

COURSE: Technology, Innovation and Sustainability Transition (SECS-P/02 – CFU: 6)

TEACHER: *to be advised*

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1. KNOWLEDGE AND SKILLS TO BE ACHIEVED DURING THE COURSE

The course offer an introduction to the topic of innovation and sustainability transitions. Students will become familiar with the basics of transitions research, its main theoretical and methodical frameworks as well as with current debates and knowledge gaps in the field of sustainability transitions. Specifically, they will have the opportunity to acquire:

1. **Knowledge and understanding.** The students will become familiar with different aspects of transitions research and discuss this in relation to their own interests with a particular focus on themes on the frontier of research.
2. **applying knowledge and understanding.** The course covers the main issues related to technological change and technical progress towards sustainability: definitions, conceptual frameworks, policy pathways and methodological issues. Moreover, it addresses some specific issues closely related to cutting edge topics: globalization, circular economy, sharing economy, etc.
3. **making judgements.** The autonomy of judgment is developed through a critical study of the scientific literature on the topic. This ability will be particularly refined through interactive teaching, namely, the course will be organized as a combination of lectures, reading and writing of exam essay and group discussions.
4. **communication skills.** The student will be able to explain clearly and comprehensively the issues addressed using the acquired knowledge in an appropriate manner. In particular, he/she will be able to deal with everyday working issues with appropriate terminology that will allow him to show communication and interaction skills, also useful for working relationships.
5. **learning skills.** The student will develop a critical ability to understand the main results produced by modern economic literature addressed to technological innovations having acquired the necessary tools to interpret policy choices and related impacts towards sustainability.

2. PROGRAM/ CONTENTS

The course aims at: i) providing a solid background in the field of technology and technological innovation, and ii) highlighting the main forms of transition towards sustainability in the current economic scenario, in relation to the increasing attention to environmental issues.

Contents:

Part I: Introduction to Innovation and Sustainability Transitions

Introduction to the course
The role of innovation and technology
Defining sustainability transitions

Part II: Understanding transitions

Current state of the art: existing analytical frameworks
Technological Innovation Systems (TIS)
Transition Management (TM)
Strategic Niche Management (SNM)
Multi-level Perspective (MLP)

Part III: The role of politics and power

The politics of transitions
The co-evolution of policy change: policy mixes

The governance perspective on transitions

Part IV: The geography of transitions

Spaces and scales

Urban and Regional sustainability transitions

Globalization and sustainability transitions

Part V: Energy Industry in sustainability transitions: the case of Italy

Case study I: The Italian liquid biofuel industry

Case study II: The case of Porto Marghera and Gela

Case study III: A socio-economic analysis of biomethane in the transport sector

Part VI: Transitions in practice and future perspectives

Ethics and justice

Circular and sharing economy.

3. TEXT BOOKS

Textbook: Grin, J., Rotmans, J., & Schot, J. (2010). Transitions to sustainable development: new directions in the study of long term transformative change. Routledge. Price Hardback **£ 38.99**.

Scientific literature: Articles, essays and reports concerned with the above topics will be provided. The readings are not compulsory, but are recommended to improve your preparation and extend of your knowledge of the topics.

4. EDUCATIONAL METHOD AND TOOLS

The course will require a total of 150 (i.e. 6 * 25) working hours organized in the following way:

- 114 hours for individual study.
- 36 hours of teaching.

The teaching is based upon:

- 18 hours of asynchronous training (i.e. classical web-based teaching)
- 18 hours of synchronous training (i.e. interactive teaching)

Interactive teaching (e-tivity) is all about instructing the students in a way they are actively involved with their own learning process by means of:

- further explanations addressed by the teacher/tutor to the entire class (or a subgroup), typically in the form of demonstrations (e.g. how to solve a problem, exercise and similar) or case studies;
- brief interventions carried out by the students (for example in discussion or collaboration environments: web forums, blogs, etc.);
- structured e-tivity (individual or collaborative), typically in the form of reports, exercises, case studies, problem solving, projects, carried out by students, with relative feedback;
- typical forms of formative evaluation, with the character of questionnaires or tests in progress.

The e-tivity will be organized as follow:

- a forum "question/answer" on two topics addressed during the course followed by a discussion Webinar. Students are asked to briefly illustrate (10 lines) the topics assigned. During the webinars the above topics will be discussed among students, teacher and tutor.
- essay test. Please contact the teacher for the assignment of an essay question.

The factual participation to these interactive activities will be evaluated and it will integrate the final mark up to 5 points.

5. SELF-ASSESSMENT PROCEDURES

A self-assessment test is published on the course web page (didactic path) to optimize the preparation of the exam. This test will allow students to ascertain the degree and the actual understanding of the acquired knowledge.

6. EVALUATION METHODS (FINAL EXAM)

The exam evaluation will be carried out by an oral examination. An adequate knowledge of the topics included in the self-assessment test is a valid basis for evaluating yours preparation. Participation in the interactive activities (possible reading and writing of essays, group discussions and webinars) will be taken into consideration during the exam session.

7. AREAS OF APPLICATION OF ACQUIRED KNOWLEDGE

The course aims to respond to the emerging training needs in the sectors driven innovation with particular reference to managerial roles.