

New Approaches to Sustainable Development

Department: Fudan International Winter Session 2026

Course Code	GEIS10033						
Course Title	New Approaches to Sustainable Development: Transition Pathways, not Goals						
Credit	2	Experiment (including Computer) Credit	0	Practice Credit	0	Aesthetic Education Credit	0
Credit Hours	36 credit hours in total + 3 office tutorial hours (one credit hour is 45 minutes)	Education on The Hard- Working Spirit Credit Hours	0	Language of Instruction	Eng- lish	Honors Course	☐ Yes ☒ No
Course Type	☐ Core General Education Course ☐ Specific General Education Course ☐ Basic Course in General Discipline ☒ Others				2+X Major : ☐ Professional Core Course ☐ Professional Advanced Course Non 2+X Major : ☐ Professional Compulsory Course ☒ Professional Elective Course		
Course Objectives	To acquaint the students with the idea of Sustainable Development (SD) and its 17 goals (SDGs); to introduce the students to the challenges of present day SD practice, and the proposed pathways to transition into a more equitable society; to then enable the students to learn different perspectives in one SD problem, and probe the underlying non-technical mechanisms; and finally to synthesize the knowledge and skills and solve complex, real-world problems, and to develop SD competencies in a fundamentally changing world.						
Course Description	Sustainable development is of paramount importance to all people, both present and future. Yet insufficient understanding and ineffective practice are common due to its profound and complex nature. This course is designed to accommodate students of all grades and disciplines, who are interested in the issue of SD, its relevance to real life, and solving the world's multiple problems through SD transition pathways. The course will cover basic concepts and contents on SD, its current state and bottlenecks, and the proposed transition pathways. Going beyond single SD goals and specialized knowledge, this course will adopt a holistic mindset and provide experience for transdisciplinary training. The students will be guided to first study one SD issue in single						

	locations, then cross-examine their findings against more holistic, comprehensive perspectives. Conflicts and dilemma among various goals will be identified, and the reasons explored by probing into deeper human shared values systems. Synthesizing this knowledge, experience and skills, the students will further move on to more comprehensive, real world problems involving multiple SDGs. Various competencies will be developed in the process, and the students' understanding of just transitions will be enhanced.
Course Requirements: Prerequisites: None. Students from all backgrounds are welcome.	
Teaching Methods: The teaching process will be highly interactive and progressively structured across 12 teaching sessions, organized in three four-session blocks separated by weekend breaks. Core knowledge input on Sustainable Development (SD), the SDGs, implementation bottlenecks, transition pathways, shared values, tacit knowledge, reflexivity, Just Transitions, and systems thinking will be followed by class activities including guided online research, case analysis, student presentations, assessed Q&A, panel discussion, the experiential WeValue InSitu activity, systems mapping, evidence gathering, and debate. Four homework assignments will be distributed at key stages of the course rather than after every session. Their findings will be brought back into class for presentation, peer challenge, reflection, and synthesis. In this way, the course combines knowledge acquisition, practice-based learning, and the progressive development of competencies for transdisciplinary sustainability problem-solving.	
Course Director's Academic Background: The lead lecturer is Prof. Marie Harder, a Foreign National Thousand Talent professor of Fudan since 2011. During her academic career at Brighton University, UK., Professor Harder has had extensive research and teaching experience in both natural and social sciences, including waste management and recycling, renewable energy, sustainable development, and values systems. At Fudan, her research interest was initially on municipal waste management, and human behavioral change during waste sorting practice. Nowadays she focuses on the WeValue In Situ methodology, a powerful tool she has developed to assist group members to deeply understand each other's tacit knowledge and make it explicit – thus making tacit social knowledge explicit and accessible for input into policies. This transdisciplinary expertise about spanning knowledge types will provide guidance for the course.	
Instructor's Academic Background: Prof. Harder will be assisted and understudied by Assoc. Prof. ZHANG Yi. Assoc. Prof. ZHANG Yi specializes in environmental engineering and wastewater treatment, but also has considerable experience in the field of renewable energy and waste recycling. She will provide contents of China focus, lead and organize class activities, and aid students who need language assistance. Dr. HUANG Yanyan will also contribute to course teaching and the organization and design of interactive learning activities. Dr. Huang has attended Wageningen University & Research in the Netherlands, has experience with such teaching approaches, and has considerable practice applying them in Prof. Harder's research team and in the WeValue process.	
Members of Teaching Team	

