

# **Study and examination regulations for the international continuing education master's program in Energy Management (EM) at TU-Campus EUREF of the Technische Universität Berlin**

**October 31, 2016**

On October 31, 2016, the TU-Campus EUREF Joint Decision-Making Committee of the Technische Universität Berlin adopted the following study and examination regulations for the continuing education master's program in Energy Management in accordance with section 18, paragraph 1, item 1 of the *Grundordnung der Technischen Universität Berlin* (TU Berlin University Charter), and with section 71, paragraph 1, item 1 of the *Gesetz über die Hochschulen im Land Berlin* (act governing higher education institutions in the state of Berlin - BerlHG) in the version of July 26, 2011 (Berlin law gazette - GVBl., p. 378), last amended by article 4 of the act of May 9, 2016 (GVBl. p. 226).\*\*)

## **Contents**

### **I. General regulations**

1 - Scope of application

2 - Entry into force

### **II. Program aims and structure**

3 - Program aims, content and areas of professional activity

4 - Program start date, standard duration, and number of credits

5 - Program structure

### **III. Requirements and conduct of examinations**

6 - Aim of the master's examination

7 - Master's qualification

8 - Contents of the master's examination; calculation of the overall grade

9 - Master's thesis

10 - Types of examination and examination registration

10 a - Term paper and business simulation

### **IV. Annexes**

## **I. General regulations**

### **1 – Scope of application**

These study and examination regulations set out the aims, structure, and requirements and arrangements of examinations in the international continuing education master's program in Energy Management. They supplement the *Ordnung zur Regelung des allgemeinen Studien- und Prüfungsverfahrens der Technischen Universität Berlin* (the University's regulations governing general study and examination procedures - AllgStuPo) with program-specific provisions.

### **2 – Entry into force**

- (1) These regulations take effect on the day after their publication and apply to students enrolling from the 2017/18 winter semester onwards.
- (2) The study and examination regulations for the international continuing education master's program in Energy Management of January 23, 2015 (TU official gazette 15/2015 p. 119) will no longer apply once the present study and examination regulations take effect.
- (3) In addition to the students mentioned in paragraph 1, these study and examination regulations apply to all students that are already enrolled on the master's program in Energy Management.

## **II. Program aims and structure**

### **3. Program aims, content and areas of professional activity**

- (1) The students in the program acquire the knowledge, skills and competencies needed to work as a manager in the energy sector under changing socio-economic conditions.

The knowledge they acquire includes, but is not limited to: The technical principles of energy generation, distribution and use; the economic, environmental and social context; the legal frameworks, in particular in the fields of competition and regulatory law; organization, planning, implementation and control of management tasks; leadership; the fundamentals of accounting, investment planning, financing, account balancing, and innovation management; familiarity with leading companies and research institutes in the energy sector.

The competencies they acquire include, but are not limited to: applying knowledge gained on the program to concrete tasks; independent use of new media and information technology; public relations; interpersonal and cross-cultural dialogue and discussion skills; managing social networks; and independently applying the methods and technologies needed.

- (2) Graduates of this program will be able to take on responsibility in leadership positions in the energy sector. These include, but are

not limited to: Energy utilities, energy service providers, energy-intensive companies, regulatory authorities, consumer and environmental associations, consultancies, energy technology companies, specialized investment firms and the mobility and transport sector. Graduates will be able to evaluate investments and technologies, design and implement plans, select and steer organizational forms, anticipate, plan and shape changes, evaluate results, determine and communicate actions and research to be performed. They will be able to accomplish these tasks independently and in teams, in networks and in society.

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\*\*\*) Approved by the TU Berlin Executive Board on January 23, 2017.

#### **4 - Program start date, standard duration, and number of credits**

- (1) The program starts in the winter semester.
- (2) The standard duration is three semesters including completion of the master's thesis.
- (3) The program is worth 90 credits.
- (4) The teaching curriculum and all examination procedures are structured so that students can complete the program within the standard duration.

