

Writing and Publishing a Scientific paper

Syllabus

Instructor

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Office Location

USI main building, room 412

Office Hours

On Tuesdays, at 5 pm (*book in advance*)

Course Overview

Writing and publishing a scientific paper is an NIH-based practical course on scientific writing in biomedical disciplines. The course consists in crafting a manuscript through a supervised peer-to-peer group work throughout its duration.

Who is the course for?

The course targets primarily the students of the PhD programs at the Faculty of Biomedical Sciences, USI. Post-docs, and EOC staffs who do research are welcome too.

Aim

The main goal is to equip PhD students with a robust and structured method to conceive, plan, write, submit, revise, and publish scientific articles and their PhD thesis.

Eligibility criteria

This course is about actual writing and revising manuscripts. There are a few, crucial pre-requisites to participate (only some of these can and will be covered during the course):

- You have discussed with your PI what your paper is going to be about (the message)
- The hypothesis and research question(s) have been approved by your PI
- The study is complete, you have the data
- You have run the main analysis (i.e. relevant to answer the research questions), therefore you have your results ready and tables and figures are in preparation [NOTE: it is your responsibility to confirm that the statistical models used are correct. You may contact us before the beginning of the course if you need assistance/ advice with stats!]
- You have selected 2/3 published papers (and have the full texts) in the topic/ area of your study. If possible one of these papers is from your own Lab. You will use them as reference.
- You have conducted a structured search in PubMed (and/or other online databases) using the P.I.C.O. elements of your research question(s) to gather evidence, screening and selecting the main papers.
- You have a provisional bibliography in EndNote or Zotero with (all) relevant references based on this search (and the selection)

- You are on top of this literature, which means that you know what's been said on the subject, and you know how to *join the conversation*, with your paper.

Basic rules

- Be always ON TIME. We cannot start without you
- Do not skip classes. The work of others depends on you.
- Plan to have up to 4 hours/ per week for your homework.

Assignments

All five assignments are compulsory and must be submitted on time, they are an integral part of the course.

Suggested exercises are not compulsory.

Email your assignments to members of your group (2 people).

File name: your name_*assignment number* (ex. Albanese_1)

Include a title page to all your assignments:

- Your name
- Target journal
- Working title of your paper
- Assignment number (1, 2, etc.)

Criteria for reviews and critiques:

Write the criticisms you'd like to receive.

- Does the section have the necessary components (paragraphs/ inverted pyramids)?
- Is it written clearly?
- Does it flow logically?
- Provide suggestions for re-writing
- Be helpful, constructive
- The criticisms are due and are used in class. Please use the class materials and contents to provide your constructive criticism.

Course materials

This course is based on the NIH Intramural Training and Education program on Writing and Publishing a Scientific Paper, by Maggie Meitzler. The NIH course is protected by copyright. However, the present course “How to Write and Publish a Scientific Paper” was further integrated and expanded by Prof. Emiliano Albanese (USI). All class materials are original. Participants are strongly encouraged to use the course materials during the course. You may provide feedback on their content, clarity, and usefulness directly to emiliano.albanese@usi.ch

Readings

I recommend three books. The first (by Matthews & Matthews) is officially recommended by the NIH instructors. The other two complement this reading, and have largely inspired the content of this Course materials and lectures:

- Successful Scientific Writing: A Step-By-Step Guide for the Biological And Medical Sciences IV edition, by Janice R. Matthews (Cambridge University Press)
- Winning the Publications Game (a smart way to write your paper and get it published) IV edition, by Tim Albert (CRC Press)
- Writing Scientific Research Articles, strategy and steps II Edition, by Margaret Cargill and Patric O'Connor (Wiley-Blackwell)

Course structure and timetable

There are 6 two-hours lectures and class practical activities, and five assignments. Please include (and block) this class in your scheduling:

LECTURE 1 – Overview – Message – Brief & MindMap

PART I

- Overview of the course
- What is a paper, and the publishing process
- Why we (must) publish
- Set your goals and objectives
- Preparatory work
- Authorship and other preliminary steps
- A step-by-step approach (19 steps 'checklist')
- Practical activity I: complete the 19 steps checklist (...so far)

PART II

- The structure of a scientific article
- Practical activity II: Patterns in 2/3 published papers
- It's all about the main message
- Group work: the main message
- How to choose a target journal
- The Brief

ASSIGNMENT 1

STEP 1

- Write the main message of your future paper
- Decide the working title
- Find and select three published papers on the subject
- Select the target journal and retrieve the Information for authors
- Choose three published articles from your target journal
- Structure - count the number of paragraphs in each Section in these three articles

- Pattern - Does a pattern exist (I:3, M:7, R:7, D:6)?

STEP 2

- Finalize the *brief* of your manuscript
- Complete and polish the *Mind Map* of your manuscript
- Get comments and suggestions on your Mind Map from you PI and colleagues
- Decide the working title

LECTURE 2 – METHODS & RESULTS

PART I

- METHODS section
- Practical activity I

PART II

- The RESULTS section
- Tables, figures, and graphs
- Group work
- Practical activity II

ASSIGNMENT 2

STEP 1 - METHODS

- 1) **Write the METHODS section** of your manuscript
- 2) Email your Methods section to group members and EA on time
- 3) Provide (constructive) criticisms to the 2 members of your group on time

Suggested exercise

Choose three published articles from your target journal, focus on the Methods section:

- How much detail was included?
- How did the authors refer to previous studies?
- Was there a Supplemental materials/ Appendix Methods section?

