

MBA - Sustainable Mobility Management

Three-Semester Master's Degree

Taught in English

Berlin, Germany

Syllabus

Winter Semester 2018-19

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Imprint

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CHANGES MAY OCCUR.

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General Information

Location and Times

Unless otherwise announced, lectures, tutorials, consultancy and peer group meetings take place in Building 9 (Haus 9), EUREF-Campus, Torgauer Straße 12-15 - 10587 Berlin, room S1. Students can access this room during regular office hours for peer groups and individual study for the preparation and revision of lectures and tutorials.

Lectures

Lectures are held by professors, academic staff of TU Berlin or other universities, and by professionals of the transport industry. They will convey the core teachings. Group work is frequent. Homework may be assigned. Lectures start *sin tempore*, i.e. sharp.

Semesters

- **First semester** (Winter semester - WiSe 2018-19)
First lesson on Monday, October 15th, 2018
Last lesson on Monday, February 22nd, 2019
- **Second semester** (Summer semester – SoSe 2019)
First lesson on Mid-April 2019
Last lesson on Mid-July 2019
- **Third semester** (Winter semester - WiSe 2019-20)
First lesson: Mid-October 2019
Last lesson: Mid-February 2020

Lessons

In the first and second semester, the lessons will usually be held on:

Mondays 9:00 – 17:30

Tuesdays 9:00 – 17:30

For the exact titles of lectures, lecturers and literature see below (minor changes may occur).

Attendance is obligatory.

Tutorials

Wednesdays 9:00 – 17:30

Tutorials repeat lecture material, supply supportive information or offer additional training, e.g. in scientific writing. **Attendance is obligatory.**

Consultancy

Students are welcome to seek advice and present ideas in person. Please make an appointment beforehand. Feel free to contact the lecturers concerning issues of a specific course. For any other issue, you can contact the coordinator (or alternatively the academic directors).

E-Learning Platform ‘Moodle’ and Internet

TUB runs an online learning platform called MOODLE. It is the official channel for announcements, the distribution of material, and registration to events, etc. Students must log on frequently, even during the lecture free periods. Wireless access for all students and lecturers will be provided. TU Berlin’s various IT services can be used by all participants.

Exams

A written exam, paper, presentation, or portfolio concludes each module. All subject matter covered in the lectures, tutorials, and compulsory excursions within the module may be subject to examination. Exams start on-time, sharp. A failed examination may be repeated twice. For further details, please refer to the official Study and Examination Regulation (available also at https://master-in-energy.com/wp-content/uploads/Study-and-Examination-Regulations_SMM_ENG.pdf). **Attendance is obligatory.**

Excursions

Extra-curricular excursions and presentations by research institutes or commercial enterprises are foreseen. Registration before attendance may be required.

Participation

Students are encouraged to self-organize, form committees, and vote on a speaker. TU Statutes stipulate student participation on the examination board. Students are asked to choose two German-speaking students (if possible) as their representatives for the examination board. Students are required to provide feedback on lecturers, tutorials, coaching, organization, and service.

Social and academic events

Opening Ceremony

| | |
|-------|--|
| When | October 05th, 2018, 16:00 |
| Where | TU Berlin Atrium (Lichthof) Straße des 17. Juni 135, 10623 Berlin |
| What | Welcome Address, music, snacks & drinks, socializing |

Christmas Dinner

| | |
|-------|--|
| When | December 21th, 2018, after classes |
| Where | tba |
| What | Christmas Dinner |

Orientation Week

When **October 1st, 2018**
Where Institute of Mathematics, MA001, Strasse des 17. Juni 136, 10623 Berlin
What 09:00 – ca. 15:00
Kick-off Event, eLearning and Online Environment introduction,
TU Berlin- Main Campus Tour (13:00) starts at TEL- Building, main
entrance Ernst-Reuter-Platz 7, 10587 Berlin

