Course Description

Do you know the intricacies of the process by which a set of data are refined, organized and published? Is the process of data collection, organization, or analysis the same for all types of data? Are some journals more finicky about publishing than others? How long does the process of data collection to publication take? This course will explore some of the ‘mysteries’ in this scientific writing and publication process. You will gain an appreciation for the entire process involved in publishing a research article. You will first have an opportunity to evaluate a published article on your own, and then discuss it within small groups. You will then learn from each instructor about the specific challenges encountered with particular types of experiments, the reaction of the reviewers, the disparity between the critiques of different reviewers examining the same article, and discover how the authors responded to the critical comments in reviews and succeeded in publishing the article.

Learning Objectives (LO)

1. Summarize empirical research articles that describe experiments in diverse realms of biomedical research.
2. Evaluate experimental findings in a paper by discussions within peer groups.
3. Postulate alternate approaches, pitfalls and follow-up studies for a given research article.
4. Describe the process for construction of a paper from data to publication.
5. Select a journal for submission of a manuscript.
6. Describe the approaches used to respond to reviewers’ critique of a paper submitted for publication.

Prerequisite(s): XX
Co-Requisite(s): XX
Concurrent Enrollment: XX
 Recommended Preparation: Completion of BIOC 581 is ideal but if you have not taken this course, the course coordinator can make alternate suggestions.
Course Notes

General Class structure

1. Pre-class work: You will examine a paper uploaded to Perusall describing recent research from the lab of a faculty member. You will individually create a summary in any of the designated formats under Assessments and submit it. You will be assigned to groups within Perusall. You will be required to make comments and/or answer questions as described in the Perusall tutorial that you will need to read/view and will get an Engagement score assigned by Perusall. Then working as a group, you will identify one or more items in each of the categories as described below in Assessments and submit them on Blackboard. You are encouraged to use the approach learned in BIOC 581 for analyzing the paper as you engage in this process. If you have not taken BIOC 581, you may be given instructions separately upon request.

2. During the live session, instructors will pose one or more questions related to the paper in any format: via a Poll in Zoom, verbally, or in the Chat box. You will respond either by raising your electronic hand or responding in the Chat box.

Alternate approaches used by instructors may include posing one or more questions and requiring you to discuss them in the Breakout Room. The instructor will indicate how much time the group has for the discussion. Each group will have a designated time-keeper and a note-taker. Each group will pick a designated member who will share the outcome of the individual group’s discussion with the entire class.

3. The instructor will then systematically review the research article by providing a background, describe the research question posed that resulted in each figure of the paper, share earlier iterations of results if they were not satisfactory or problematic, and the conclusions in a broader context, and implications of the results in terms of the plan for the next experiments.

4. The instructor will discuss how he or she selected the journal that was targeted for initial or secondary submissions considering factors such as Open Access, page charges, Impact Factor, audience considerations, and competition/requirement for speed. A press embargo if appropriate, may also be discussed.

5. The instructor will share bulleted points from the reviews received and a condensed version of the rebuttal while sharing the length of the actual document to illustrate the extent of detail required. If the instructor is comfortable doing it, sharing the entire review and rebuttal may also be instructive in keeping with similar policies at all EMBO Journal and eLife, for example.

6. Informational sessions that will be interspersed between the type of session described above will not require any advance preparation from students. Faculty member(s) will discuss their experiences from their service as an Editor, member of an Editorial Board or as a reviewer of a
manuscript for a journal. Other types of information discussed may relate to conception of an idea and reduction to practice upon reading a paper or a change of plans due to failed experiments or other reasons.

Communication

You are encouraged to ask questions ahead of a class by email to the instructor, and giving the instructors and course coordinator feedback on the course. If there are questions or comments, you should not hesitate to bring them up during class so that all students can benefit from the answer and discussions.

Technological Proficiency and Hardware/Software Required

This course requires use of Perusall, Zoom and Blackboard.

Required Materials

Articles to be read will be shared via Perusall well in advance of the course. Discussion forums at the discretion of the instructor may also be conducted on Blackboard.

Optional Materials

N/A

Description of Assessments

1. Pre-class assignment
   A. Summary of the paper:
      ➢ Graded; will count towards 10% of the grade
      ➢ Will assess Learning Objectives 1, 2 and 3
      You will each submit a summary of the paper in any one of the following forms:
      i) a graphical abstract (if there was none in the paper OR one that is different from the one in the paper)
      ii) a concept map
      iii) a summary written in 250 or less words that are your OWN

   B. Assignment on the web-based platform, Perusall:
      ➢ Graded; will count towards 35% of the grade (15% will be Perusall-assigned individual grade and 25% will be based on the group submission)
      ➢ Will assess Learning Objectives 1, 2 and 3
      i) Prior to each session, you will work in assigned groups of 3 and have a discussion on the Perusall web-based platform (https://perusall.com/) and post comments. Perusall will automatically assign individual grades based on quality and level of participation.
ii) Each of you will then submit at least one consensus item in each of the categories below on Blackboard based on your discussion in Perusall for your group grade which will be assigned after review of the work:

1. What question(s) would you ask next given the results in the given paper?
2. What other approaches would you use to answer the research question(s)?
3. Imagine you are a reviewer of the paper. What do you see as being unclear from the data presented? Do you see any pitfalls in the data presented or the conclusions derived in the paper? What if any, are limitation(s) of the study? State them.
4. What concepts or figures in the paper were particularly difficult for you to fully understand?

