



ROMANIA
1 DECEMBRIE 1918
UNIVERSITY OF ALBA IULIA

NextGen EU Tech and European Green Deal

Tulbure Ildiko



Course Title:
NextGen EU Tech and European Green Deal

Proposed date/dates and proposed timetable:
16 - 17.05.2022, 4 hours each day, proposal: 9:00 – 13:00

Language of instruction: English
Name of lecturer: Tulbure Ildiko

Form of instruction	Number of teaching days	Number of teaching hours per day	Form of evaluation (if any)	Certification
Lecture/Group discussion/Hands-on method	2	4	Writing and presenting a short Report with regard to NextGen EU Tech by respecting the European Green Deal.	

COURSE AIMS:

Technological advance has always assured humanity desire to increase its quality of life. Registered developments have however emphasized that beside wanted impacts of technological progress, undesired and even unthinkable negative effects can appear. Currently humanity confronts itself with a series of global problems, their complexity bases on their interconnectedness as well as on the rapid change rates registered especially in technological field. In order to find appropriate solutions for identified challenges debates on scientific, political and social levels have worldwide started some time ago. In the Brundtland Report 1987 for the first time the concept of *sustainable development* has been defined and accepted as a possible solution for the global complex environmental, economic and social problems, meaning by this a need for innovations in technological field for the next generation. Which are actually technologies that humanity needs, how are these technologies to be developed and how do they integrate into environment and society? With this goal, *technology assessment* brings together almost all scientific disciplines with the common goal of finding the best ways for sustainability operationalisation and actually points out that there are new evaluation criteria for technological applications, that include not only technical and economic aspects, but also environmental and social ones. Recent debates in Europe have brought the idea of assuring best living conditions in a sustainable world for the new generation, especially by applying *systemic thinking*, what is possible by using new technological applications, which have to respect the newly launched program in Brussels at the European Commission with regard to the *European Green Deal*. In this regard the discipline firstly defined in the US called *Technology Assessment* starts to be very interesting for shaping the new discussed generation of technologies. That is why sustained debates are currently carried out about next *European technologies generation, NextGen EU*, which have to consider environmental quality criteria, all these aspects being emphasised by proposed course entitled "*NextGen EU Tech and European Green Deal*".

COURSE CONTENT:

Introduction

1. European Green Deal for assuring Sustainable Development
2. Basics about Technology Assessment, TA
3. Notions regarding Systems Engineering
4. Tools for Environmental Impact Assessment
 - 4.1. Environmental Management Systems
 - 4.2. Eco-audit
 - 4.3. Eco-balances
 - 4.4. Life-cycle-assessment
 - 4.5. Applying examples - Group discussion/Hands-on method
5. Case studies – examples
 - 5.1. Sustainability in the Information Society – Chances and challenges of using ICT
 - 5.2. Sustainable Energy Systems
 - 5.3. Innovative Approaches: Future Engineering – Sustainability Codex
 - 5.4. Applying examples - Group discussion/Hands-on method

Concluding remarks

TEACHING METHODS: Lectures/Group discussions/Hands-on method for involving all participants

LEARNING OUTCOMES:

Course participants should be aware with regard to the need of shaping new technological applications, which have to respect sustainability criteria. In this regard *Technology Assessment* has to be used, which tries to give an answer to the question: What are technologies that we really need? How do they fit into environment and society? By which criteria have technologies to be evaluated? All these evaluation criteria should be considered in sustainability decision-making processes also regarding **NextGen EU Tech**. By educating a new generation of engineers with inter- and transdisciplinary skills the contribution to shaping new technologies will be assured by respecting several conditions regarding resources use and waste production in the context of the four major processes in the context of the whole life cycle: Raw Material Acquisition, Production, Use/Maintenance as well as Recycling/Waste Management. The proposed interdisciplinary course will debate the role and challenges of technological applications by **NextGen EU Tech** in getting global sustainability and its possible contribution in this direction by respecting the **European Green Deal**.

LEARNING OUTCOMES VERIFICATION AND ASSESSMENT CRITERIA (if any):

Writing and presenting a short Report with regard to NextGen EU Tech by respecting the European Green Deal.

RECOMMENDED READING (English language only):

- V. Hauff (Ed): Our Common Future. The Brundtland Report of the World Commission on Environment and Development. Oxford Univ. Press, Oxford, 1987
- Jischa, M. F., 2005: Herausforderung Zukunft (Challenging the Future). 2. Auflage. Spektrum Akademischer Verlag, Heidelberg.
- Lengsfeld, T.,Tulbure, I., Vali, A., 2003: Exploring a worthwhile future for all. Spanish Chapter of the Club of Rome.
- D. and D. Meadows, 1972: *The Limits to Growth*; Universe Book, New York.
- Tulbure, I., 2003: *Overcoming Technological Divides*. In: Lengsfeld, T., Tulbure, I., Ali, V. (Eds.), 2003: *Exploring a worthwhile future for all*. A report of tt30 of the Club of Rome. Spanish Chapter of the Club of Rome, Valencia, Spain, p.: 111-172.
- Tulbure, I., 2013: *Technology Assessment*. Lecture. Clausthal University of Technology. Clausthal-Zellerfeld, Germany.
- Tulbure, I., 2016: *Sustainable City in Romania – from Vision to Reality*. In: Albiez, M., Banse, G., Lindeman, K., C., Quint, A. (Eds.): *Designing Sustainable Urban Futures – Concepts and Practices from Different Countries*. KIT Scientific Publishing, Karlsruhe, 2016, p. 73 – 84
- Tulbure, I., Prunariu, D., 2018: *Systems Engineering Approach for Getting Sustainability*. Proceedings of the 18th International Multidisciplinary Scientific Geoconference, SGEM2018, Volume 18, “Nano, Bio, Green and Space – Technologies for a Sustainable Future”, Issue 6.3, Section “Green Design and Sustainable Architecture”, ISBN 978-619-7408-52-2, DOI 10.5593/sgem2018/6.3, hi-index=8, pag. 713-720, Albena, Bulgaria.
- Tulbure, I., Berca, M., 2021: *Shaping Sustainable Energy Supply Systems on Regional Level*. Proceedings of the 21th International Multidisciplinary Scientific Geoconference, SGEM2021, Section “Renewable Energy Resources and Clean Technologies”, DOI 10.5593/sgem2018/6.3, hi-index=8, Albena, Bulgaria.
- Prunariu, D., Tulbure, I., 2021: *Chances and Challenges of Terraforming other Planets*. Proceedings of the 21th International Multidisciplinary Scientific Geoconference, SGEM2021, Section “Space Technologies and Planetary Sciences”, DOI 10.5593/sgem2018/6.3, hi-index=8, , Albena, Bulgaria.