#### **5 - Program structure**

- (1) Students are able to structure their studies individually. However, they are required to comply with the provisions of these study and examination regulations. The recommended module pathway is shown in the sample program schedule in Annex II.
- (2) However, content-related admission requirements for modules shown in the schedule apply.
- (3) Students earn a total of 90 credits; 72 for taught modules and 18 for the master's thesis.
- (4) The entire program is run only in English. It comprises lectures and seminars, e-learning components, self-study, practical components such as excursions and visits, individual work such as reports and papers, and group work.
- (5) Students take compulsory modules worth a total of 62 credits, and compulsory elective modules worth 10 credits. The modules assigned to the different fields can be found in the module list (Annex 1).

### **III. Requirements and conduct of examinations**

#### **6 - Aim of the master's examination**

The master's examination determines whether a candidate has achieved the qualification aims in accordance with section 3 of these regulations.

#### **7 - Master's qualification**

Students who have passed the master's examination are awarded the academic title master of business administration (MBA) by the Technische Universität Berlin through the Joint Decision-Making Committee (GKmE).

#### **8 - Contents of the master's examination; calculation of the overall grade**

- (1) The master's examination comprises the module examinations listed in the module list (Annex 1) and the master's thesis as explained in section 9.
- (2) The overall grade is determined in accordance with the principles outlined in section 47 of AllgStuPO. It is based on a) the module examinations that are graded and form part of the overall grade according to the module list, and b) the grade of the master's thesis.

#### **9 - Master's thesis**

- (1) The master's thesis is usually completed in the third semester. It is worth a total of 18 credits and amounts to 18 weeks' work. If there is an important reason, and it is beyond the student's control, the examination committee can grant an extension of up to one month, and in cases of illness up to three months.
- (2) To be admitted to complete a master's thesis, students must submit evidence of having successfully completed module examinations worth at least 62 credits to the responsible office.
- (3) The topic of the master's thesis may be rejected once, but only within the first four weeks after it has been issued by the responsible office.
- (4) The procedure for applying for admission to work on final dissertations and the procedure for evaluating them are set down in AllgStuPO as amended.
- (5) The master's thesis must be written in English. It is approx. 50 pages in length.
- (6) People with experience of professional activity and training can be appointed as examiners of final dissertations. It is generally more important that second examiners meet this criterion.

#### **10 - Types of examination and examination registration**

Types of examination and the procedure for registering for module examinations are set down in AllgStuPO as amended. In addition, the following types of examination form are offered: term paper, business simulation.

##### **10a - Term paper and business simulation**

(1) The term paper is a written assignment through which students demonstrate their ability to produce a piece of academic work on a specific aspect of the module subject and place it in the context of the module. Further details are outlined in the module description.

(2) A business simulation is a piece of oral work in the form of a corporate strategic planning tool. Further details are outlined in the module description.

#### **IV. Annexes**

Annex 1: Module list

Annex 2: Sample program schedule

Annex 3: Module descriptions

**Annex 1: Module list**

<b>Module</b>	<b>Credits</b>	<b>Type of examination</b>	<b>Graded</b>	<b>Weighting in overall grade<sup>1</sup></b>
<b>Compulsory modules</b>				
Technical Fundamentals	6	Written (examination)	Yes	1
Economics Fundamentals	6	Written (examination)	Yes	1
Business Fundamentals	10	Business simulation	No	-
Energy Law	10	Written (term paper)	Yes	1
Energy Grids	10	Written (examination)	Yes	1
Management	10	Portfolio	Yes	1
Investments	10	Written (examination)	Yes	1
<b>Compulsory elective modules</b>				
Specialist management: Efficiency Management	10	Portfolio	No	-
Specialist management: Innovation Management	10	Portfolio	No	-
<b>Master's thesis</b>	18			1
<b>Total</b>	90			

<sup>1</sup> A weighting of 1 means that the grade is weighted according to the number of credits (section 47, paragraph 6 of AllgStuPo); "-" means the grade won't be weighted; all other figures are multiplied by the number of credits.