Name	Gender	Professional Title	Department	Responsibility
Marie K. HARDER	F	Professor	Environmental Science and Engineering	Development of course syllabus, providing principle teaching materials, designing course activities and evaluating students' performance.
ZHANG Yi	F	Associate Professor	Environmental Science and Engineering	Providing materials of China focus and language aid, practice teaching, organizing class activities. Assisting with student evaluations.
HUANG Yanyan	F	Post Doctoral Fellow	Environmental Science and Engineering	Organizing class activities and student liaison. Assisting with class activity design based on experience in NL.

Course Schedule: The course is delivered in 12 teaching sessions, organized in three four-session blocks with a weekend break after Session 4 and Session 8. The list below distinguishes learning activities from separately assessed work; where no point value is shown, the activity is not separately graded.

Week 1 (Sessions 1–4)

Session 1 — Foundations of Sustainable Development

- **In class:** Core concept and historical development of SD; origin, logic, and structure of the 17 SDGs; relationships among environmental, social, and economic dimensions; overview of the course progression.
- **Presentation / assessment:** No presentation or separate assessment.
- **After class:** None.
- **Points:** No separate points.

Session 2 — Current SD practice and implementation bottlenecks

- **In class:** From global goals to implementation; evidence of progress and gaps; why fragmented understanding, institutional constraints, trade-offs, and implementation failures recur in sustainability practice.
- **Presentation / assessment:** No presentation or separate assessment.
- **After class:** None.
- **Points:** No separate points.

Session 3 — Hometown SD status: mapping local issues to SDGs

- **In class:** Guided in-class analysis of a place students know well, including strong and weak SD aspects, a priority sustainability challenge, relevant SDGs/targets, key actors, and implementation constraints.
- **Presentation / assessment:** No formal presentation in this session; in-class work prepares Homework 1.
- **After class:** Homework 1: Hometown SD Report. Prepare a concise presentation for Session 4.
- **Points:** Homework 1 = 5 points in total, including the report and its concise presentation in Session 4.

Session 4 — Homework 1 briefing presentations, Assessed Q&A 1, and introduction to the problem-based case study

- **In class:** Students give very short presentations of their hometown findings, followed by focused peer/instructor questioning. The second part introduces the next task: one settlement and one SDG, including actors, constraints, and implementation pathways.
- **Presentation / assessment:** Homework 1 presentation is part of the Homework 1 score. Assessed Q&A 1 is scored separately.
- **After class:** Form teams for Homework 2: Problem-based Case Study, to be prepared for Session 5.
- **Points:** Homework 1 = 5 points total (report + concise presentation). Assessed Q&A 1 = 10 points.

Week 2 (Sessions 5–8)

Session 5 — Homework 2 side-by-side presentations, peer challenge, and Assessed Q&A 2

- **In class:** Teams working on comparable cases present side by side; the class reviews, critiques, and expands the proposed approaches, with attention to missing actors, assumptions, trade-offs, and the limits of single-goal solutions.
- **Presentation / assessment:** Homework 2 presentation is part of the Homework 2 score. Assessed Q&A 2 is scored separately.
- **After class:** None.
- **Points:** Homework 2 = 5 points total (case study + presentation). Assessed Q&A 2 = 10 points.

Session 6 — Tacit knowledge, shared values, and WeValue InSitu

- **In class:** Experiential WeValue InSitu practice to examine why people can interpret the same sustainability problem differently and to surface tacit knowledge, shared values, and underlying non-technical mechanisms.
- **Presentation / assessment:** No separate graded presentation or test. Active participation contributes to the overall Attendance & Participation component.
- **After class:** None.
- **Points:** No separate points for WeValue InSitu; participation is covered within Attendance & Participation (20 points overall).

Session 7 — Reflexivity, positionality, and knowledge integration

- **In class:** Students reconsider earlier analyses in light of their own and others' perspectives and examine how values, positionality, and different forms of knowledge shape problem framing and interpretation. The Written Test reflection prompt is provided.
- **Presentation / assessment:** No separate graded presentation or test in this session.
- **After class:** Prepare for the Written Test in Session 8.
- **Points:** No separate points.

