

# Scientific Writing and Hypothesis Testing

**MBIO 623-01-4218**

Fall 2023

Time: Monday 2-4 PM

Place: 601 CTR

1 Credit Hour

2-hour lecture/interactive discussion sessions

**Course Goals and Objectives:** The main objective of the course is to improve the student's scientific writing. This will be accomplished through writing, editing and presenting the work. The course will involve didactic lectures, student presentations, in class exercises, and discussion that will be integrated into the 2-hour class period.

**Course Description:** This course will teach students writing skills necessary to write research papers and compete successfully for grant funding, and more generally to succeed as a scientist. Topics covered in this course include how to write abstracts, research papers, as well as various components of research proposal, including Specific Aims page and research plan. Didactic lectures on these topics will be combined with in class presentations by students.

	Date	Faculty	Topics
1	8/21	Kirpich IA	<ul style="list-style-type: none"><li>➤ Introduction to the Science of Scientific Writing</li><li>➤ Abstract for a Scientific Meeting</li><li>➤ In-Class Activity: Exercises in Abstract Writing</li></ul>
2	8/28	Kirpich IA	<ul style="list-style-type: none"><li>➤ Research Papers: Structure and Style</li><li>➤ Rules of Thumbs for Writing a Research Paper</li><li>➤ In-Class Activity: Practicing in Style</li></ul>
	9/4	<b>Labor Day Holiday</b>	
3	9/11	Kirpich IA	<ul style="list-style-type: none"><li>➤ Graphs, Tables and Figures in Scientific Publications</li><li>➤ In-Class Activity: Tables and Figures: the Good, the Bad and how not to be latter</li></ul>
4	9/18	Kirpich IA	<ul style="list-style-type: none"><li>➤ Scientific Writing and Scientific Career:<ul style="list-style-type: none"><li>i) Introduction to the Research Grants: F31 Fellowships</li><li>ii) Introduction to the Qualifying Exam Written Research Proposal</li></ul></li><li>➤ In-Class Activity: CV and NIH format Biosketch</li></ul>
5	9/25	Kirpich IA	<ul style="list-style-type: none"><li>➤ Components of the Research Proposal: Introduction to the Specific Aims Page, Background, Significance &amp; Innovation</li><li>➤ In-Class Activity: "Three Minute Research Story"</li></ul>
6	10/2	Kirpich IA	<ul style="list-style-type: none"><li>➤ Specific Aims Page</li><li>➤ In-Class Activity: Hypothesis &amp; The Aims</li></ul>
	10/9	<b>Mid-term Break</b>	
7	10/16	Kirpich IA	<ul style="list-style-type: none"><li>➤ Components of the Research Proposal: Research Plan</li><li>➤ In-Class Activity: Workshop on Experimental Design</li></ul>

8	10/23	Kirpich IA	➤ In-Class Activity: Student Presentation & Discussion of the Research Plan
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## **Assignments**

<b>Date assigned</b>	<b>Date due</b>	<b>Description</b>
8/21	9/11	Research Abstract
9/18	9/25	NIH format Biosketch
10/2	10/16	Specific Aims Page
10/16	10/23	Research Plan

## **Student Learning Outcomes**

On completion of the course, the student will be able to describe the structure of scientific abstracts and papers, submitting and reviewing papers. Students will develop scientific writing skills applicable to grant proposal and receive feedback on written sections of proposals that they have submitted as class assignments.

