Master’s thesis
In the fourth semester, students will familiarise themselves with tasks and problem areas in the field of energy-efficient urban transport systems independently and will develop solutions under the mentorship of a lecturer as part of their master’s thesis.

Admission and application
Admission to the master’s course requires a bachelor’s, master’s or diploma qualification in transport engineering or science, an economics, engineering or science course with a focus on transport engineering or science or a related course, and generally at least one year of professional experience. The application period for the summer semester, which begins on 1 April 2012, will run from 1 December 2011 to 15 January 2012 inclusive. The number of places per year is limited to 30. A selection panel will rank the applications received and offer places on the course based on this ranking. Criteria include the overall grade received for prior studies, the course profile and additional subject-specific qualifications obtained outside of higher education. The tuition fee for the master’s course is €5,000 per semester. Further information on tuition fees, funding options and grants and bursaries can be found on our website.

Studying at the TU-Campus EUREF
The master’s course will be held at the TU-Campus EUREF on the EUREF site at the Gasometer Schöneberg. The campus is part of an innovative community of applied research, economics and policy advice that has sustainable action at the heart of its philosophy. Studies take place in a practice-oriented environment in close cooperation with the companies based on the EUREF site. The buildings throughout the site have been renovated in accordance with strict energy efficiency criteria and provisions on the protection of sites of historic interest and have been equipped with new, carbon-neutral heating and cooling systems. The three new master’s courses offered by TU Berlin – “Energy-efficient construction and operation of buildings”, “Energy-efficient urban transport systems” and “Urban supply infrastructure” – will be held in the Wasserturm building in the centre of the campus.

Fee
€5,000 per semester. Grants and bursaries may be provided.

Contact
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e-mail: info@campus-euref.tu-berlin.de

Information
Further information on the master’s course can be found on our website:
www.campus-euref.tu-berlin.de

Lecturers
Vehicle Technology and Construction: Prof. Dr.-Ing. Markus Hecht
Drive Technology and Energy Storage: Prof. Dr. Frank Behrendt
Prof. Dr.-Ing. Uwe Schäfer
Prof. Dr.-Ing. Bernd Wiedemann
Energy Management:
Prof. Dr.-Ing. Kai Strunz
Related subjects:
Prof. Dr.-Ing. Thomas Richter
Prof. Dr. Andreas Knie
Prof. Dr. Barbara Lenz

Energy-efficient urban transport systems

Master’s course at TU Berlin on the subject of “City and Energy”
Background
Traffic accounts for 18% of global CO₂ emissions and 20% of particulate emissions in cities. The current debate on electric mobility and the ambitious targets of the German Federal Government mean that energy-efficient urban transport systems are playing a key role in the preparations for post-fossil mobility. As well as electric mobility, other highly developed technologies for improving the efficiency of combustion engines, hybrid technologies and energy-efficient traffic flow management are being taken into consideration. Economic efficiency and the business models of future transport systems will also be a central factor in light of the sharp rise in global demand for transportation. The new master’s course teaches the latest findings from research and practice in the context of the complete system of vehicles, infrastructure and operation. In combination with practical applications, concrete approaches for “energy-efficient urban transport systems” are developed within projects in particular.

Energy-efficient urban transport systems
The “Energy-efficient urban transport systems” master’s course is one of three new advanced courses offered by TU Berlin on the subject of “City and Energy”. It is aimed at students and young professionals with a bachelor’s degree and generally one year of professional experience, or a qualification from a traditional academic course (transport engineering or science, an economics, engineering or science course with a focus on transport engineering or science and related areas). The course teaches specialist knowledge on the optimisation of vehicle energy efficiency in the context of traffic planning, economic and ecological challenges for increasing energy efficiency in urban transportation. The knowledge obtained is documented by a master’s degree from TU Berlin. The modular course structure meets the requirements of the Bologna declaration on the harmonisation of European higher education.

Content and objectives
The interdisciplinary course addresses the technical requirements and conditions for energy-efficient vehicles and means of transportation in close conjunction with traffic planning aspects, the economic framework and ecological challenges for the energy-efficient design and execution of urban transport. The technical focal points of the course are battery technologies, hydrogen technologies, energy-efficient drive systems, lightweight construction, energy management and electrical engineering for energy-efficient vehicles. The technical approaches are addressed in a traffic planning, economic and ecological context. Other focal points include the energy-efficient planning and combination of the various modes of transportation, including pedestrians and cyclists, the interoperability of modes of transportation and the intermodal planning of transport networks.

Opportunities
The market for specialists with expertise in improving energy efficiency and the use of renewable energies is growing, not only with a view to ecological sustainability and due to the German Federal Government’s ambitious environmental protection targets, but also as a result of economic necessity in light of rising energy prices. Traffic accounts for around one-fifth of total CO₂ emissions in Germany and, along with buildings, is one of the areas with the greatest potential for efficiency improvements. The master’s degree offered by this course opens up attractive prospects in areas such as vehicle development, future studies, technical marketing and sales and technically oriented applications of mobility and transport research in the automotive and rail industries.

Course structure
The master’s course “Energy-efficient urban transport systems” starts in the summer semester of 2012 and is a face-to-face course lasting four semesters. The course is completed with a master’s thesis written in the fourth semester.

Key content areas
Vehicle Technology and Construction
- Vehicle technology for private transport
- Vehicle technology for public transport
- Lightweight design
Energy Storage and Drive Technologies
- Electric drive systems
- Energy storage and conversion
- Hydrogen technology
Energy Management
- Energy supply networks
- Renewable energies and smart grids
- Energy management and power electronics for vehicles
Related subjects
- Business models and economic aspects of post-fossil mobility
- Safety aspects of vehicles and infrastructure
Project
Projects are modules in which students can implement their theoretical knowledge using concrete practical examples and gain their own insights through independent work on an interdisciplinary or subject-specific basis. Students may choose freely from a range of subjects.

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<th>Module groups</th>
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<tr>
<td>Vehicle Technology and Construction</td>
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<td>Energy Storage and Drive Technologies</td>
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<td>Energy Management</td>
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<td>Related subjects</td>
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<td>Free-choice projects</td>
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<td>Master’s thesis</td>
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