

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检讨之后产生变动。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.

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| 1. | 课程名称 Course Title | The Language of Interdisciplinary Problem Solving |
| 2. | 授课院系 Originating Department | Center for Language Education |
| 3. | 课程编号 Course Code | CLE5002 |
| 4. | 课程学分 Credit Value | 0 |
| 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 Instructor(s), Affiliation & Contact (For team teaching, please list all instructors) | The main instructor will be Stephen Pellerine, but not limited to depending on number of enrolled participants. |
| 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) | 20-40 |

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|---|----------------|-----------------------|------------------------|-------------------------------------|--------------|
| 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 |
| | 32 | 0 | 0 | 0 | 32 |
| 学时数 Credit Hours | | | | | |
| 12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements | 无 NA | | | | |
| 13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite | 无 NA | | | | |
| 14. 其它要求修读本课程的学系 Cross-listing Dept. | 无 NA | | | | |

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

A primary objective is to provide students with the opportunity to learn language from various academic disciplines, centering on problem solving.

A secondary objective is to facilitate interdepartmental collaborations in meaningful academic forms that keep student progress at the center of attention, yet demonstrate professional academic partnerships.

This course is considered to be very progressive and 21st century in that content and expertise comes together, from many vantage points, and produces a cohesive theme that is cognitively beneficial to SUSTech in many ways.

This course should be a model that other institutes can model from, placing SUSTech as a leader in Education.

16. 预达学习成果 Learning Outcomes

Upon successful completion of this course, students will:

- develop note taking skills (In English) in an academic setting
- demonstrate gain in interdisciplinary thinking through writing assignments and presentations
- develop academic writing, aware fully of avoiding plagiarism, since their main course essay will come from in class guests, and assigned reading "notes".
- deliver a final presentation demonstrating a case which an interdisciplinary mind-set was required, for deriving a solution

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: Week One Introduction to the Interdisciplinary

Class 1: Teach Arts and Science Together (TED Talk by Mae Jemison). Students will watch and take notes on a talk linking science and art: https://www.ted.com/talks/mae_jemison_teach_arts_and_sciences_together. Following this task students will write a reflection on this talk, and make a comment on the following: what effect can interdisciplinary study have?

Class 2: SLO Students will read Klobus (2020), Tracing the Reach of An Interdisciplinary Antarctic Study, and annotate it, see: <https://glacierhub.org/2020/02/04/tracing-the-reach-of-interdisciplinary-antarctic-study/>. Students are asked to reflect on what two fields were brought together in this study, and how it helped inform findings. Students are then required to go to BlackBoard and under Week 1, do two things. 1 find a short reading on and write a paragraph of another area in life (academic or less formal) that required some kind of interdisciplinary synthesis. It does not need to be long, but be thoughtful: please include the link to your reading. 2 read posts (or more if you like) from two other students and make a comment on their post.

Week 2: Looking at the last lecture linking to the next

Class 3 SLO Photography and the Interdisciplinary: Does Photographing a Moment Steal the Experience from You. A talk by Erin Sullivan, at: https://www.ted.com/speakers/erin_sullivan. Watch this video, and reflect taking notes. When she is done, write a reflection. Please respond to three things: What does she suggest in her talk? How does it link to interdisciplinary studies? How were images used to help your understanding in last weeks Antarctic Study?

Class 4 SLO In the second part of week two, we will look closely at your personal images (just one). Please select an image that you have taken. If you need to, or prefer, you can go take a new image. Photograph something that to you says multi-disciplines related. Post your image in Black Board, week 2. Reflect on this, and comment on two other (minimum) student posts.

Week 3: Oumuamua

Class 5 SLO Watch Karen Meech, discuss Oumuamua, at:

https://www.ted.com/talks/karen_j_meech_the_story_of_oumuamua_the_first_visitor_from_another_star_system

While listening to Meech speak about the Oumuamua discovery, naming of it, its composition, observing it, depicting it, and thinking about it to you in this TED talk. Write a reflection discussing the link to the last two weeks: Art and Science, Antarctica Exploration, Photography with Oumuamua. Reflect on the interdisciplinary nature of these talks and readings. Post this.

