

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程优化之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	Reading & Writing for Understanding Science 理工科英文综合读写
2.	授课院系 Originating Department	语言中心 Center For Language Education
3.	课程编号 Course Code	CLE065
4.	课程学分 Credit Value	2
5.	课程类别 Course Type	通识选修课程 General Education (GE) Elective Courses
6.	授课学期 Semester	春季 Spring / 夏季 Summer / 秋季 Fall
7.	授课语言 Teaching Language	英文 English
8.	授课教师、所属学系、联系方式 (如属团队授课, 请列明其他授课教师) Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	Rongrong Dong, Center For Language Education
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	无 NA
10.	选课人数限额(可不填) Maximum Enrolment (Optional)	20-25 students

11. 授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other (Please specify)	总学时 Total
学时数 Credit Hours	32	0	0	0	32
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	None				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	None				
14. 其它要求修读本课程的学系 Cross-listing Dept.	None				

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

Students need support to learn appropriate norms and language for productive participation in the discourses of science. This selective course aims to provide students with academic English discourses (the way to use specific English disciplinary language to communicate, to read and write) for their specific major disciplines and prepares them to complete their majors in a critical way.

For each 1-2 weeks, students' English language learning will focus on one science discipline. For each discipline section, they will be trained to use specific disciplinary English language to have whole class or group discussions. To develop their disciplinary reading fluency, students will read their major-related academic papers. They will also study the academic English language in terms of disciplinary concepts and principles in specific STEM field, build and develop academic disciplinary vocabularies for their STEM study. Besides course required readings, students will be encouraged to bring their major related reading/writing assignments/paper and conference presentations to class for discussion and practice as well.

This course also focuses on academic disciplinary English writing. By the end of each discipline section, students will learn to write short academic English essays based on the assigned readings. In English writing sessions, students will be trained to form their own opinions, draw evidences from the texts, and argue for their own positions.

Students will complete 2-3 presentations for their academic English speaking proficiency assessment. Mock conference presentation training workshops will be provided before the speaking skills assessments.

By the end of the course, students are expected to be more familiar with the academic English discourses in different science and technology disciplines. They are expected to develop a comprehensive English language skills to communicate, read and write as future scientists.

16. 预达学习成果 Learning Outcomes

1. Students will develop fluency in their disciplinary academic English communication :

- Students are able to engage in conversations in class about certain scientific phenomenon, concept, and principle framed by scientific literacy discourses;
- Students are able to collaborate with peers in class and model "science talk" by presenting their group-designed symposium---one formal structure of conversation in science community.

2. Students will enhance their reading comprehension in the disciplinary academic papers

- Students are able to build and develop lists of disciplinary vocabularies from in-class readings;

- Student are able to interpret data, make inferences and predictions in disciplinary academic papers;
- Student are able to keep annotated bibliography of their scientific readings;
- Student are able use different reading strategies (skim & scan; activate previous knowledge; think aloud; use graphic organizer, etc.) in their disciplinary academic readings;
- Students are able to view science reading as an act of inquiry and raise more research-oriented questions.

3. Students will develop better writing skills for their major-related multi-genre papers

- Students are able to keep their own “science notebook” as a great source of information for further writing, inquiry and explorations;
- Students are able to use concise, precise scientific language and agreed-upon conventions in their writings;
- Student are able to understand different genres in scientific writing (eg. Journal article, research proposal, lab report etc.)
- Students are able to make hypothesis and gather information to support their opinions in their paper writings;

17. 课程内容及教学日历（如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）

Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

Week 1

Discipline

No specific discipline

Teaching Content

1. Course introduction

2. Syllabus

3. Scientific vocabulary training 1: The differences between everyday English vocabulary and disciplinary academic vocabulary

4. Scientific reading skill 1: How to take notes and raise questions in science reading

Activities

1. English academic literacy development: explore & create your “Science Map”

2. Group discussions on challenges and benefits of reading scientific articles

Readings

1. Purugganan, M., & Hewitt, J. (2004). How to read a scientific article. Rice University.

Link:

<http://www.owlnet.rice.edu/~cainproj/courses/HowToReadSciArticle.pdf>

Assignments

1. Weekly “science map” Prep

2. Reading response 1: Your struggles/challenges in reading English scientific articles

Week 2

Discipline

Astronomy

Teaching Content

1. Scientific vocabulary training 2: Disciplinary vocabulary list-astronomy
2. Reading for comprehension: Astronomers in history and modern times
3. Listening/speaking training: Use simple scientific language for effective communication

Activities

1. Listening & speaking activity: watch & repeat Cosmos-episode 1-astronomy (clip)
2. In-class discussion & research: My favorite astronomer
3. Mini presentation: What makes great astronomers?