When **October 2nd, 2018**
Where EUREF-Campus, House 9, Room 5, 10829 Berlin
What 11:00 – ca. 19:00
Welcome to EUREF-Campus, Scavenger hunt, Gasometer tour, get-
together and drinks

October 3rd - PUBLIC HOLIDAY

When **October 4th, 2018**
Where Starts in front of TRÄNENPALAST, Reichstagufer 17, 10117 Berlin
What 10:00 – ca. 19:00
Berlin City Tour (appr. 5 hours) and Reichstag Visit (17:00) starts at Platz
der Republik 1, 11011 Berlin

When **October 5th, 2018**
Where TU Berlin Atrium (Lichthof), Straße des 17. Juni 135, 10623 Berlin
What 16:00
Welcome Address, music, snacks & drinks, socializing

The course program and structure

Module description

The Master program is taught over a period of three semesters. The first two semesters include lectures, tutorials, seminars, and excursions. The program will be completed in the 3rd semester by writing a master thesis.

The first semester is dedicated to the fundamentals of mobility and sustainability, considering these issues from different perspectives such as economic factors, social and managerial elements, and naturally including technological drivers.

In the second semester, trends, the future of transport as well as the transition toward sustainable mobility will be the main focus. This will also encompass the issue of governance and management of complex structures. A lecture series will provide world-based case studies and additional broad based information.

The third semester is mainly devoted to specialization and the master thesis.

Elective courses for specialization are offered.



Module Course Plan

| First Semester (WiSe 2018-19) | Second Semester (SoSe 2019) | Third Semester (WiSe 2019-20) |
|---|--|---|
| M01 - Project Management (in Mobility) 9 ECTS | M05 - Mobility Trends and Futures 9 ECTS | M08 - Managing Smart and Green Mobility 6 ECTS |
| M02 - Mobility Actors and Practices 6 ECTS | M06 - Managing Transition: Governance and Skills 9 ECTS | Thesis 18 ECTS |
| M03 - Technological Foundations in transport 9 ECTS | M07 - Lecture Series 6 ECTS | |
| M04 - Macro-Economics and Business Models of Sustainable Mobility 6 ECTS | <i>Compulsory electives</i> | |
| | M09A - Innovation and Technology Management I - 6 ECTS | M09B - Innovation and Technology Management II - 6 ECTS |
| | M010 - Managing ICT and Mobility 6 ECTS | M011 - Mobility and Development 6 ECTS |
| 30 ECTS | 30 ECTS | 30 ECTS |

Module 01

Project Management (in Mobility)

9 ECTS

| Lectures | | |
|----------|---|---|
| 1 | <p>Prof. Dr. Hans-Liudger Dienel <i>Technische Universität Berlin</i></p> <p><i>Prof. Dr. Hans-Liudger Dienel holds degrees in Mechanical Engineering (Dipl.-Ing., TU München 1990), History and Sociology (M.A. 1989, Ph.D. 1993, University of Munich). He is a full Professor at the Technische Universität Berlin (Berlin University of Technology) for the department of Technology and Society.</i></p> <p><i>Prof. Dienel is a board member of the Centre for Technology and Society and the Center for Metropolitan Studies of TU Berlin, and additionally, of the nexus Institute for Cooperation Management. He is a prolific writer and Editorial Board Member of the following journals: Journal of Transport History, Innovation; The European Journal for Social Sciences; Forum Qualitative Social Research. He is also a board member of the "Society and Technology Board" of the German Association of Engineers (VDI).</i></p> |  |
| 2 | <p>Dr. Angela Jain <i>Technische Universität Berlin</i></p> <p><i>Dr. Angela Jain (PhD), research associate and lecturer at Technical University of Berlin and director "Infrastructure and Society" at nexus Institute Berlin, has her academic background in spatial planning and wrote her PhD dissertation on the topic of sustainable mobility. She works in local as well as international project contexts with research focus on sustainable mobility, urban development and local governance. Her areas of expertise are: Policy consultation and cooperation management, user-centric and social innovation in smart cities as well as participation and stakeholder involvement.</i></p> |  |

Qualification Aims

At the end of this module, the students will recognize the basics of strategic management and management methods concerning today's challenges in transport and mobility.