**Annex 2: Sample program schedule**

Winter semester		Summer semester	Winter semester	
Technological Fundamentals, 6 credits	Economics Fundamentals, 6 credits	Energy Grids, 10 credits	Compulsory elective module: Efficiency Management, 10 credits	Compulsory elective module: Technology and Innovation Management, 10 credits
Business Fundamentals, 10 credits Energy law, 10 credits		Management, 10 credits Investments, 10 credits	Master's thesis, 18 credits	
ECTS total: 32 credits		ECTS total: 30 credits	ECTS total: 28 credits	

Technological Fundamentals
Economics Fundamentals
Business Fundamentals
Energy Law
Energy Grids
Management
Investments
Efficiency Management
Technology and Innovation Management

**Annex 3: Module descriptions**

<b>Module title:</b> Technological Fundamentals	<b>ECTS credits:</b> 6	<b>Short title:</b> EM – Technology			
<b>Responsible for the module:</b> Prof. Dr.-Ing. Joachim Müller- Kirchenbauer	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
This module revisits and broadens students' knowledge of energy technologies and systems in the context of today's changing world, preparing the ground for the coming modules. Students are taught to apply this knowledge independently to selected cases.					
The module primarily develops the following competencies (put a cross next to the relevant competence or write in percentages):					
Subject-specific competence [60] Methodological competence [10] Systems competence [30] Social competence [0]					
<b>2. Content</b>					
Energy physics and energy technologies; thermodynamics, mechanics, chemical processes; Carnot engines and cycles; fossil fuels and renewable energy sources; conversion technologies; recent global and local developments; storage and transport technologies; electrical engineering, grids; transitions and trends.					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) / Compulsory elective (CE)	Semester (WS/SS)
Energy and Energy Markets	Integr. course	0.5	6	C	WS
Power Grids	Integr. course	0.5			
Fossil Fuels	Integr. course	0.5			
Renewable Energy Sources	Integr. course	0.5			
EM – Technology	Tutorial	1			
EM – Technology	eLearning	3			
Case Studies and Company Program	Integr. course	1			
<b>4. Description of course types</b>					
Integrated courses in the form of seminar-style lectures, eLearning course, tutorial and excursions					

<b>5. Participation requirements</b>		
Enrolled on the continuing education master's in Energy Management at TU Berlin (1st sem.)		
<b>6. Module can be taken in following programs</b>		
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)		
<b>7. Work load and credits</b>		
2 hours per week of integr. courses (in-person)	4 x 8 h	32h
1 hour per week of tutorial (in-person)	2 x 8 h	16 h
3 hours per week of eLearning	6 x 8 h	48h
1 hour per week of case studies and company	15 h	15 h
Preparation and follow-up		51.5 h
Examination and preparation for exam (1 test)	1.5 h & 16 h	17.5h
This amounts to a workload of 180 hours per semester, which is equivalent to 6 credits.		
<b>8. Module examination and grading</b>		
Type of examination: written exam		
- There will be one assessed test (written; duration 90 mins) at the end of the module.		
- Students who fail the test may repeat it at the beginning of the following semester.		
<b>9. Module duration</b>		
The module can be completed in one semester. It comprises approx. 3-4 weeks.		
<b>10. Number of participants</b>		
Maximum number of participants: 30		
<b>11. Registration formalities</b>		
Students can register for the eLearning course, the tutorial and the test via TUBS.		
<b>12. Reading list and lecture notes</b>		
Lecture notes available in hard copy: No		
If yes, where can the lecture notes be purchased?		
Lecture notes available in electronic format: Yes		
If yes, give internet page: On the Moodle platform for the program:		
<a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a>		
Reading list:		
The reading list is provided on the eLearning course on Moodle.		

