

Course:	Energy and Mobility	Course Code
Module:	Compulsory Elective Module I	EM CEM 1.1

Head of the module:	Prof. Dr Verena Rath	Lecturer:	Prof. Dr Verena Rath
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Part of studies:	One	Semester hours per week:	4
Semester:	Three	Workload:	180 h
Status:	Compulsory elective subject	Credits:	6
Frequency:	Every second semester	Assessment:	Seminar paper
Taught in:	English		

Breakdown of the workload:

On-campus studies	Excursion	Self-study	Assessment
45 h	0 h	135 h	-

Prerequisites:

The knowledge of mathematics, business economics and energy management acquired in the modules "Mathematics" (Module I) and "Statistics" (Module II), "Business Administration" (Module IV), "Economics" (Module V) and the "Fundamentals of Energy Management" (Module XI).

Qualification objectives:

After attending the course, the current situation in the field of alternative drive technologies and, in particular that of e-mobility, is known. The students are aware of the political background of the subject as well as the current regulatory framework conditions in Germany and other selected countries. Further, the students master the technical basics of electrical drive technologies (battery vehicles, plug-in hybrids, range extenders and fuel cells). In addition, the students are able to put electromobility into context with other alternative drive technologies (e.g. hybrid, natural gas and car gas or biofuels) and judge them critically in this respect. The students are able to calculate the economic efficiency of electro vehicles and compare it with alternative and conventional vehicles. Furthermore, the students understand the essential activities with regard to the market and have dealt with questions of customer requirements, the marketing of highly innovative products and the development of business models.

The students have also become familiar with the overall economic perspective. They understand how, for example, the introduction of electro vehicles influences the energy market as a whole (e.g. integration of electro vehicles into the energy system with an increasing expansion of decentralised energy production) and how energy companies can position themselves.

Content of teaching:

- Brief overview
- Political and regulatory framework conditions
- Technological framework conditions (incl. distinguishing from other alternative drive technologies)
- Chances and risks of electromobility
- Customer or market requirements
- Potential business models
- The effects of e-mobility on the energy market and energy system

Lecture material:	Script online in Ilias, supplementary handouts as and when required
Recommended reading:	Topical articles such as scientific articles and studies, publications by political institutions/associations, press reports and the like
	Bozem, K. / Nagl, A. / Rath, V. / Haubrock, A.: Elektromobilität: Kundensicht, Strategien, Geschäftsmodelle – Ergebnisse der repräsentativen Marktstudie FUTURE MOBILITY, Springer Vieweg, Wiesbaden 2013
	Bozem, K. / Nagl, A. / Rennhak, C.: Energie für nachhaltige Mobilität – Trends und Konzepte, Springer Gabler, Wiesbaden 2013
	Kampker A. / Vallée D. / Schnettler A. (Hrsg.): Elektromobilität: Grundlagen einer Zukunftstechnologie, Springer Vieweg
	Siebenpfeiffer W. (Hrsg.): Energieeffiziente Antriebstechnologien: Hybridisierung, Downsizing, Software und IT, Springer Vieweg
	Keichel M. / Schwedes O. (Hrsg.): Das Elektroauto: Mobilität im Umbruch, Springer Fachmedien, Wiesbaden 2013