Class 6 SLO Find an article on if it is possible, or not, to live on another planet. Include a link to it here – but reflect clearly on the conclusion of this reading. Think about it, the idea if what would be required to live on another planet. Write, in addition to a simple summary statement of the article: would it be beneficial to have interdisciplinary minded and trained people to develop new life on another planet? Or more specialized academics? Post this, and make comments on at least two other posts from different classmates.

Week 4: Life on Mars

Class 7 Watch a talk on Life on Mars, at:

https://www.ted.com/talks/lynn_rothschild_the_living_tech_we_need_to_support_human_life_on_other_planets

Take notes and discuss, in a short reflection, what interdisciplinary requirements would be needed to live on Mars. Think about the connections to last week's work, about living on another planet.

Class 8SLO Make a rough sketch on an A4 sheet of paper. Draw a community on a new planet. In this sketch or diagram label it and list a minimum of 10 different disciplines that you have integrated and are required to support life

within your proposed community.

Present this diagram with a written, or video explanation of this. Look at and comment on a few other student designs.

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Week 5. Guest Speaker (30 min talk + 20 min Q&A) / Class Discussion (**Biology**) L3

Class 9: SLO In the first hour students will hear a talk on the literature they have been analyzing. They will have the opportunity to ask questions and deepen their understanding on the talk.

Class10: SLO In the second hour students will be placed into four groups. 1 group will prepare and present a review of the talk on Education, and will try to link an idea or two to the talks on Engineering and Biology. A second group will focus on Biology and link to Education and Biology, the third focusing on Biology linking to Education and Engineering. The fourth group will present and discuss two-three main points from each topic (the points can be from lectures or assigned readings).

Week 6. Introduce groups for final presentation / Discuss challenges with paper (reference page started)

Class 11: SLO Students will make groups (of about 5) for a final presentation. Based on the past lectures, and course materials for future talks, they will start to negotiate their topics for this. A brief presentation will be given on public speaking: verbal punctuation or signposting, stance, volume and clarity, clean and easy to follow slides, and a clear direction of their talk (cutting it down to a clear example).

Class 12: SLO In the second hour students will discuss the applications of mathematics and how statistics, math, and algebra are valuable from the view of application. We will discuss this in relation to the materials provided from the algebra lecture in the following week.

Week 7: Class 6: Hour 1 Guest Speaker (30 min talk + 20 min Q&A) / Class Discussion (**Algebra**) L4

Class13: SLO Students will hear a different kind of talk on algebra, not the formulas and philosophies, but the applications and how problems in various fields have been solved through either complex or simple math, like the work of Shannon, entropy in general, ANOVAs, or simple number needed solutions.

Class 14: SLO Students will have heard a lecture on algebra and we will discuss this. Students will have been tasked with finding a case, for homework, where algebra and math/statistics provides solutions in other disciplines and help solve challenges.

I, the instructor, will present a paper written at Oxford addressing education, and in this the European Social Survey was used as a data set for investigating migrant language proficiency (lack thereof) and disadvantage they have in accessing health care in the UK.

Week 8, Class 8: Summarize links (Compare and Contrast) between: Engineering, Education, Biology, and Algebra.

Class15: SLO In the first hour students will practice impromptu public speaking. Each student will be given an index card and 5 minutes to use their notes and reflect on the course thus far. 1) What was the most interesting thing they learned thus far, 2) How was it interdisciplinary, 3) How can this shape their future thinking.

In the time remaining (in hour 1) random numbers will be picked and students will be tasked with a 3-5 minute speech (not graded) to practice their public speaking.

Class 17: SLO students will be asked to reflect on biochemistry, how math/numbers are important for dealing with chemistry, how are new synthetic chemicals engineered. We will then look at the materials presented by the lecturer on chemistry.

Week 9, Class 9: Hour 1 Guest Speaker (30 min talk + 20 min Q&A) / Class Discussion (**Chemistry**) L5

Class 18: We will hear a talk on chemistry that looks at synthetic materials and how these materials may shape the future for society. There will be a question and answer period.

Class 19: SLO Students will be asked to think of how chemistry has shaped the world, past present, and future. They will then be asked to get back into groups and think about a past present and future for their presentation (does it help them a – build the background b – describe the problem being solved itself c – offer important insights for the future. No group will be forced to add this into their final presentation but will be required to discuss this possibility in this class.

