepare a research paper describing experimental results	Paper 2	At least 80% of class earns a B or better

For the MS program:

Number	Program Learning Outcome	Depth	Specific Outcome Objectives	Assessment Instrument	Defined Success Level
1	Demonstrate competency in coursework related to biological sciences and the student's area of specialty.	0			
2	Be able to critically read and comprehend original research papers in biology and display proficiency in written & oral communication of scientific information	2	Students will communicate scientific information in three standard scientific formats	Papers 1-3	At least 80% of class earns a B or better
3	Apply appropriate statistical analyses to experimental design and experimental results	1	Students will prepare papers in which well-designed experiments are described and analyzed	Papers 2-3	At least 80% of class earns a B or better
4	Write manuscripts describing experimental results in the standard format for submission to scholarly journals.	2	Students will prepare a research paper describing experimental results	Paper 2	At least 80% of class earns a B or better