STEP 2 - RESULTS

- 4) Prepare (or finalize) your Tables, Graphs, and Figures
- 5) **Write the RESULTS section** of your manuscript
- 6) Email your Results section to group members and EA on time
- 7) Provide (constructive) criticisms to the 2 members of your group on time

Suggested exercise

- Read the Results section of a paper from your target journal
- Examine the figure(s): do they show ‘what happened’, the main answer?
- Examine the tables and highlight important layout/ formatting details

LECTURE 3 – INTRODUCTION

PART I

- Addressing criticisms (revisions)
- Checkpoint 2

PART II

- The INTRODUCTION section (purpose, importance, shape)
- Paragraphs and sentences
- How to proceed
- PRACTICAL – *outline the key elements*
- Plagiarism, language & grammar
- GROUP WORK – discuss criticisms of the METHODS and RESULTS section, including tables, figures and graphs

ASSIGNMENT 3

- 1) Revise the Results section, incorporating suggestions made in class
- 2) (over) structure the Introduction outline (see slides)
- 3) **Write the INTRODUCTION section** of your manuscript (adding sentences)
- 4) Email the Introduction section to group members and EA on time
- 5) Provide (constructive) criticisms to the 2 members of your group on time

Suggested exercise

- Choose three (new) published articles from your target journal
- Can you identify the two key sentences of the Introduction (opening sentence on the topic; aim of the study, last sentence)?
- Is the general area of the problem presented?
- How much detail about established facts is provided?
- Can you identify the first transition from general to specific?
- Have the authors ‘created the space’ for their research?
- Can you easily locate the transition point (the ‘however’)?
- Is the gap clearly defined (lack, inconsistency, or limitation of evidence)?
- Is the hypothesis stated explicitly?
- Highlight the aim(s) of the article (not of the study).

LECTURE 4 – DISCUSSION

- Purpose of the Discussion section
- The (hidden) structure of the Discussion section (with examples)
- The two key sentences of the Discussion (main results; closure to your message) (with examples)
- Use of tenses in the Discussion section (with examples)
- Build and structure the Discussion in separate sections:
 - First paragraph (what you did, and found, first key sentence)
 - Second paragraph (limitations, and counter-argument strengths)

- Third/ fourth paragraphs (illustrate and explain reasons of fit into context)
- Fifth paragraph (main implications of the results, in context)
- Last paragraph (paraphrasing your message, + last key sentence, which provide an ending of your message, a closure)
- Practical activity I:
 - draft 'mini outlines' of each separate section of your Discussion (you may adapt and use the template provided, if appropriate)
 - write the two key sentences of the Discussion
- Group work: discuss the feedback and criticisms to the Introduction

ASSIGNMENT 4

- 1) Refine the mini outlines you worked on in class
- 2) **Write the DISCUSSION section** of your manuscript (you may use the mini outlines prepared in class)
- 3) Email the Discussion section to group members and EA on time
- 4) Provide (constructive) criticisms to the 2 members of your group on time

Suggested exercise

- Choose three published articles from your target journal
- Identify and highlight the two key sentences of the Discussion section
- Are these key sentences what you expected them to be (solid statement of main findings; real closure, or suggestions for future studies etc.)?
- Count the number of sentences of and analyze what was in the first paragraph
- Count the number of sentences of and analyze the last paragraph (are there references)?
- Underline all verbs, review past and present tenses and note how and why they change.

LECTURE 5 – TITLE, ABSTRACT, and REFERENCES

- The title page
- Types of titles
- The Abstract and its highly varying structure (depending on Journals)
- When to draft the abstract, and its use(s)
- Practical activity I: use the instructions for authors to:
 - Write three different types of title (and a working title each)
 - Draft a rough version of the abstract of your manuscript **WITHOUT** looking at the manuscript!
- References and in text citations
 - Updating references
 - Organizing your references for in text citation by section (and paragraph)

- References in the draft version of the manuscript (preventing formatting issues)
- Crafting the bibliography
- Practical demonstration of EndNote functions
- Group work: discuss the feedback and criticisms to the Discussion section
- Practical activity II: adapt, and populate the manuscript template provided with the revised drafts of the title and the five sections drafted and revised so far (A, I, M, R, D)

ASSIGNMENT 5

- 1) Finalize the title of your manuscript
- 2) Finalize the abstract
- 3) Carefully check the consistency of information between the abstract and what is reported in the manuscript
- 4) **Email the Title and Abstract** of your manuscript to group members and EA on time
- 5) Provide (constructive) criticisms to the 2 members of your group on time
- 6) Combine the title, abstract, and all sections of your manuscript in one document
- 7) **Print it in 2 copies of this document and bring them to the final class** (you may use and adapt the template provided)

Suggested exercise

- Browse recent issues of the target journal
- Note the structure and type of titles frequently used
- Read several abstracts at random (i.e. in areas far from yours too)
- Now read your abstract again, does it sound ‘familiar’
- ...revise as needed

LECTURE 6 – REVISIONS and SUBMISSION

PART I - Revisions

1. Writing techniques
2. Outline and Manuscript structure
3. Reporting guidelines and checklists
4. Editing procedures (Macro- and Micro-editing)
5. Your co-authors

PART II - Submission

1. Manuscript preparation
2. Cover letter
3. Submission
4. Revisions, rebuttals,
5. Rejections and re-submission

Course Schedule

October 2020 edition

Week	Date/time	Activity
Week 1	06.10.2020 15.00-17.00	Course overview; scientific articles. Message, Brief, MindMap
Week 2	13.10.2020 15.00-17.00	The brief, and how to expand it Methods & Results sections
Week 3	20.10.2020 15.00-17.00	English language suggestions Introduction section
Week 4	27.10.2020 15.00-17.00	Discussion section
Week 5	13.11.2020 FRIDAY 15.00-17.00	Title, Abstract , and References EndNote demonstration
Week 6	20.11.2020 FRIDAY 15.00-17.00	Writing techniques Revisions , and manuscript Submission