Week 10, Class 10: Students will present individual progress on individual papers (5 min presentations with Q & A)

Class 20: SLO Individual paper presentations with Q & A

Class 21: SLO Individual paper presentations with Q & A

Students will be asked and reminded to read the Physics article for next week, as we have been doing in class. They should have the idea now and the goal is to develop learner independence.

Week 11, Class 11: Hour 1 Guest Speaker (30 min talk + 20 min Q&A) / Class Discussion (**Physics**) L6

Class 22: SLO Students will hear a lecture on physics, and how physics is an integral part of many disciplines.

Class 23: SLO In addition to having read the article, and listened to the lecture on physics, students will be responsible for bringing one idea to class that links the article/or talk with a daily life application. Groups will discuss these. The most interesting will be shared with the class.

Week 12, Class 12: Hour 1 Guest Speaker (30 min talk + 20 min Q&A) / Class Discussion (**Economics**) L7

Class 24: : SLO It all boils down to money. Economics will be presented as a pure discipline, but quickly linked to .. well.. any and everything. The lecturer can elicit a lot from students on this, and engage them in conversations on how finance and economics can be tied to all disciplines.

Class 25: SLO students will be asked to consider the talk on Economics, and see if and how this links to their presentation. No group will be forced to add this into their final presentation but will be required to discuss this possibility in this class.

Week 13, Class 13: Hour 1 Guest Speaker (30 min talk + 20 min Q&A) / Class Discussion (**Computing Science**) L8

Class 26: SLO For the final session computing science will be presented in a way that links to all previous talks, computing in: Education, Physics, Chemistry, Biology, Engineering, Economics, and Algebra.

Class 27: SLO Students will discuss computing, and the future of computing. We will briefly look at the Agricultural Revolution, the Industrial Revolution and the current Technological Revolution. We will consider what is next? The nan technological revolution? If so, what role will computer science play?

Week 14, Class 14: Looking into the future with groups (planning final group case presentation)

Class 28: SLO Students will review all lectures after they are provided with a take-home exam. The exam is constructed to capture their learning and bring points together from readings and content delivered via 8 lectures. Students can clarify point son the take home exam.

Class 29: SLO In the second half of the session students will get into groups and make sure PPTs for presentations are complete. If the do not use a PPT some kind of visual aid/hand out is required. Students will have time to practice speaking and working on pronunciation/intonation for the final group case presentations.

Week 15, Class 15: Sharing Individual Papers (there will be a class book collated with student chapters)

Take home exam is due next week: Second hr recapping talks

Class 30: SLO Students will share their chapter (their essay) in a class book, titled "Interdisciplinary Problems: Interdisciplinary Solutions".

Class 31: SLO Presentation (informal) will take place on papers. With any remaining time questions will be addressed regarding the take-home exam.

Week 16, Class 16: Group Presentations

Group presentations will take place this week. Panel will be invited to observe.

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

Articles and materials presented by guest speakers

TED Talk as a back up (bit will try to avoid this)

Will record lectures, if possible, so absent students can see and they can act as back-up lectures for future runnings of the course.

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 | | 10% | -2% | 1 class unexcused is ok |
| 课堂表现 Class Performance | | 11% | | Teacher Evaluation |
| 小测验 Quiz | | | | |
| 课程项目 Projects | Note taking log | 14% | | Log to be handed in |
| 平时作业 Assignments | Paper/Essay | 20% | | 1500-3000 word essay |
| 期中考试 Mid-Term Test | | | | |
| 期末考试 Final Exam | | | | |
| 期末报告 | Week 15 or 16 | 20% in class | | In Groups Cases will be Presented |

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|---|-----------------------|-----------------------|--|--|
| Final Presentation | | | | Demonstrating a Significant Problem the Required an Interdisciplinary Solution |
| 其它（可根据需要改写以上评估方式） Others (The above may be modified as necessary) | Handed out in week 12 | 25% Take home exam | | Culminating reflections on problem solving |

20. 记分方式 **GRADING SYSTEM**

Yes 十三级等级制 **Letter Grading**
 B. 二级记分制（通过/不通过） **Pass/Fail Grading**

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

注意：本大纲为 2020 年春季学期使用大纲，其中涉及到的教学安排、考核方式、计分方式、成绩比例等可能在不同学期随着课程发展进行调整、更新，请以课上教师公布大纲为准