Readings

Astronomer biographies

1. Maria Mitchell, The First American Scientist to Discover a Comet, Fought for Pay Equality for Women
Link:

https://www.amightygirl.com/blog?p=25283&_cf_chl_captcha_tk__=pmd_paJfE6RUgSf70Wujdmc2NeAnS.FbNT5KE7nsQs0a.Fw-1635224956-0-gqNtZGzNAuWjcnBszQi9

2. Who Was Galileo Galilei?

Link:

https://www.pbs.org/wgbh/nova/galileo/media/lrk_handout.pdf

Assignments:

1. Complete readings
2. Review vocabulary list-astronomy

Week 3

Discipline

Astronomy

Teaching Content

1. Scientific vocabulary training 3: Disciplinary vocabulary list -astronomy
2. Reading for comprehension: Summarize and provide evidence from readings
3. Reading for discussion: How to develop one's curiosity into research interests
 - a. Read articles about breakthroughs and achievements in astronomy
 - b. Research and read one or two astronomers' stories

Activities

1. Group discussion & sharing: Share your researched stories and retell the stories
2. Develop disciplinary academic literacy: Creating "Science map"-astronomy
3. Field trip to the Shenzhen Science Museum planning

Readings

1. *Black Holes Explained*

Link: astronomy.com

2. *The next big discovery in astronomy? Scientists probably found it years ago – but they don't know it yet*

Link: <https://theconversation.com/the-next-big-discovery-in-astronomy-scientists-probably-found-it-years-ago-but-they-dont-know-it-yet-95280>

Assignments:

1. Field trip to SZ Science Museum sign-in
2. Review vocabulary list-astronomy

Week 4

Discipline

Chemistry

Teaching Content

1. Read & write your lab report
2. Scientific vocabulary training 4: disciplinary vocabulary list-chemistry-Experimental equipment in the lab
3. Speaking & communication: How to explain chemical reactions in simple English language

Activities

1. Lab reports sharing
2. Lab reports mini-presentation
3. Vocabulary training: Select your equipment for the experiment

Readings:

1. *Some tips on writing lab reports* by Wun Chiou

Link: https://www.chem.ucla.edu/~gchemlab/labnotebook_web.htm

2. *Writing an Organic Chemistry Lab Report* by Danielle M. Solano

Link: https://www.csub.edu/chemistry/organic/manual/Topic4_Report.pdf

3. *10 Chemical Reactions That Changed The World* by Mark Thomas

Link: <https://listverse.com/2018/05/09/10-chemical-reactions-that-changed-the-world/>

Assignments:

1. Weekly "Science map"-Chemistry
2. Write & revise your lab reports

Week 5

Discipline

Chemistry

Teaching Content

1. Scientific vocabulary training 5: disciplinary vocabulary list 5-chemistry in life
2. Reading & discussion: Chemistry in life-observation & reflection
3. Reading for critical thinking: Chemistry vs. Environment

Activities

1. Group debates: Chemistry vs. Environment
2. Speaking & critical thinking: Documentary: Silent spring (clip)

Readings

1. *Silent Spring* by Rachel Carson (chapters)
2. *Chemistry in everyday life* by Dr. S.K. Shukla
Link: <https://manavrachna.edu.in/blog/chemistry-in-everyday-life/>
3. *Chemistry in daily life-10 examples of chemistry all round you* by Anne Marie Helmenstine
Link: <https://www.thoughtco.com/examples-of-chemistry-in-daily-life-606816>

Assignments:

1. Weekly "Science map"-Chemistry 2
2. Review lab report
3. Read one journal article in chemistry

Week 6

Discipline

Biology

Teaching Content

1. Writing workshop: How to do annotated bibliography in your science reading
2. Scientific vocabulary training 6: Disciplinary vocabulary list-Biology
3. Mid-term presentation prep 1