<b>Module title:</b> Economics Fundamentals	<b>ECTS credits:</b> 6	<b>Short title:</b> EM – Economics			
<b>Responsible for the module:</b> Prof. Dr. Georg Erdmann	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
<p>The master's in Energy Management aims to develop the following skills in the students:</p> <p>This module provides students with core knowledge of economics in the field of energy and provides a grounding in the economics behind the coming modules. Students are taught to apply this knowledge independently to selected cases.</p> <p>The module primarily develops the following competencies (put a cross next to the relevant competence or write in percentages): Subject-specific competence [60] Methodological competence [20] Systems competence [20] Social competence [0]</p>					
<b>2. Content</b>					
Welfare analysis, prices and markets, market forms, production and pricing decisions, natural resource economics, merit order effects, external effects, trading in allowances, fundamentals of investment decisions, market failures and regulation, sustainability, global commons, security of supply.					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) Compulsory elective (CE)	Semester (WS/SS)
Welfare, Prices and Markets	Integr. course	0.5	6	C	WS
Introduction to Business Administration	Integr. course	0.5			
Resource Economics, Security of Supply I	Integr. course	0.5			
Resource Economics, Security of Supply II	Integr. course	0.5			
EM – Economics	Tutorial	1			
EM – Economics	eLearning course	3			
Case Studies and Company Program	Integr. course	1			

<b>4. Description of course types</b>		
Integrated courses in the form of seminar-style lectures, eLearning course and tutorial		
<b>5. Participation requirements</b>		
Enrolled on the continuing education master's in Energy Management at TU Berlin (1st sem.)		
<b>6. Module can be taken in following programs</b>		
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)		
<b>7. Work load and credits</b>		
2 hours per week of integr. courses (in-person)	4 x 8 h	32 h
1 hour per week of tutorial (in-person)	2 x 8 h	16 h
3 hours per week of eLearning	6 x 8 h	48h
1 hour per week of case studies and company program	15 h	15 h
Preparation and follow-up		51.5 h
Examination and preparation for exam (1 test)	1,5 h & 16 h	17.5 h
This amounts to a workload of 180 hours per semester, which is equivalent to 6 credits.		
<b>8. Module examination and grading</b>		
Type of examination: written exam		
- There will be one assessed test (written; duration 60 mins) at the end of the module.		
- Students who fail the test may repeat it at the beginning of the following semester.		
<b>9. Module duration</b>		
The module can be completed in one semester. It comprises approx. 3-4 weeks.		
<b>10. Number of participants</b>		
Maximum number of participants: 30		
<b>11. Registration formalities</b>		
Students can register for the eLearning course, the tutorial and the test via TUBS.		
<b>12. Reading list and lecture notes</b>		
Lecture notes available in hard copy: No		
Lecture notes available in electronic format: Yes		
If yes, give internet page: On the Moodle platform for the program: <a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a>		
The reading list is provided on the eLearning course on Moodle.		

<b>Module title:</b> Business Fundamentals	<b>ECTS credits:</b> 10	<b>Short title:</b> EM – Business			
<b>Responsible for the module:</b> Prof. Dr. Dodo zu Knyphausen-Aufseß	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
The master's in Energy Management aims to develop the following skills in the students: In this module, students learn the fundamentals of strategic management and the basic tools and applications used in the energy sector. Students are taught to apply this knowledge independently to selected cases. The module <b>primarily</b> develops the following competencies (put a cross next to <b>the relevant</b> competence or write in percentages): Subject-specific competence [50] Methodological competence [20] Systems competence [20] Social competence [10]					
<b>2. Content</b>					
Fundamentals of management and business administration; management and leadership; shareholder and stakeholder value approach; the concept of strategy; Porter's Five Forces, SWOT analysis, etc.; strategic business units; industry analysis; generic strategies; vertical integration; portfolio analysis; diversification; strategy process; case studies					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) / Compulsory elective (CE)	Semester (WS/SS)
Management in the Energy Sector	Integr. course	0.5	10	C	WS
Strategy, Organization, Leadership I	Integr. course	0.5			
Strategy, Organization, Leadership II	Integr. course	0.5			
Strategy, Organization, Leadership III	Integr. course	0.5			
Regulation, Industry & Company Analysis I	Integr. course	0.5			
Regulation, Industry & Company Analysis II	Integr. course	0.5			
EM – Business Fundamentals	Tutorial	1.5			
EM – Business Fundamentals	eLearning course	4			
Case Studies and Company Program	Integr. course	1			

