Chinese course name: 天文论文写作
English course name: Advanced Writing for Astronomy
Meeting times: Tues 11:10am-12:00pm/Thurs/Fri to be determined
(usually 1 hr lecture, 1 hr discussion)

Textbook: None; some exercises will be obtained from websites developed by writing experts, including https://cgi.duke.edu/web/sciwriting/index.php, and https://owl.purdue.edu/owl/purdue_owl.html, and https://www.astro.caltech.edu/~lah/ay31/

Description: Communication is a critical step in the scientific method. The scientific impact of academic careers depends on the combination of the scientific research and the ability to communicate that research. Academic papers are the main unit of production and measure of success for scientists. Good papers describe our results in the simplest possible terms so that readers may understand our results. Bad papers make our research sound needlessly complex and pointless.

Writing papers is often seen one of the major hurdles in the career of any scientist, especially those for whom English is not a first language. Regardless of background and native language, every student begins their career as a bad writer and bad editor. Students may be fast in achieving success in scientific discoveries but slow at communicating their achievements. Writing is seen as a dull task necessary to tell people what the authors have done, not as an enjoyable exercise to share in the excitement of discovery with readers.

My goal for this course is to get students to think of their paper quality as the product of editing and not writing, and then to learn how to edit their papers (and proposals) by critically evaluating the logic. The course will begin by discussing the overall structure and logic in papers, including outlining and reverse outlining. We will then discuss grammar, focusing on problems that are prevalent for written English by Chinese. In addition to some standard exercises, students will be expected to create their own content, edit their own outlines and papers, and also edit each other's outlines and papers. The course will end with other types of writing that is important for astronomy: popular writing and press releases, and proposals for observing and funding. We will finish the class with a discussion of academic publishing, including ethical concerns and the referee process.

To benefit most from this class, students should be advanced PhD students, perhaps even with a 1st author publication already completed. A draft of a written research paper is a necessary pre-requisite; you will be expected to complete this draft during the course. **The class will likely require a substantial workload of ~10-15 hrs/week from each student.** Students should be advanced PhD students so that they can focus on this course. Students who cannot commit to the workload and completing their paper can still take the course, but would likely end up with a B.

Table 1: Weekly syllabus for Advanced Writing for Astronomy

Week	In-class	Assignments
1	Intro: how/why, formats	Find writing examples
2	Principles of writing	Reverse Outline examples
3	Paper structure and logical flow	Outline your own paper
4	Paper structure and logical flow	Edit classmate's outline; outline section
5	Paper structure and logical flow	edit classmate's section outline
6	Grammar	finalize outline, writing exercises
7	Grammar	writing exercises
8	Transitions	write one section
9	Discussion, in-class editing	edit classmate's section
10	Discussion and in-class editing	write paper
10	Discussion and in-class editing	write paper
11	Discussion and in-class editing	edit classmate's paper
12	Discussion and in-class editing	edit classmate's paper
13	Abstracts	update paper
14	Popular writing	AAS Nova assignment
15	Proposal & Fellowship Writing	
16	Publishing, the referee process, and ethical concerns	Paper due