浙江大學

ENGG509

Interdisciplinary Engineering and Global Systems

ENGG509

Interdisciplinary Engineering and Global Systems

Instructor Contact Details

Lecturer-in-charge: Dr. Suijing Wang
Email: wlwyxy_29@zju.edu.cn
Office location: Huajiachi Campus, Zhejiang University, Hangzhou, China
Consultation Time: Book appointment by sending email to: wlwyxy_29@zju.edu.cn

Teaching Times, Modes and Locations

Course Duration: 11 Jan 2026 to 30 Jan 2026
Modes: Face-to-face
Location: Huajiachi Campus, Zhejiang University via face-to-face

Academic Level

Undergraduate

Credit Points:

The course is worth 6 units of credit point.

Credit Hours

The number of credit hours of this course equals to the credits of a standard semester- long course.

Contact Hours

The course contains a total of 53 contact hours, which consists of orientation, lectures, seminars, quiz, discussion, research, case study, small tests, assignments, on-site field trip(s), in-class and after-class activities, revision, self-study, and final exam. Students will receive an official transcript which is issued by Zhejiang University when completing this course.

Enrolment Requirements

Eligibility requires enrollment in an overseas university as an undergraduate or postgraduate student, proficiency in English, and pre-approval from the student's home institution.

Course Description:

This unit offers students the opportunity to engage with complex engineering challenges through an interdisciplinary lens. Students will work in multi-disciplinary engineering teams to analyze and evaluate engineered systems within the context of contemporary global challenges, such as climate change, resource scarcity, and technological disruption. The course emphasizes the integration of knowledge from different engineering fields, encouraging students to develop innovative solutions and actionable recommendations over the course of a semester-long project. Students will also explore how engineering practices and decisions can have both positive and negative impacts on these global challenges, preparing them to navigate complex systems and contribute meaningfully to sustainable and ethical engineering solutions.

Prerequisite:

None.

Learning Resources

The course materials will be provided prior to the start of the class.

Learning Objectives

By the end of this course, you should be able to:

・Independently identify and apply fundamental engineering concepts and methods to develop effective solutions, considering stakeholder and multidisciplinary perspectives.

・Analyze and manage complex engineered systems using data-driven modelling, addressing uncertainty and operational challenges.

・Demonstrate leadership and professionalism in contributing to a multidisciplinary team, aligning work with regulatory frameworks and community expectations.

・Adapt communication strategies to effectively convey engineering solutions to diverse audiences, applying appropriate academic standards and demonstrating independent learning.

Course Delivery:

- Face-to-face Lecture mode includes lectures, seminars, quiz, discussion, research, case study, small tests, assignments, on-site field trip(s), in-class and after-class activities, revision, and final exam.

The following course will be taught in English. There will also be guest speakers and optional field trips available for students who would like to enhance their learning experience. All courses and other sessions will be run during weekdays.

Topics and Course Schedule:

WK	Topic	Activities
1	Introduction to Interdisciplinary Engineering and Global Challenges	Lecture; Tutorial
1	Fundamentals of Engineering Problem-Solving	Lecture; Tutorial
1	Researching the project briefly Stakeholder Perspectives and Design Context	Lecture; Tutorial
1	Scoping and defining the problem	Lecture; Tutorial
1	Systems Thinking and Complexity Management	Lecture; Tutorial
2	Contextual analysis (legal, policy, social, and environmental) and decision making	Lecture; Tutorial
2	Engineering Requirements and decision making	Lecture; Tutorial
2	Developing Engineering Solutions	Lecture; Tutorial
2	Quiz	Closed book
2	Concept modeling and development	Lecture; Tutorial
3	Implementation timelines and planning, Gantt charts and resource allocation	Lecture; Tutorial
3	Regulatory Frameworks and Industry Standards	Lecture; Tutorial
3	Leadership and Professionalism in Engineering	Lecture; Tutorial
3	Risk Assessment	Lecture; Tutorial
3	Final Project Presentation and Peer Review	Lecture; Tutorial
3	Revision	Tutorial

3	Final exam	Closed book

Assessments:

Class participation	15%
Quiz	15%
Assignments	20%
Final exam	50%

Grade Descriptors:

HD	High Distinction	85-100
D	Distinction	75-84
Cr	Credit	65-74
P	Pass	50-64
F	Fail	0-49

High Distinction 85-100

- Treatment of material evidences an advanced synthesis of ideas Demonstration of initiative, complex understanding, and analysis.
- Work is well-written and stylistically sophisticated, including appropriate referencing, clarity, and some creativity where appropriate.
- All criteria addressed to a high level.

Distinction 75-84

- Treatment of material evidences an advanced understanding of ideas Demonstration of initiative, complex understanding and analysis Work is well-written and stylistically strong.
- All criteria addressed strongly.

Credit 65-74

- Treatment of material displays a good understanding of ideas.
- Work is well-written and stylistically sound, with a minimum of syntactical errors.
- All criteria addressed clearly.

Pass 50-64

- Treatment of material indicates a satisfactory understanding of ideas Work is adequately written, with some syntactical errors.
- Most criteria addressed adequately.

Fail 0-49

- Treatment of ideas indicates an inadequate understanding of ideas Written style inappropriate to task, major problems with expression.

- Most criteria not clearly or adequately addressed.

Academic Integrity

Students are expected to uphold the university's academic honesty principles which are an integral part of the university's core values and principles. If a student fails to observe the acceptable standards of academic honesty, they could attract penalties and even disqualification from the course in more serious circumstances. Students are responsible for knowing and observing accepted principles of research, writing and any other task which they are required to complete.

Academic dishonesty or cheating includes acts of plagiarism, misrepresentation, fabrication, failure to reference materials used properly and forgery. These may include, but are not limited to: claiming the work of others as your own, deliberately applying false and inaccurate information, copying the work of others in part or whole, allowing others in the course to copy your work in part or whole, failing to appropriately acknowledge the work of other scholars/authors through acceptable referencing standards, purchasing papers or writing papers for other students and submitting the same paper twice for the same subject.

This Academic Integrity policy applies to all students of the Zhejiang University in all programs of study, including non-graduating students. It is to reinforce the University's commitment to maintain integrity and honesty in all academic activities of the University community.

Policy

The foundation of good academic work is honesty. Maintaining academic integrity upholds the standards of the University. The responsibility for maintaining integrity in all the activities of the academic community lies with the students as well as the faculty and the University. Everyone in this community must work together to ensure that the values of truth, trust and justice are upheld.

Academic dishonesty affects the University's reputation and devalues the degrees offered. The University will impose serious penalties on students who are found to have violated this policy. The following penalties may be imposed:

- ✓ Expulsion
- ✓ Suspension
- ✓ Zero mark /fail grade
- ✓ Marking down
- ✓ Re-doing/re-submitting of assignments or reports, and
- ✓ Verbal or written warning.