Session 8 — Written Test and introduction to Just Transitions

- **In class:** Students complete an individual in-class written reflection on Homework 2 after WeValue InSitu, reflexivity, positionality, and knowledge integration. The session then introduces why sustainability requires transition pathways rather than isolated goals.
- **Presentation / assessment:** Written Test completed in class.
- **After class:** Homework 3: short Just Transition Case Reflection Note, due for Session 9.

- **Points:** Written Test = 20 points. Homework 3 = 5 points.

Week 3 (Sessions 9–12)

Session 9 — Just Transitions: theory versus practice, and introduction to systems thinking

- **In class:** Case-based examination of real transition attempts, tensions, dilemmas, and trade-offs among goals, followed by an introduction to interdependence, feedback, and system complexity. Homework 3 is used as a bridge into discussion.
- **Presentation / assessment:** No separate presentation; Homework 3 is submitted and discussed.
- **After class:** None.
- **Points:** Homework 3 = 5 points.

Session 10 — Systems thinking and transdisciplinary problem framing

- **In class:** Students move from transition cases to complex real-world sustainability problems, framing issues across goals, actors, scales, perspectives, and interacting system components.
- **Presentation / assessment:** In-class problem-framing activity; no separate score.
- **After class:** Homework 4: Integrated Complex-Problem Analysis begins and continues after class.
- **Points:** Homework 4 = 5 points in total, including the final analysis and its presentation in Session 12.

Session 11 — Systems mapping, evidence, and debate workshop

- **In class:** Students develop and cross-examine system maps, gather relevant evidence, identify feedbacks and stakeholder roles, test assumptions through structured discussion and peer challenge, and refine Homework 4.
- **Presentation / assessment:** Formative workshop activity; no separate presentation score or workshop score.
- **After class:** Finalize Homework 4 and prepare the Session 12 presentation.
- **Points:** No separate points for the workshop; it supports Homework 4.

Session 12 — Homework 4 presentations, final synthesis, and closed-book Final Examination

- **In class:** Students present their integrated complex-problem analyses, synthesize learning across SDGs, implementation bottlenecks, shared values, Just Transitions, systems thinking, and transdisciplinary problem-solving, and complete the final examination.
- **Presentation / assessment:** Homework 4 presentation is included in the Homework 4 score. Final Examination is separately assessed.
- **After class:** None.
- **Points:** Homework 4 = 5 points total (final analysis + presentation). Final Examination = 20 points.

The design of class discussion or exercise, practice, experience and so on:

The course uses a sequence of linked in-class activities and assessed assignments. “Homework” refers only to work that continues beyond class. In-class activities are described as activities, practice, discussion, or workshops and are not separate homework unless explicitly stated.

Guided hometown analysis (Session 3) — in-class learning activity. Students investigate a place they know well, identify a concrete sustainability problem, connect it to relevant SDGs/targets, and map key actors and implementation constraints. This activity prepares Homework 1 and is not separately graded.

Homework 1 — Hometown SD Report (5 points total). Students prepare a concise report and a very short presentation for Session 4. The report and presentation together constitute the Homework 1 score; there is no additional presentation score.

Assessed Q&A 1 (10 points, separate from Homework 1). Following the Session 4 brief presentations, peers and instructors question the selected problem, SDG/target mapping, evidence, actor analysis, and assumptions. The Q&A is assessed independently from Homework 1.

Homework 2 — Problem-based Case Study (5 points total). Students work in small teams on one settlement and one particular SDG, identify what would have to change, who could enable or block change, key dependencies, and where implementation may fail. The case-study work and the side-by-side presentation in Session 5 together constitute the Homework 2 score.

Assessed Q&A 2 (10 points, separate from Homework 2). After the Session 5 presentations, students are challenged on alternative problem framings, missing actors, trade-offs, assumptions, and the limits of single-goal or single-location solutions. The Q&A is assessed independently from Homework 2.