The students will be able to develop managerial solutions, to tackle issues related to transition toward sustainable mobility and to run appropriate solutions.

Lesson Plan

| | |
|--|---|
| Wednesday 17 th October 2018 10:00 - 13:00 | Introducing Project Management (PM-phases and PM-tools) |
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| Lesson 1 | Lecturer: Dr. Angela Jain |
| Tuesday 6 st November, 2018 14:30 - 17:30 | Applying Project Management to the students' own Sustainable Mobility projects |
| Lesson 2 & Tutorial | Lecturer: Lecturer: Dr. Angela Jain |
| Monday 26 th November, 2018 9:00 - 17:00 | Learning from practitioners (visit of external experts) |
| Lesson 3 | Lecturer: Dr. Angela Jain |
| Tuesday 27 st November, 2018 9:00 - 17:00 | Excursion to a transport related company/ organization (tba) |
| Excursion | Lecturer: Dr. Angela Jain |
| Thursday 14 nd January, 2019 10:00 - 16:00 | Exam preparation |
| Lesson 4 | Lecturer: Dr. Angela Jain |
| Wednesday 6 th February, 2019 8:00 - 17:00 | Basics of tactical and strategic management |
| Lesson 4 + Tutorial | Lecturer: Prof. Dr. Hans-Liudger Dienel |
| Thursday 7 th February, 2019 8:00 - 17:00 | Project management tools and methods for mobility projects in business, politics and administration |
| Lesson 5 + Tutorial | Lecturer: Prof. Dr. Hans-Liudger Dienel |
| Friday 8 th February, 2019 8:00 - 17:00 | Typical problems in complex mobility projects |
| Lesson 6 + Tutorial | Lecturer: Prof. Dr. Hans-Liudger Dienel |
| Saturday 9 th February, 2019 8:00 - 17:00 | Process management as an approach to overcome typical problems |
| Lesson 7 + Tutorial | Lecturer: Prof. Dr. Hans-Liudger Dienel |
| Friday 22 nd February, 2019 9:00 - 17:00 | Exam |
| Examination | Lecturer: Prof. Dr. Hans-Liudger Dienel/ Dr. Angela Jain |

Literature

Project Management Institute (2013), *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)–Fifth Edition*, PMI Global Standards
(<https://www.pmi.org/pmbok-guide-standards/foundational/pmbok>)

Bruijn, Hans de; Heuvelhof, Ernst ten; Veld, Roel in't (2002): *Process Management. Why Project Management Fails in Complex Decision Making Processes*, Boston/Dordrecht/London: Kluwer Academic Publishers
(<http://www.springer.com/la/book/9783642139406>)

Prittwitz, Volker von (2012): *Multi-Dimensional Political Analysis New Perspectives for Political Science*, Consulting, and Political Education

Ralf Tils (2007): *The German Sustainable Development Strategy: Facing Policy, Management and Political Strategy Assessments*, in: *European Environment*, Vol. 17, No. 3, 164-176. <http://onlinelibrary.wiley.com/doi/10.1002/eet.453/abstract>


Von Pierer, Heinrich, and Bolko Von Oetinger. *A Passion for Ideas*. Purdue University Press, 2001, pp. 1-26.
<http://www.thepress.purdue.edu/titles/format/9781557532091>