## **Course Director**

Irina A. Kirpich, Ph.D, MPH, Department of Microbiology and Immunology, room 511, CTR Building,  
Phone: (502) 852-7653; email: i0kirp01@louisville.edu

## **Online Materials**

Duke Graduate School Scientific Writing Resource <https://sites.duke.edu/scientificwriting/>  
University of Southern California Scientific Writing Resource <https://libguides.usc.edu/writingguide>  
NIH Research Training and Career Development tutorials  
<https://researchtraining.nih.gov/?CFID=39328942&CFTOKEN=acfe55c3bcd206b3-04CDA94D-5056-9439-7EE690802F3809F4>  
[https://grants.nih.gov/grants/grant\\_tips.htm](https://grants.nih.gov/grants/grant_tips.htm)

## **Reference Material**

The CRAFT of Scientific Writing: 3<sup>rd</sup> Edition, by Michael Alley, Springer (1996)  
The Elements of Style: 4<sup>th</sup> Edition, by Strunk and White, Longman (1999)  
Zeigler, M. Essentials of writing biomedical research paper, 2nd Edition.

## **Syllabus Revision**

The course director reserves the right to modify any portion of this syllabus.

## **Class Cancellations**

An assignment will be placed on the Blackboard site for this course in the event that a class is cancelled. Completion of this assignment by the given due date will count toward class attendance for the day class was cancelled.

## Grading

The course will be P/F. Students are expected to attend class meetings, submit assignments on time, actively participate in class presentations and discussions.

## University of Louisville Policies

### Title IX/Clery Act Notification

Sexual misconduct (including sexual harassment, sexual assault, and any other nonconsensual behavior of a sexual nature) and sex discrimination violate University policies. Students experiencing such behavior may obtain **confidential** support from the PEACC Program (852-2663), Counseling Center (852-6585), and Campus Health Services (852-6479). To report sexual misconduct or sex discrimination, contact the Dean of Students (852-5787) or University of Louisville Police (852-6111).

Disclosure to **University faculty or instructors** of sexual misconduct, domestic violence, dating violence, or sex discrimination occurring on campus, in a University-sponsored program, or involving a campus visitor or University student or employee (whether current or former) is **not confidential** under Title IX. Faculty and instructors must forward such reports, including names and circumstances, to the University's Title IX officer.

For more information, see the Sexual Misconduct Resource Guide (<http://louisville.edu/hr/employeerelations/sexual-misconduct-brochure>).

### Students with Disabilities

The University of Louisville is committed to providing access to programs and services for qualified students with disabilities. If you are a student with a disability and require accommodation to participate and complete requirements for this class, notify me immediately and contact the Disability Resource Center (Stevenson Hall, 852-6938) for verification of eligibility and determination of specific accommodations.

### Academic Dishonesty

Academic dishonesty is prohibited at the University of Louisville. It is a serious offense because it diminishes the quality of scholarship, makes accurate evaluation of student progress impossible, and defrauds those in society who must ultimately depend upon the knowledge and integrity of the institution and its students and faculty.

For more information, visit the [Code of Student Rights and Responsibilities](#) (Sections 5. and 6.).

## **Religious Holy Days and Observances**

Federal law and university policy prohibit discrimination on the basis of religious belief. It is the policy of the University of Louisville to accommodate students, faculty, and staff who observe religious work-restricted holy days.

Students who observe work-restricted religious holy days must be allowed to do so without jeopardizing their academic standing in any course. Faculty are obliged to accommodate students' request(s) for adjustments in course work on the grounds of religious observance, provided that the student(s) make such request(s) in writing during the first two (2) weeks of term.

Deans and department chairs must investigate and resolve student complaints arising from alleged faculty failure to make reasonable accommodations under these guidelines.

## **Statement on Diversity**

The University of Louisville strives to foster and sustain an environment of inclusiveness that empowers us all to achieve our highest potential without fear of prejudice or bias.

We commit ourselves to building an exemplary educational community that offers a nurturing and challenging intellectual climate, a respect for the spectrum of human diversity, and a genuine understanding of the many differences-including race, ethnicity, gender, gender identity/expression, sexual orientation, age, socioeconomic status, disability, religion, national origin or military status-that enrich a vibrant metropolitan research university.

We expect every member of our academic family to embrace the underlying values of this vision and to demonstrate a strong commitment to attracting, retaining and supporting students, faculty and staff who reflect the diversity of our larger society.