<b>4. Description of course types</b>		
Integrated courses in the form of seminar-style lectures, eLearning course and tutorial		
<b>5. Participation requirements</b>		
Enrolled on the continuing education master's in Energy Management at TU Berlin (1st sem.)		
<b>6. Module can be taken in following programs</b>		
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)		
<b>7. Work load and credits</b>		
3 hours per week of integr. courses (in-person)	6 x 8 h	48h
1.5 hour per week of tutorial (in-person)	3 x 8 h	24 h
4 hours per week of eLearning	8 x 8 h	64 h
Case Studies and Company Program	15 h	15 h
Preparation and follow-up		123 h
Examination and preparation for exam (business sim.)	8 h & 8 h	16 h
This amounts to a workload of 300 hours per semester, which is equivalent to 10 credits.		
<b>8. Module examination and grading</b>		
Type of examination: Portfolio. There is an ungraded business simulation (oral, duration: 8 h) at the end of the module. This involves a student presentation and subsequent write-up. 50 points are awarded for the presentation and 50 for the write-up. Students need 51 points to attain a pass. Students who do not take part may repeat at the beginning of the following semester by taking an ungraded exam (written, duration: 2 h).		
<b>9. Module duration</b>		
The module can be completed in one semester. It comprises approx. 4-5 weeks.		
<b>10. Number of participants</b>		
Maximum number of participants: 30		
<b>11. Registration formalities</b>		
Students can register for the eLearning course, the tutorial and the examination via TUBS.		
<b>12. Reading list and lecture notes</b>		
Lecture notes available in hard copy: No Lecture notes available in electronic format: Yes If yes, give internet page: On the Moodle platform for the program: <a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a> The reading list is provided on the eLearning course on Moodle.		



<b>Module title:</b> Energy Law	<b>ECTS credits:</b> 10	<b>Short title:</b> EM – Energy Law			
<b>Responsible for the module:</b> Prof. Dr. Dr. Dres. h.c. Franz Jürgen Säcker	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
The master's in Energy Management aims to develop the following skills in the students:  This module presents the legal framework of today's global, EU and German energy markets. Students learn to independently evaluate cases and summarize legal situations.  The module primarily develops the following competencies (put a cross next to the relevant competence or write in percentages): Subject-specific competence [60] Methodological competence [20] Systems competence [20] Social competence [0]					
<b>2. Content</b>					
Energy law, energy trade and international contracts; UN conventions, WTO, ECT, contract law, EFET contracts; the legal system of the EU and the Third Energy Package; Germany's <i>Energiewende</i> and EEG; EU secondary law v. regional developments, environmental law, state aid.					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) / Compulsory elective (CE)	Semester (WS/SS)
Introduction to European Union (Energy) Law	Integr. course	0.5	10	C	WS
Energy Policy, European Law and Business Practice	Integr. course	0.5			
The EU Legal Framework for Infrastructure Regulation	Integr. course	0.5			
EU Competition Law for the Energy Sector	Integr. course	0.5			
Energy Law in Practice	Integr. course	0.5			
The EU Legal Framework for Energy Wholesale & Trading					
EM – Energy Law	Tutorial	1.5			
EM – Energy Law	eLearning course	4			
Case Studies and Company Program	Integr. course	1			