A. Longman, Jim Mullins (2005): *The Rational Project Manager: A Thinking Team's Guide to Getting Work Done*, Wiley

Module 02

Mobility Actors and Practices

6 ECTS

| Lectures | |
|--|------------------------------|
| 1 | Prof. Dr. Claus Tully |
| <i>Freie Universität Bozen</i> | |
| <p>Claus Tully, Industrial Engineer, Sociologist (Dipl. Soz.) and Dr. rer. pol. Since 2003 Prof (adjunct professor) at FU Bozen and since 2003 PD, Dr. habil. (private professor, Privatdozent at FU Berlin). From 1980- 2014 Researcher at German Youth Institute (Munich). Member of mobiLAB (for PhD students) at Technical University of Munich. Lecturer at Technical University of Berlin. Visiting professor at various universities in Argentina. Main research areas: youth, media, consumption and digitalization, mobility and informatization in modern societies.</p> | |
|  | |

Qualification Aims

At the end of this module, the students will understand the fundamentals of mobility concepts based on the knowledge of theoretical sustainable concepts and their practical application. The focus is to recognize mobility as a socio-technical system. Mobility changes are based on cultural changes.

Students will address and manage the social/economic/technological tensions and critical points emerging in the implementation of the transition toward sustainable mobility.

Lesson Plan

| | |
|---|---|
| Monday 29 th October, 2018 9:00 - 16:00 | <ul style="list-style-type: none"> - Introduction to the seminar concept. - Social Processes investigated by Social Science Another view (Part I) - Project work I - Excursion to Technikmuseum |
| Lesson 1 / Excursion | Lecturer: Prof. Dr. Claus Tully |
| Tuesday 30 th October, 2018 9:00 - 15:30 | <ul style="list-style-type: none"> - Social Processes and Social Science. Another view (Part II) - Project work II |
| Lesson 2 | Lecturer: Prof. Dr. Claus Tully |
| Monday 19 th November, 2018 09:00 - 16:00 | <ul style="list-style-type: none"> - Patterns and history of settlement - Stages to our modern mobile societies - Project Work III & IV - The Range of rides in a mobile Society |
| Lesson 3 | Lecturer: Prof. Dr. Claus Tully |

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|--|--|
| Tuesday 20 th November, 2018 9:00 - 16:00 | <ul style="list-style-type: none"> - The social construction of Mobility - Basic definitions of mobility - Car production. From H. Ford to the E car - Project Work V |
| Lesson 4 | Lecturer: Prof. Dr. Claus Tully |
| Monday 3 rd December, 2018 09:30 - 16:00 | <ul style="list-style-type: none"> - Dimensions of Sustainability - Project work VI |
| Lesson 5 | Lecturer: Prof. Dr. Claus Tully |
| Monday 4 th December, 2018 09:00 - 15:30 | <p>Student Presentations on</p> <ul style="list-style-type: none"> - Actors: Pilgrim, flaneur, soldier, tourist, driver etc. - Installations for mobility |
| Lesson 6 | Lecturer: Prof. Dr. Claus Tully |
| Monday 7 th January, 2019 9:30 - 16:00 | Excursion |
| Excursion | Lecturer: Prof. Dr. Claus Tully |
| Tuesday 8 th January, 2019 9:30 - 12:30 | <ul style="list-style-type: none"> - The concept of sustainability - Preparation for the final oral test - Sharing concept |
| Lesson 7 | Lecturer: Prof. Dr. Claus Tully |
| Monday 28 th January, 2019 9:30 - 13:00 | <p>Two examples of new mobilities</p> <ul style="list-style-type: none"> - Research on Car sharing (Presentation of Christian Assmann, MobiLAB TU München) - „Assessment of Mobility Stations on Sustainable Urban Mobility “ (Presentation by Montserrat Miramontes TUM; mobil.LAB) |
| Lesson 8 | Lecturer: Prof. Dr. Claus Tully |
| Tuesday 29 th January, 2019 9:30 - 12:30 | <ul style="list-style-type: none"> - Revisions, summary and focusing - Summing up the seminar |
| Lesson 9 | Lecturer: Prof. Dr. Claus Tully |
| Wednesday 30 th January, 2019 9:30 - 16:00 | Oral Examination |
| Examination | Lecturer: Prof. Dr. Claus Tully |

Excursion

| | |
|---------------|-----|
| Date and time | tba |
| TBD | |

Literature

Basic

Adey, P et al. (2014): *The Handbook of Mobilities*, Routledge

Adey, P. (2006): "If mobility is everything then it is nothing". In: *Mobilities* 1/1, pp. 75-94.