2. Final Project:

- Graded; will count towards 30% of the grade
- Will assess Learning Objectives 4 and 6

The final project will be a reflection statement based on your careful observation and noting down of the processes or situations shared by each of the instructors. This will NOT your knowledge of the scientific content of the presentations.

You will submit an ~500 word (double-spaced, 12 point, Times Roman) reflection statement with the following prompts:

- Based on the presentations made in the course, describe the steps you would take to ensure publication of the data you have generated. Include insights you gained from the presentations that would be helpful to you.

- Reflect on insights you gained on responding to reviews of a paper from the presentations. Then, describe three effective strategies you observed that were used to respond to the critiques for a paper.

3. In-class Group Exercise

- Graded; will count towards 10% of the grade
- Will assess Learning Objective 5

You will be given three different abstracts from which your group will choose one. You will be given a set of conditions to consider when selecting a journal to submit the study including:
- Speed to publish
- Impact journal of journal
- Open access?
- Audience it will reach
- Need for payment

You will be asked to justify your choice.
Participation/In-class work

You will be given one or more questions by the instructor to discuss in groups at the beginning of each class or during the class. You must submit the response to this question individually on Blackboard towards a Participation Grade which will count towards 10% of the final grade. Full credit will be given for submission of in-class work.
## Alignment Grid

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Assignment/Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of this course, students should be able to:</td>
<td>This learning objective skill is measured by:</td>
</tr>
<tr>
<td>1. Summarize empirical research articles that describe experiments in diverse realms of biomedical research.</td>
<td><strong>Individual assignment:</strong> Student will provide a summary of the article in a graphical abstract (if there was none in the paper OR one that is different from the one in the paper), concept map, or in a text format in their own words (250 or less).</td>
</tr>
</tbody>
</table>
| 2. Evaluate experimental findings in a paper by discussions within peer groups. | **Individual assignment:** Student will engage in Discussion outside of class in assigned groups on Perusall (https://perusall.com/) and post comments. Perusall will automatically assign grades based on quality and level of participation.  
**Group grade:** Pre-session homework based on Discussion on Perusall. Prior to each session, students who are assigned to work in groups of 3 will submit at least one consensus item in each of the categories (1 - 4) on Blackboard:  
1. What question(s) would you ask next given the results in the given paper?  
2. What other approaches would you use to answer the research question(s)?  
3. Imagine you are a reviewer of the paper. What do you see as being unclear from the data presented? Do you see any pitfalls in the data presented or the conclusions derived in the paper? What is one or more limitations of the study? State them.  
4. What concepts or figures in the paper were particularly difficult for you to fully understand? |
| 3. Postulate alternate approaches, pitfalls and follow-up studies for a given research article. | **Individual assessment:** As part of the Final Project, students will submit a two-page (double-spaced, 12 point, Times Roman) reflection statement with the prompt: Based on the presentations made in the course, describe the steps you would take to ensure publication of the data you have generated. Include insights you gained from the presentations that would be helpful to you. |
| 4. Describe the process for construction of a paper from data to publication. | **Individual assessment:** As part of the Final Project, students will answer the prompt: Reflect on insights you gained in responding to reviews of a paper from the presentations. Describe three effective strategies you observed that were used to respond to the critiques for a paper. |
| 5. Select a journal for submission of the manuscript. | **Group project (graded):** (a worked example will be provided or they will practice this in groups with one abstract) Students will be given three different abstracts from which they will choose one. They will be given a set of conditions to consider when selecting a journal to submit the study including:  
- Speed to publish  
- Impact journal of journal  
- Open access?  
- Audience it will reach  
- Need for payment  
Students will be asked to justify their choice |
| 6. Describe the approaches used to respond to reviewers’ critique of a paper submitted for publication. | **Individual assessment:** As part of the Final Project, students will answer the prompt: Reflect on insights you gained in responding to reviews of a paper from the presentations. Describe three effective strategies you observed that were used to respond to the critiques for a paper. |
Grading

The following table shows the grading breakdown that will be used:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of paper</td>
<td>10</td>
</tr>
<tr>
<td>Engagement in Perusall (Individual grade)</td>
<td>15</td>
</tr>
<tr>
<td>Pre-class assignment (Group grade)</td>
<td>25</td>
</tr>
<tr>
<td>In-class Graded Group Exercise</td>
<td>15</td>
</tr>
<tr>
<td>Final Project</td>
<td>25</td>
</tr>
<tr>
<td>Participation</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Course-specific Policies

**Assignment Submission**
Pre-class assignments must be completed on Perusall at least 3 days before the paper is
discussed in class so that an instructor can address the comments or questions during their
presentation. The consensus group assignment must also be submitted by 10 a.m. on Tuesday
before the session on Blackboard. In-class work should be submitted by midnight on the day of
the class.