<b>4. Description of course types</b>		
Integrated courses in the form of seminar-style lectures, eLearning course and tutorial		
<b>5. Participation requirements</b>		
Enrolled on the continuing education master's in Energy Management at TU Berlin (1st sem.)		
<b>6. Module can be taken in following programs</b>		
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)		
<b>7. Work load and credits</b>		
3 hours per week of integr. courses (in-person)	6 x 8 h	48 h
1.5 hour per week of tutorial (in-person)	3 x 8 h	24 h
4 hours per week of eLearning	8 x 8 h	64 h
1 hour per week of case studies and company program	15 h	15 h
Preparation and follow-up		93 h
Examination and preparation for exam (1 term paper)	40 h & 16 h	56 h
This amounts to a workload of 300 hours per semester, which is equivalent to 10 credits.		
<b>8. Module examination and grading</b>		
Type of examination: graded written exam		
- One term paper (written, 10 pages, 1 week) will be set at the end of the module.		
- Students who fail the paper may repeat it at the beginning of the following semester.		
<b>9. Module duration</b>		
The module can be completed in one semester. It comprises approx. 4-5 weeks.		
<b>10. Number of participants</b>		
Maximum number of participants: 30		
<b>11. Registration formalities</b>		
Students can register for the eLearning course, the tutorial and the examination via TUBS.		
<b>12. Reading list and lecture notes</b>		
Lecture notes available in hard copy: No		
Lecture notes available in electronic format: Yes		
If yes, give internet page: On the Moodle platform for the program: <a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a>		
The reading list is provided on the eLearning course on Moodle.		

<b>Module title:</b> Energy Grids	<b>ECTS credits:</b> 10	<b>Short title:</b> EM – Energy grids			
<b>Responsible for the module:</b> Prof. Dr. Kai Strunz	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
The master's in Energy Management aims to develop the following skills in the students:					
This module deals with the technical and organizational challenges of grid management in a changing energy environment. It looks at transformation processes between different forms and sources of energy and considers novel technological developments. Students learn to independently report on technological developments and solve basic grid management problems.					
The module primarily develops the following competencies (put a cross next to the relevant competence or write in percentages): Subject-specific competence [60] Methodological competence [20] Systems competence [20] Social competence [0]					
<b>2. Content</b>					
Grid management, balancing; liquid fuels and pipelines vs. electricity transmission; convergence, substitution and interoperability; redundancy principle; power-to-gas; power-to-heat; mobility-to-grid; CHP; virtual power plants; demand response, smart meters, contracts; RES integration; grid management technologies, prosumers, IT and conversion of grids, next-generation networks, micro smart grids.					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) / Compulsory elective (CE)	Semester (WS/SS)
Security of Supply, Transport, Infrastructure, Logistics, Interfaces	Integr. course	0.5	10	C	SS
Power Grid System Management	Integr. course	0.5			
Transport Grids and E-Mobility	Integr. course	0.5			
Smart Grids, Smart Metering, IT Grids	Integr. course	0.5			
Transmission Capacity Allocation Mechanisms I	Integr. course	0.5			
Transmission Capacity Allocation Mechanisms II	Integr. course	0.5			

EM – Energy grids	Tutorial	1.5		
EM – Energy grids	eLearning course	4		
Case Studies and Company Program	Integr. course	1		
<b>4. Description of course types</b>				
Integrated courses often in the form of seminar-style lectures, eLearning course and tutorial.				
<b>5. Participation requirements</b>				
Enrolled on the continuing education master's in Energy Management at TU Berlin (2 <sup>nd</sup> sem.)				
<b>6. Module can be taken in following programs</b>				
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)				
<b>7. Work load and credits</b>				
3 hours per week of integr. courses (in-person)		6 x 8 h		48 h
1.5 hour per week of tutorial (in-person)		3 x 8 h		24 h
4 hours per week of eLearning		8 x 8 h		64 h
1 hour per week of case studies and company program		15 h		15 h
Preparation and follow-up				131 h
Examination and preparation for exam (1 term paper)		2 h & 16 h		18 h
This amounts to a workload of 300 hours per semester, which is equivalent to 10 credits.				
<b>8. Module examination and grading</b>				
Type of examination: graded written exam				
- There is one graded examination (written, duration: 2 h) at the end of the module.				
- Students who fail the exam may repeat it at the beginning of the following semester.				
<b>9. Module duration</b>				
The module can be completed in one semester. It comprises approx. 5 weeks.				
<b>10. Number of participants</b>				
Maximum number of participants: 30				
<b>11. Registration formalities</b>				
Students can register for the eLearning course, the tutorial and the examination via TUBS.				
<b>12. Reading list and lecture notes</b>				
Lecture notes available in hard copy: No				
Lecture notes available in electronic format: Yes				
If yes, give internet page: On the Moodle platform for the program: <a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a>				
The reading list is provided on the eLearning course on Moodle.				