Adey, P. (2009): *Mobility*, Routledge London

Cresswell, T. (2006): *On the move*, Routledge


Sheller, M. (2011). Mobility. *Sociopedia*, (for introduction)

More will be indicated at the beginning of the lessons.

Module 03A

Technological Foundations in Transport (Planning and Operation of Road infrastructure)

**4.5
ECTS**

| Lectures | |
|-----------------|--|
| 1 | Prof. Dr.-Ing. Thomas Richter |
| | <i>Technische Universität Berlin</i> |
| | <i>Prof. Richter received his Doctorate of Engineering in 1993 from the Universität Hannover. He is managing director of SHP Ingenieure in Hannover since 1993 and since 2003 is department head for "Road Planning and Operation" at the TU Berlin.</i> |
| |  |

Qualification Aims

At the end of this module, the students will diagnose several elements relevant to transport engineering and operations, including but not limited to analysis of energy source, propulsion, efficiency and (different) rationales of transport regimes. They will also have an understanding of road design of urban access roads and main roads.

The students will utilize such knowledge to implement and planning according to technical potentials and limitations, as well as appraise its relevance in addressing sustainability.

Lesson Plan

| | |
|---|--------------------------------------|
| Monday 15 th October, 2018 14:00 - 19:00 | Introduction to lectures and project |
| Lesson 1 | Lecturer: Prof. Dr. Thomas Richter |
| Tuesday 16 th October, 2018 14:00 - 19:00 | Traffic planning I |
| Lesson 2 | Lecturer: Prof. Dr. Thomas Richter |
| Monday 12 th November, 2018 14:00 - 19:00 | Traffic planning II |
| Lesson 3 | Lecturer: Prof. Dr. Thomas Richter |
| Tuesday 13 th November, 2018 | Design main roads |



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|--|--|
| 14:00 - 19:00 | |
| Lesson 4 | Lecturer: Prof. Dr. Thomas Richter |
| Wednesday 21 st November, 2018 14:00 - 19:00 | Design non-motorized traffic |
| Lesson 5 | Lecturer: Prof. Dr. Thomas Richter |
| Wednesday 28 th November, 2018 14:00 - 19:00 | Traffic engineering I |
| Lesson 6 | Lecturer: Prof. Dr. Thomas Richter |
| Wednesday 5 th December, 2018 14:00 - 19:00 | traffic engineering II and presentation of project by students |
| Lesson 7 | Lecturer: Prof. Dr. Thomas Richter |

| Literature |
|--|
| Reference 1: Michael Meyer, Eric J. Miller (2000) "Urban Transport Planning", McGraw-Hill Science/Engineering/Math; 2 edition |
| Reference 2: Paul H. Wright, Norman J. Ashford, Robert J. Stammer (1997) "Transportation Engineering: Planning and Design", Wiley; 4 edition |
| Reference 3: Tumlin, Jeffrey (2012): Sustainable Transportation Planning: Tools for Creating Vibrant, Healthy, and Resilient Communities |
| Reference 4: FGSV (2006): Directives for the Design of Urban Roads |
| Reference 5: Sustainable Urban Mobility Plans (SUMP) http://www.mobilityplans.eu |
| Reference 6: Sustainable Urban Transport Project (SUTP) http://www.sutp.org |

Module 03B

Technological Foundations in transport (Fundamentals of Transport Systems)

