Innovation in Engineering Sciences from An Anthropological Perspective
312232030
Spring 2025
Syllabus

Instructor: Sophia Zuoqiu, D. Sc.
Email: yqiu@scupi.cn
Office hours: TBD

TA: Haoxuan Hu

Note: This syllabus is subject to change.

Course Description

This **case-study** course is designed to explore the dynamic landscape of innovation within the field of engineering sciences. Through real-world case studies, students will analyze successful and challenging cases of innovation in engineering, examining the technological, ethnical and societal implications. The course aims to cultivate a deep understanding of the innovation process, encouraging students to think critically, creatively, and ethnically as they tackle complex engineering challenges. Students in this course should be prepared for: after-class reading, in-class discussion, group work.

Course objectives

- Understand what innovation is, and what are conditions for innovation;
- Understand what anthropology is, and how anthropological perspective can help us to better understand engineering;
- Learn about applications of innovation in engineering.

ABET outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to communicate effectively with a range of audiences.
3. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
4. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
5. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Grading Rubric

The students are evaluated on their participation in class, individual learning and group work based on the following grading rubric:

Attendance	20%
Homework (case study)	20%
Participation (group case challenge)	20%
Final project	20%
Final exam	20%

NO MAKE UP is accepted for any of the above grading criteria.

Video and Audio Recording Policy

To ensure the free and open discussion of ideas, students **should not record** classroom lectures, discussion, and activities without the advance written permission of the instructor, and any such recording properly approved in advance should be used solely for the student's private use.

Academic Integrity

We are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). Unacknowledged direct copying from the work of another person/group/source, or the close paraphrasing of such, is called plagiarism and is a serious offense, equated with cheating in examinations. This applies to copying both from other students' work and from published sources. Paraphrasing, when the original statement is still identifiable and has also no acknowledgement, is plagiarism. The use of artificial intelligence also requires explicit citation and specification of contribution. The Code of Student Conduct allows Sichuan University to take disciplinary action if students don't follow this community expectation.

Policy on Utilization of Artificial Intelligence

Students in this course may choose to incorporate artificial intelligence (AI) in the following aspects of their study: information gathering, coding, translation/interpretation, visualization, cross-referencing, and other relevant and efficient ways for self-learning. Students are EXCPLICITLY FORBIDDEN from using AI to 1) complete the logic of the assigned task and 2) perform entire assigned tasks. If students choose to incorporate AI, they MUST explicitly disclose the following information: 1) acknowledgement of the AI program/platform, 2) proportion/percentage contribution from AI, 3) prompts/logic/questions used to elicit AI response. All the materials must be submitted before receiving credit for the assigned task/homework/group work. Unacknowledged AI contribution will result in automatic "0" in the assigned task/assigned (if it is individual work, the individual student will receive no credit; if it is group work, the entire group will receive no credit). Additionally, AI-generated content can contain inaccuracies, it is the student's responsibility for verifying the factual correctness. Students are strongly encouraged with consult with teaching team for incorporation and acknowledgement of AI utilization before proceeding.

Tentative Lecture Schedule (Subject to Change)

Lecture 1 Course introduction and introduction to “innovation”
Lecture 2 Understanding “innovation” and “anthropology”

Lecture 3 Biophilia and Human-nature interaction
Case studies

Lecture 4 Innovation application in environmental engineering
Case study

Lecture 5 Innovation application in sustainability
Case study

Lecture 6 Innovation application in urban development
Case study

Lecture 7 Case Challenge I

Lecture 8 Innovation application in autonomous vehicles
Case study

Lecture 9 Innovation application in biomedicine
Case study

Lecture 10 Human-Machine interaction (HMI)
Case study

Lecture 11 Case Challenge II

Lecture 12 Artificial Intelligence
“Hallucinating” AI

Lecture 13 Guest lecture (pending)

Lecture 14 Innovation into the Future: Challenges and Prospects

Lecture 15 Group project presentation
Lecture 16 Group project presentation

Lecture 17 Final Exam