<b>Module title:</b> Management	<b>ECTS credits:</b> 10	<b>Short title:</b> EM – Management			
<b>Responsible for the module:</b> Prof. Dr.-Ing. Joachim Müller- Kirchenbauer	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
The master's in Energy Management aims to develop the following skills in the students:  This module looks at the implications of the changing energy landscape for industrial organizations, for planning, management and control. How can businesses benefit from our understanding of the legal and economic framework? How do we operate? And how do we communicate? Students learn to develop and present appropriate solutions.  The module primarily develops the following competencies (put a cross next to the relevant competence or write in percentages): Subject-specific competence [50] Methodological competence [20] Systems competence [20] Social competence [10]					
<b>2. Content</b>					
Business ideas, proposals, plans, and models; small group communication, leadership, environmental communication, conflict management; change management; risk management; operational excellence; system services and energy services; Germany's <i>Energiewende</i> ; management of idle power; energy storage and conversion.					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) / Compulsory elective (CE)	Semester (WS/SS)
Energy management	Integr. course	3	10	C	SS
EM – Business Communication	Integr. course and tutorial	1.5			
EM – Management	eLearning course	4			
Case Studies and Company Program	Integr. course	1			
<b>4. Description of course types</b>					
Integrated courses in the form of seminar-style lectures, eLearning course and tutorial					

<b>5. Participation requirements</b>		
Enrolled on the continuing education master's in Energy Management at TU Berlin (2nd sem.)		
<b>6. Module can be taken in following programs</b>		
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)		
<b>7. Work load and credits</b>		
3 hours per week of integr. courses (in-person)	6 x 8 h	48 h
1.5 hour per week of tutorial (in-person)	3 x 8 h	24 h
4 hours per week of eLearning	8 x 8 h	64 h
1 hour per week of case studies and company program	15 h	15 h
Preparation and follow-up		131 h
Examination and preparation for exam (1 term paper)	2 h & 16 h	18 h
This amounts to a workload of 300 hours per semester, which is equivalent to 10 credits.		
<b>8. Module examination and grading</b>		
Type of examination: graded portfolio evaluation; business plan 40 points, written test 40 points, short oral presentation 20 points. Students who do not pass may repeat at the beginning of the following semester by taking a graded written exam (duration: 120 h).		
<b>9. Module duration</b>		
The module can be completed in one semester. It comprises approx. 5 weeks.		
<b>10. Number of participants</b>		
Maximum number of participants: 30		
<b>11. Registration formalities</b>		
Students can register for the eLearning course, the tutorial and the examination via TUBS.		
<b>12. Reading list and lecture notes</b>		
Lecture notes available in hard copy: No Lecture notes available in electronic format: Yes If yes, give internet page: On the Moodle platform for the program: <a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a> The reading list is provided on the eLearning course on Moodle.		