4,5
ECTS

| Lectures | |
|----------|---|
| 1 | <p>Prof. Dr. Dietmar Göhlich</p> <p><i>Technische Universität Berlin</i></p> <p><i>Prof. Dr.-Ing. Dietmar Goehlich studied mechanical engineering at the Technical University Berlin and received his doctorate from the Georgia Institute of Technology, Atlanta. Since 2010 he leads the chair in Product Development Methods and Mechatronics and in 2015 he became spokesperson for the BMBF research campus Mobility2Grid in Berlin bringing together 36 partners from industry and academia. He previously held a senior management position in the passenger car development of Daimler AG.</i></p> |
| |  |
| 2 | <p>M.Sc. Tu-Anh Fay</p> <p><i>Technische Universität Berlin</i></p> <p><i>Tu-Anh Fay, M.Sc. studied mechanical engineering at Technical University Berlin with a stay abroad at the National Taiwan University Taipei, Taiwan. Since 2013 she is a research associate at the Technical University Berlin in the Department of Product Development Methods and Mechatronics. Her focus of research lies on the field of calculation and simulation such as the calculation of energy consumption of electric buses.</i></p> |
| |  |

Qualification Aims

At the end of this module, the students will recognize the basics of strategic management and management methods concerning today's challenges in transport and mobility.

The students will be able to develop managerial solutions, to tackle issues related to transition toward sustainable mobility and to run appropriate solutions.

Lesson Plan

| | |
|--|---|
| Tuesday 11 th December, 2018 13:30 - 17:30 | Lecture 1: Introduction to sustainable and e-mobility; Introduction to experimental learning platform, hand out of topics for assignment |
| Lesson/ Tutorial | Lecturer: Prof. Dr. Dietmar Göhlich and M.Sc. Tu-Anh Fay |

| | |
|---|---|
| Tuesday 18 th December, 2018 13:30 - 17:30 | Tutorial for non-engineers (1) Mechanical: speed, acceleration, mechanical energy, kinetic energy (2) Electrical: voltage, current, capacity, electrical energy |
| Tutorial | Lecturer: M.Sc. Tu-Anh Fay |
| Tuesday 8 th January, 2019 13:30 - 17:30 | Short group presentation of students' assignment ideas; lecture 2: drivetrain concepts – How to calculate energy consumption and range? Basic equations. |
| Lesson | Lecturer: Prof. Dr. Dietmar Göhlich, M.Sc. Tu-Anh Fay |
| Tuesday 15 th January, 2019 13:30 - 17:30 | Continuation lecture 2: drivetrain concepts – comparison of conventional and electric vehicles, drive cycles, electric machines and drives Lecture 3: Energy source/ storage systems: general, battery |
| Lesson | Lecturer: Prof. Dr. Dietmar Göhlich |
| Wednesday 16 th January, 2019 10:30 - 17:30 | Tutorial 2: Drivetrain concepts – explanation of experiment and practical application |
| Tutorial | Lecturer: M.Sc. Tu-Anh Fay |
| Thursday 17 th January, 2019 10:30 - 17:30 | Tutorial 3: Storage Systems – explanation of experiment and practical application |
| Tutorial | Lecturer: M.Sc. Tu-Anh Fay |
| Tuesday 29 th January, 2019 13:30 - 17:30 | Lecture 4: Charging strategies and technologies for passenger vehicles and public transportation Tutorial 4: Site-visit E-Bus Ladestation Bidirektionale Ladestation EUREF, ZeeMoBase |
| Lesson/ Tutorial | Lecturer: Prof. Dr. Dietmar Göhlich and M.Sc. Tu-Anh Fay |
| Tuesday 5 th February, 2019 13:30 - 17:30 | Lecture 5: TCO and Smart Grid Integration |
| Lesson | Lecturer: Prof. Dr. Dietmar Göhlich |
| Tuesday 12 th February, 2018 13:30 - 15:30 | Group presentation of students assignment |
| Examination | Lecturer: Prof. Dr. Dietmar Göhlich, M.Sc. Tu-Anh Fay |




| | |
|---|---|
| Tuesday 19 th February,2018 13:30 – 15:30 | Written exam |
| Examination | Lecturer: Prof. Dr. Dietmar Göhlich, Tu-Anh Fay |

