MSE | MASTER OF SCIENCE IN ENGINEERING

Zürcher Hochschule für Angewandte Wissenschaften
zhaw School of Engineering

Ergänzende Veranstaltung der School of Engineering

Titel: Future oriented technology analysis

Kürzel: EVA_FOTA

Obtainable number of credits	3 ECTS
Organiser	ZHAW Zurich University of Applied Sciences, School of Engineering Institute of Sustainable Development (INE), Winterthur, Switzerland
Record of achievement/assessment	Oral assignment (presentation of FOTA) / evaluation sheet (30%) Written assignment (group work report) / evaluation sheet (70%)
Start date	Each Workshop will take place on a Friday. Workshop 1: date KW38, 09.00-16.00 hrs (Kick-off) Workshop 2: date KW39, 08.00-17.00 hrs Workshop 3: date KW45, 08.30-17.00 hrs Workshop 4: date KW03, 09.00-17.00 hrs (Presentation Day)
Mode of delivery	Four full-day workshops (teaching, in-class activities and group work progress meetings; total 30 hours) separated by independent self-study immersion and small group work periods (total 60 hours). In-class attendance is required and compulsory.
Language of instruction	Teaching is generally in English. Student presentations and group work reports may be given/submitted in English (or in exceptional cases in German).
Short description (max. 300 characters)	Future oriented technology analysis (FOTA) is vital for any forward and strategic planning or policy activity to be able to meet future challenges proactively in order to transform sociotechnical energy and transport systems. This module enhances FOTA by gathering anticipatory intelligence in a systematic way and linking it to today's decision making, as well as by acquiring knowledge on conceptual, methodological and operational approaches to futures assessment.
Module contents and learning objectives	**Goals:** In this Module, the students will • gain competences in future oriented technology analysis, understanding the conceptual approach to futures research and how to design a foresight process and architecture • acquire insights into a range of creative futures research and foresight methods, such as Delphi expert survey, scenario development, and technology analysis • apply successful tools and software (e.g. LCA SimaPro) to deepen and experience the transferred knowledge in applied small group work **Contents:** Workshop 1 : Future oriented concepts, foresight process design Workshop 2 : Applied technology assessment (e.g. LCA); group work Workshop 3 : Scenario development, analysis & roadmap; progress Workshop 4 : Presentation of small group works, debriefing

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Admission requirements	Bachelor of Science (or equivalent), English language skills. This module will respect the competence level of the students in future oriented technology analysis.
Literature	Carabias-Hütter, V., Haegeman K. (2013). Future-Oriented Technology Analysis (FTA) to Support Decision-Making in Meeting Global Challenges. SAGUF Mitteilungen, *GAIA* 22/1: 57-59. Cagnin, C. et al. (eds., 2008). Future-Oriented Technology Analysis. Berlin: Springer, 169p. Decker, M. & Ladikas, M. (eds., 2004). Bridges between Science, Society and Policy: Technology Assessment Methods and Impacts. Berlin: Springer, 241p. Hellweg S., Rubli S., N. von Götz (2016). Ökologische Systemanalyse Vorlesungsskript. https://www.ethz.ch/content/dam/ethz/special-interest/baug/ifu/eco-systems-design-dam/documents/lectures/2016/bachelor/ecological-systems-analysis/Gesamtskript_Feb29_2016.pdf [Aug. 2016]. Joss, S. & Bellucci, S. (eds., 2002). Participatory Technology Assessment: European Perspectives. London: Centre for the Study of Democracy. World Energy Council (2013): Composing energy futures to 2050. http://www.worldenergy.org/publications/2013/world-energy-scenarios-composing-energy-futures-to-2050/ [Aug. 2016]. http://www.foresight-platform.eu/ [Aug. 2016] http://forlearn.jrc.ec.europa.eu/ [Aug. 2016] http://fullyfledgedforesight.blogspot.ch/ [Aug. 2016] Glenn & Gordon (2012). Futures Research Methodology Version 3.0. http://millennium-project.org/millennium/FRM-V3.html [Aug. 2016]. Further literature and websites will be indicated during the Module.
Special regulations	All Workshops are conducted at Technopark Winterthur or similar places. Weblink: https://www.zhaw.ch/storage/shared/hochschule/lageplaene/lageplan-winterthur-stadt-mitte.pdf (building MT or MN). The venue can easily be reached by public transport (10 min on foot from Winterthur railway station).
Contact and information	**Prof. Vicente Carabias**, cahu@zhaw.ch Dr. Adrian Kammer, kama@zhaw.ch Dr. Christian Zipper, zipp@zhaw.ch