WeValue InSitu practice (Session 6) — experiential learning activity. Students participate in a group process that surfaces tacit knowledge and shared values through intersubjective comparison of lived experiences. The activity has no separate point value; active participation contributes to the overall Attendance & Participation component.

Reflexivity, positionality, and knowledge-integration activity (Session 7). Students revisit Homework 2 and earlier analyses in light of their own and others’ perspectives. This activity prepares the Written Test and is not separately graded.

Written Test — individual in-class reflection (20 points). In Session 8, students write an individual reflection on Homework 2 after the WeValue InSitu, reflexivity, positionality, and knowledge-integration activities. This is a separate assessment component, not part of the Homework 2 score.

Homework 3 — Just Transition Case Reflection Note (5 points). This is a short bridge assignment completed over the weekend and brought into Session 9. Students identify tensions, dilemmas, trade-offs, and the difference between normative goals and feasible transition pathways. No presentation is required.

Homework 4 — Integrated Complex-Problem Analysis (5 points total). Students apply systems thinking and transdisciplinary problem framing to a complex real-world sustainability challenge. The assessed Homework 4 output includes the final integrated analysis/system map and its presentation in Session 12.

Homework 4 systems-mapping, evidence, and debate workshop (Session 11) — formative activity. Students cross-examine system maps and evidence, identify missing relationships or assumptions, and revise their integrated analysis. The workshop is required as part of the learning process but carries no separate points.

Homework 4 presentation and final synthesis (Session 12). The presentation is included within the 5-point Homework 4 score and is not a separate assessment. The final synthesis itself carries no separate points.

If you need a TA, please indicate the assignment of assistant:

PhD student Mr. ZHANG Yangcheng (张养成) will act as TA, providing coordination and implementation support for in-class and out-of-class teaching activities. His responsibilities will include helping to manage class logistics and student groups, supporting classroom activities and presentations, providing routine after-class Q&A and assignment-related assistance under the instructors' direction, and collecting and communicating course information between students and instructors. The TA will support course delivery and implementation, but will not be responsible for course or activity design.

Grading & Evaluation:

The course is graded out of 100 points. The assessment structure is as follows:

1. Attendance and Participation — 20 points. Based on full and punctual attendance and active participation across the 12 scheduled teaching sessions. Participation in WeValue InSitu, class discussion, peer challenge, and workshops is included here; these activities do not carry separate point values.

2. Homework — 20 points total. Four homework assignments, each worth 5 points:

- Homework 1 — Hometown SD Report: 5 points total, including the concise Session 4 presentation.
- Homework 2 — Problem-based Case Study: 5 points total, including the Session 5 side-by-side presentation.
- Homework 3 — Just Transition Case Reflection Note: 5 points; no presentation required.
- Homework 4 — Integrated Complex-Problem Analysis: 5 points total, including the final analysis/system map and the Session 12 presentation. The Session 11 workshop is formative and carries no separate points.

3. Written Test — 20 points. An individual in-class written reflection in Session 8 on Homework 2 after the WeValue InSitu, reflexivity, positionality, and knowledge-integration activities. This is assessed separately from Homework 2.

4. Assessed Q&A — 20 points total. Assessed Q&A 1 in Session 4 = 10 points; Assessed Q&A 2 in Session 5 = 10 points. These Q&A scores are separate from the 5-point Homework 1 and Homework 2 scores.

5. Final Examination — 20 points. A closed-book in-class examination in Session 12 assessing students' understanding of the major course concepts and their ability to apply them to sustainability-related real-world problems.

Usage of Textbook: ☐ Yes (complete textbook information form below) ☒ No

Textbook Information (No more than two textbooks) :

Title	Author	ISBN	Publishing Time	Publisher	Type I	Type II
					☐ Self-compiled Textbook (Published) ☐ Non-mainland Textbook ☐ Other Textbook (Published)	☐ National Planning Textbook ☐ Provincial and Ministerial Planning Textbook ☐ School Level Planning Textbook ☐ Others

					☐ Self-compiled Textbook (Published) ☐ Non-mainland Textbook ☐ Other Textbook (Published)	☐ National Planning Textbook ☐ Provincial and Ministerial Planning Textbook ☐ School Level Planning Textbook ☐ Others
Teaching Materials & References:						