**Late work**
Since the pre-class work requires the effort of students working in groups and the discussion by
the faculty instructor will relate to the submitted responses, late work will not be accepted.

If you miss submitting work for an unavoidable, documented, and serious reason, discuss the
situation with the course coordinator via email for any alternate consideration.

**Expectations on Student engagement**
Students are expected to act in a professional manner, meeting deadlines, solving problems,
responding to questions from instructors voluntarily or when called upon, cooperating with
classmates, and generally contributing in a positive way to the class. Working in the real world
often means searching for solutions in a group context. Teamwork, listening, empathy,
enthusiasm, emotional maturity, and consideration of other people’s concerns are all essential
to success. Please bring these qualities and values with you to class. It is as important to
‘practice’ these interpersonal skills as it is to learn new intellectual content.

Students are expected to provide feedback to instructors. This can be done informally during
the semester through the course director or TA. It must be done formally by responding to
surveys conducted where student anonymity is maintained to ensure that necessary changes
may be made to the instructional material, presentation or assessments.
Academic integrity

A grade of zero will be applied to submitted work that does not comply with the USC standards of academic conduct. Such work may not be resubmitted for a new grade.

Attendance

You are expected to attend all class sessions, on time, for the entire course of the class, and come prepared to discuss the reading assignment. If you miss an in-class assignment, you will not be allowed to make up those points.

Classroom norms

Your physical presence in the classroom via audio and video is ideally preferred. If for any reason, you have difficulty meeting this request, please inform the course coordinator ahead of the session or during the session. If you are uncomfortable watching yourself on the screen, you could choose the "Hide Self View" option in Zoom or choose "Speaker view" when the instructor is presenting. It is particularly useful to be present via video during discussions in the Breakout Rooms.

Course evaluation

Two surveys will gather student opinions about the course: the mid-semester evaluation and the standard USC course evaluation survey at the end of the semester. Your opinion is valued and can make a difference in how this course is conducted; please give your honest and constructive recommendations.
## Course Schedule: A Weekly Breakdown

<table>
<thead>
<tr>
<th>Date</th>
<th>Instructor</th>
<th>Pre-class assignment due in Perusall and on Blackboard by noon on (highlighted rows)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-Aug</td>
<td>How the process works - experts' perspective</td>
<td>Hooman Allayee and Cheng-Ming Chuong</td>
</tr>
<tr>
<td>28-Aug</td>
<td>Michael Stallcup</td>
<td>24-Aug</td>
</tr>
<tr>
<td>4-Sep</td>
<td>Jian Xu</td>
<td>31-Aug</td>
</tr>
<tr>
<td>11-Sep</td>
<td>Kian Kani</td>
<td>7-Sep</td>
</tr>
<tr>
<td>18-Sep</td>
<td>Editors' perspective</td>
<td>Peggy Farnham and Sara Cullinan</td>
</tr>
<tr>
<td>25-Sep</td>
<td>Jian-Fu (Jeff) Chen</td>
<td>21-Sep</td>
</tr>
<tr>
<td>2-Oct</td>
<td>Ching- Ling (Ellen) Lien</td>
<td>28-Sep</td>
</tr>
<tr>
<td>9-Oct</td>
<td>Hooman Allayee</td>
<td>5-Oct</td>
</tr>
<tr>
<td>16-Oct</td>
<td>Group exercise in class on journal selection</td>
<td>Pragna Patel</td>
</tr>
<tr>
<td>23-Oct</td>
<td>Yifan Liu</td>
<td>19-Oct</td>
</tr>
<tr>
<td>30-Oct</td>
<td>Oliver Bell</td>
<td>26-Oct</td>
</tr>
<tr>
<td>6-Nov</td>
<td>Panel Discussion on Best Practices</td>
<td></td>
</tr>
<tr>
<td>13-Nov</td>
<td>Crystal Marconett</td>
<td>9-Nov</td>
</tr>
<tr>
<td>18-Nov</td>
<td>Final Project due</td>
<td></td>
</tr>
</tbody>
</table>

## Statement on Academic Conduct and Support Systems

**Academic Conduct:**
Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

**Support Systems:**
Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling
National Suicide Prevention Lifeline – 1 (800) 273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.
Provides overall safety to USC community. dps.usc.edu