Activities

1. Find the biography topic you have interest with your group members
2. Research the topic and group cross-table bibliography writing
3. Presentation rehearsal 1

Readings

1. How to write a bibliography
Link: <https://tippie.uiowa.edu/how-write-bibliography>
2. Evaluating Bibliographic Citations
Link:
https://owl.purdue.edu/owl/research_and_citation/conducting_research/evaluating_sources_of_information/evaluating_bibliographic_citations.html

Assignments

1. List the readings you collected for your research project
2. Complete the class readings and take notes for discussion
3. Weekly “Science map”-Biology 1

Week 7

Discipline

Biology

Teaching Content

1. Scientific vocabulary training 7: Disciplinary vocabulary list -Biology
2. Reading & writing training: How to develop your research interest into a research project
3. Writing workshop: How to turn your reading list into a bibliography
4. Mid-term presentation prep 2

Activities

1. Research ideas sharing
2. Group work on bibliography
3. Presentation rehearsal 2

Readings

1. Turning your topic into a research question

Link:

<https://subjectguides.esc.edu/researchskillstutorial/researchquestion>

2. Research & Innovation-Explore your topic

Link:

<https://research.uoregon.edu/plan/undergraduate-research/resources/exploring-topic>

Assignments

1. Get ready for presenting your research idea to the class
2. Weekly “Science map”-Biology 2

Week 8

Mid-term Exam Week

Exam Format: In-class formal presentation

Exam Requirement:

1. Present the research idea you have the most interest so far
2. Please make slides for your presentation
3. Your presentation time is around 10 minutes
4. Please include a handout of your bibliography to your audiences
(More details please refer to presentation rubrics)

Week 9

Discipline

Engineering

Teaching Content

1. Scientific vocabulary training 9: Disciplinary vocabulary list-Engineering
2. Reading for understanding: Differences between engineers & scientists?
3. Reading for critical thinking: The amazing innovative designs in engineering 1

Activities

1. Group discussion on designs in engineering
2. Engineering literacy development circle sharing
3. SZ science museum report 1 (according to the sign-up sheet order)

Readings

1. *The differences between engineering and science* by Jeremy Ramsden
Link: https://www.researchgate.net/publication/270607461_The_Difference_Between_Engineering_and_Science
2. What is engineering design
Link: <https://www.linkengineering.org/EngineeringDesign.aspx>

Assignment

1. Weekly “Science map”-Engineering 1
2. Find one engineering design you would like to share in class
3. Research the design and learn its designing process

Week 10

Discipline

Engineering

Teaching Content

1. Scientific vocabulary training 10: Disciplinary vocabulary list-Engineering
2. Reading & discussions: Engineering design process and stories
3. Speaking training: How to tell a good story- “Mock Engineers” sharing preparation

Activities

1. SZ science museum report 2
2. “Mock Engineers”-Share one engineering design in the first count narrative from the engineer

Readings

1. *Forget Edison: This is How History's Greatest Inventions Really Happened*

By Derek Thompson

Link:

<https://www.theatlantic.com/business/archive/2012/06/forget-edison-this-is-how-historys-greatest-inventions-really->

[happened/258525/](#)

2. *The Stories Behind 20 Inventions That Changed the World*

Link:

<https://www.mentalfloss.com/article/648542/inventions-changed-world>

Assignment

1. Weekly “Science map” - Engineering 2
2. Reflection paper: My current struggles/challenges & improvement in disciplinary academic reading and writing

Week 11

Discipline

Medicine

Teaching Content

1. Scientific vocabulary training 11: Disciplinary vocabulary list-medicine
2. Reading for critical thinking: Why do we need medicine literacy training?
3. Reading for comprehension: Stories of doctors

Activities

1. SZ science museum report 3
2. Group discussion on the importance of health literacy

Readings

1. *From Doctors’ Stories to Doctors’ Stories, and Back Again* By Marcia Day Childress

Link:

<https://journalofethics.ama-assn.org/article/doctors-stories-doctors-stories-and-back-again/2017-03>

2. *The Need for Focused Literacy Training in the Medical School Curriculum: A Cross-Sectional Study of Undergraduate Students* By Joyce Kling, Sanne Larsen, and Simon Francis Thomsen

Link:

<https://www.hindawi.com/journals/edri/2017/7273824/>

3. *Health Literacy: A Prescription to End Confusion* By Lynn Nielsen-Bohlman, Allison M. Panzer, David A. Kindig, Editors, Committee on Health Literacy

Link:

https://www.ncbi.nlm.nih.gov/books/NBK216032/pdf/Bookshelf_NBK216032.pdf

Assignments

1. Weekly “Science map”-Medicine 1
2. Reading response 2: What is the most impressive story in medicine to you?

Week 12

Discipline

Medicine

Teaching Content

1. Scientific vocabulary training 12: Disciplinary vocabulary list-medicine
2. Speaking and communication: Medicine concepts explanation preparation-How to explain a medicine idea to the audiences without medical knowledge
3. Final project introduction - How to do a science talk in a symposium 1

Activities

1. Individual proposal for medicine concepts
2. Explain the medicine concept to your audiences (eg. How to do a MRI; How to authorize a vaccine)
3. SZ science museum report 4

Readings

1. National action plan to improve health literacy

Link: https://health.gov/sites/default/files/2019-09/Health_Literacy_Action_Plan.pdf

2. Students bring their topic reading for class discussion

Assignments

1. Weekly "science map"-Medicine 2
2. Documentary watching: Sicko (2007)
3. Preliminary selection on your symposium topic from "science map"

Week 13

Discipline

Physics

Teaching Content

1. Scientific vocabulary training 13: Disciplinary vocabulary list-Physics
2. Reading for discussion: Application of physics in everyday life --- Examples sharing
3. Final project progress - Symposium topic sign up

Activities

1. TED Talk: The fascinating physics of everyday life | Helen Czerski
2. Group sharing: Examples of physics in everyday life
3. SZ science museum report 5

Readings

1. *What's the meaning of life?* By Jeremy Berlin

Link:

<https://www.nationalgeographic.com/science/article/physics-evolution-life-constructal-law-bejan-ngbooktalk>

2. Physics in our lives

Link:

[http://comsats.org/Publications/Books_SnT_Series/07%20\(a\).%20Physics%20in%20Our%20Lives%20\(July%202005\).p](http://comsats.org/Publications/Books_SnT_Series/07%20(a).%20Physics%20in%20Our%20Lives%20(July%202005).p)

[df](#)

Assignments

1. Reading response 3: How does physics change our lives?
2. Weekly “science map”-physics

Week 14

Discipline

Physics

Teaching Content

1. Scientific vocabulary training 14: Disciplinary vocabulary list-Physics
2. Reading for critical thinking: Application of physics in everyday life 2
3. Speaking and delivery training: Final project progress - Symposium - Mock conference

Activities

Mock Conference - Symposium

Readings

Review readings

Assignments

1. Vocabulary review
2. Weekly “science map” finalized

Week 15

Discipline

No specific discipline

Teaching Content

1. Final Project work time & rehearsal
2. Final project rubrics analysis
3. Final project Q & A

Activities

1. Class discussions on the final project
2. Symposium rehearsal and individual conference

Readings



None
<u>Assignment</u>
Complete final project
Week 16
Final Project Presentation Week
Classroom symposium

18. 教材及其它参考资料 Textbook and Supplementary Readings

Coursepack

课程评估 ASSESSMENT

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance	Every class	5%		First unexcused Absence = no penalty Second unexcused absence = -2% from final grade Third unexcused absence = Failure of course
课堂表现 Class Performance	Every class	5%		
小测验 Quiz				
课程项目 Projects				
平时作业 Assignments		50%		Five Assignments: 1. Reading responses (3) 2. Science map 3. Shenzhen Science Museum report 4. Lab report 5. Reflection paper
期中考试 Mid-Term Test		20%		In-class presentation
期末考试 Final Exam				
期末报告 Final Presentation		20%		In-class symposium

其它（可根据需要
改写以上评估方
式）
**Others (The
above may be
modified as
necessary)**

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20. 记分方式 **GRADING SYSTEM**

- | |
|---|
| <input checked="" type="checkbox"/> A. 十三级等级制 Letter Grading
<input type="checkbox"/> B. 二级记分制（通过/不通过） Pass/Fail Grading |
|---|

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课程审批 REVIEW AND APPROVAL

21. 本课程设置已经过以下责任人/委员会审议通过
This Course has been approved by the following person or committee of authority

Center for Language Education