Literature

Reference 1: New Generation of Electric Vehicles, Edited by Zoran Stevic, ISBN 978-953-51-0893-1, 384 pages, Publisher: InTech, Chapters published December 19, 2012 under CC BY 3.0 license, DOI: 10.5772/45641

Module 04 - Macro-Economics and Business Models of Sustainable Mobility

6 ECTS

| Lectures | |
|-----------------|---|
| 1 | Prof. Andreas Knie |
| | WZB – Berlin Social Science Center |
| | Andreas Knie is professor for sociology at TU Berlin and an expert for transport, mobility, science and innovation research. In his work, he connects theory and practice. Apart from his research career he co-founded the Innovation Center for Mobility and Societal Change (InnoZ) in 2006 which he was head of for many years. Between 2001 and 2016 he was also division manager for intermodal transport offers at Deutsche Bahn AG. |
| |  |
| 2 | Dr. Valentina Fava |
| | TU Berlin |
| | Valentina Fava holds a PhD from Bocconi University in Milan (Italy). Before joining TUB, she held research and teaching positions at European University Institute (Italy), Helsinki University (Finland), Czech Academy of Sciences. |
| |  |
| 3 | Hamid Mostofi |
| | TU Berlin |
| | Hamid Mostofi is the researcher and Ph.D. candidate at TU Berlin. He has experiences in the field of business analysis for urban mobility and urban infrastructure development as well as renewable energy development. He is the team member of GECl project at TU Berlin (Green Energy Center of Iran) which is defined by The Federal Ministry of the Environment (BMU). His current mobility research project is "System Dynamics modeling of rebound effects for Smart City Technologies on urban mobility. |
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Qualification Aims

The first part of the course (15-23 October 2018, teacher: Dr. Valentina Fava) aims at introducing the students to business models' theory and to its uses in managerial literature and practice. Socio-technical transition framework provides the ground to understand how sustainability challenges affect business strategies in the field of transport and mobility. The students will familiarize with empirical tools to help them to generate business models. Through Osterwalder and Pigneur's handbook, they learn how to use business model canvas to generate sustainable business models. This serves as an introduction to the analysis of the pros and cons of the emergence of new mobility solutions, as sale-of-service mobility (Maas), car-sharing services; and of the challenges deriving from emerging technologies.

The second part of the course (5-13 November 2018, teacher Mr. Hamid Mostofi Darbani) provides an introduction to transport economics and system dynamics modeling for the analysis of business policies and strategies in mobility sectors. Special emphasis will be placed on how to realize the inter-relation between different components of mobility business. The aim is to help students to develop understanding and proficiency in system dynamics simulation to evaluate the future of one business in the real world by system

thinking approach to consider the linear and nonlinear impacts between different components of the mobility systems. Finally, this lecture covers an introduction of financial tools to evaluate customer behaviors in mobility systems such as mode choice models as well as some principles of economics in transportation planning such as Jevons paradox and rebound effects.

At the end of this module, the students will recognise the basics of strategic management and management methods concerning today's challenges in transport and mobility. The students will be able to think in terms of managerial solutions, to tackle issues related to transition toward sustainable mobility.

| Plan of the lessons | |
|--|---|
| Monday 15 th October, 2018 09:30- 12:30 | <p>Introduction. Which are the Principles and Components of Business Models for Sustainable Mobility?</p> <p>The Sustainable Mobility Paradigm Which Business Model for Sustainability?</p> <p><u>Readings</u> By October 15th, students need to read: Bannister, The sustainable Mobility Paradigm, 2008 and Peter Wells, Business Models for Sustainability, pp. 63-89 by October 10th, students need to send the teacher an email memo with their academic background, expectations for the course\master, definition of sustainable mobility</p> |
| Lesson | Lecturers present: Valentina Fava and Hamid Mostofi |
| Tuesday 16 th October, 2018 09:30-12:30 | <p>What is a Business Model? And which are the central business models patterns for future mobility?</p> <p>Business model as management concept – uses, aims and classifications</p> <p><u>Case Studies</u> Business models evolution in the automotive sector: from Ford to e-mobility and autonomous vehicles</p> <p><u>Readings</u> By October 16th, students need to read: Masanell, Rikart, From Strategy to Business Models to Tactics, HBS, Working Paper, 2009</p> |
| Lesson | Lecturer present: Valentina Fava |
| Monday 22 nd October, 2018 09:30-12:30 13: 00-15.30 | <p>The Evolution of the Market: From Mobility as a Product to Mobility as a Service</p> <p><u>Case Studies</u> https://www.itf-oecd.org/sites/default/files/docs/shared-automated-vehicles-business-models.pdf</p> <p>Afternoon: workshop on Business Model Canvas</p> <p><u>Reading</u> Osterwalder and Pigneur (2010), Business Models Generation</p> |
| Lesson | Lecturer present: Valentina Fava |
| Tuesday 23 rd October, 2018 09:30-12:30 13.00 -15.30 (16.00?) | <p>Sustainable Business Models in Railways and Logistics</p> <p><u>Case Studies:</u> Bombardier Transportation; DHL Express Polska, UPS, DB</p> |

| | |
|--|---|
| | <p>Afternoon: workshop on Business Model Canvas</p> <p><u>Reading</u> Osterwalder and Pigneur (2010), Business Models Generation</p> |
| Lesson | Lecturer present: Valentina Fava |
| Monday 05 th November, 2018 09:30-15:30 | <p>System Thinking and Linear Thinking in mobility business models</p> <p>Methodology of Systems Thinking and System Dynamics Tools for System Dynamics Modeling Building causal loop diagrams for mobility business models Feedback analysis</p> |
| Lesson | Lecturer present: Hamid Mostofi |
| Wednesday 07 th November, 2018 09:30-15:30 | <p>Mode choice analysis and Customer 's behaviors analysis in mobility business models</p> <p>Mode choice analysis models in transportation planning Introduction of quantitative mobility behaviors analysis Travel supply and demand models in mobility business System Dynamics modeling of costumer behaviors in mobility business model</p> |
| Lesson | Lecturer present: Hamid Mostofi |
| Monday 12 th November, 2018 09:30-13:00 | <p>Transport economics and financial tools for sustainable mobility systems</p> <p>Jevons paradox in transport systems Public Sector: Financing and Regulating Sustainable Mobility Financial evaluation of urban mobility policies Rebound effects in Urban mobility</p> |
| Lesson | Lecturer present: Hamid Mostofi |
| Tuesday 13 th November, 2018 09:30-13:00 | <p>Evaluation of sustainability in mobility business models</p> <p>Evaluation tools in system dynamics approach Simulating some case studies of Sustainable mobility systems Model Validation and Verification approaches</p> |
| Lesson | Lecturer present: Hamid Mostofi |
| Monday 10 th December, 2018 09:30-16:30 | tba |
| Lesson | Lecturer present: Prof. Dr. Andreas Knie |
| Tuesday 11 th December, 2018 09:00-12:30 | tba |
| Lesson | Lecturer present: Prof. Dr. Andreas Knie |
| tba | Written Exam (120 minutes) |
| Examination | Lecturer present: Valentina Fava, Hamid Mostofi |

Literature

Peter Wells, Business Models for Sustainability, Cheltenham, Edward Elgar, 2013.

[Alexander Osterwalder and Yves Pigneur, Business Models Generation. A Handbook for Visionaries, Game Changers, and Challengers, Wiley, 2010.](#)