<b>Module title:</b> Investment	<b>ECTS credits:</b> 10	<b>Short title:</b> EM – Investment			
<b>Responsible for the module:</b> Prof. Dr. Christian von Hirschhausen	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
The master's in Energy Management aims to develop the following skills in the students:					
This module looks at energy infrastructure from a decision maker point of view. Grids, storage facilities and power plants are large-scale long-term investments of national, if not international, scope and importance. How are such projects managed? How can they be insured? How can their risk be assessed? Students learn to independently evaluate investments.					
The module primarily develops the following competencies (put a cross next to the relevant competence or write in percentages):					
Subject-specific competence [60] Methodological competence [20] Systems competence [20] Social competence [0]					
<b>2. Content</b>					
Investment in infrastructure, power plants, grids and storage; special purpose vehicles (SPVs); foreign direct investment (FDI); financial tools, insurance, derivatives, virtualization; risk assessment and risk management; corporate finance; behavioral finance; investment and portfolio management; investment in replacement and maintenance; asset management.					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) / Compulsory elective (CE)	Semester (WS/SS)
Investment in Grids, Storage, and Power Plants	Integr. course	1	10	C	SS
Investment Operations Management	Integr. course	1			
Investment in Renewables	Integr. course	1			
EM – Investment	Tutorial	1.5			
EM – Investment	Learning course	4			
Case Studies and Company Program	Integr. course	1			

<b>4. Description of course types</b>		
Integrated courses often in the form of seminar-style lectures, eLearning course and tutorial.		
<b>5. Participation requirements</b>		
Enrolled on the continuing education master's in Energy Management at TU Berlin (2 <sup>nd</sup> sem.)		
<b>6. Module can be taken in following programs</b>		
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)		
<b>7. Work load and credits</b>		
3 hours per week of integr. courses (in-person)	6 x 8 h	48 h
1.5 hour per week of tutorial (in-person)	3 x 8 h	24 h
4 hours per week of eLearning	8 x 8 h	64 h
Case Studies and Company Program	15 h	15 h
Preparation and follow-up		131 h
Examination and preparation for exam (1 term paper)	2 h & 16 h	18 h
This amounts to a workload of 300 hours per semester, which is equivalent to 10 credits.		
<b>8. Module examination and grading</b>		
Type of examination: written exam		
- There is one examination (written, duration: 4 h) at the end of the module.		
- Students who fail the exam may repeat it at the beginning of the following semester.		
<b>9. Module duration</b>		
The module can be completed in one semester. It comprises approx. 5 weeks.		
<b>10. Number of participants</b>		
Maximum number of participants: 30		
<b>11. Registration formalities</b>		
Students can register for the eLearning course, the tutorial and the examination via TUBS.		
<b>12. Reading list and lecture notes</b>		
Lecture notes available in hard copy: No		
Lecture notes available in electronic format: Yes		
If yes, give internet page: On the Moodle platform for the program: <a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a>		
The reading list is provided on the eLearning course on Moodle.		

<b>Module title:</b> Compulsory elective module: Efficiency Management	<b>ECTS credits:</b> 10	<b>Short title:</b> EM – Efficiency Management			
<b>Responsible for the module:</b> Prof. Dr.-Ing. Joachim Müller- Kirchenbauer	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
The master's in Energy Management aims to develop the following skills in the students:  Students look at technical projects and products such as buildings, plants and urban neighborhoods, and apply the knowledge gained in prior modules in case studies.  The module primarily develops the following competencies (put a cross next to the relevant competence or write in percentages):  Subject-specific competence [60] Methodological competence [20] Systems competence [20] Social competence [0]					
<b>2. Content</b>					
Buildings and energy efficiency; greenhouse gas emissions, demand side management, combined heat and power generation, process chain management, energy efficiency technologies, payback calculation methods, local heat and cooling grids, project management, ISO standards.					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) / Compulsory elective (CE)	Semester (WS/SS)
EM – Efficiency Management	Integr. course	4	10	CE	WS
EM – Efficiency Management	eLearning course	2			
Case Studies and Company Program	Integr. course	1			
<b>4. Description of course types</b>					
Integrated courses often in the form of seminar-style lectures, eLearning course and tutorial.					
<b>5. Participation requirements</b>					
Enrolled on the continuing education master's in Energy Management at TU Berlin					

<b>6. Module can be taken in following programs</b>		
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)		
<b>7. Work load and credits</b>		
4 hours per week of integr. courses	4 x 15 h	60 h
2 hours per week of eLearning	4 x 8 h	32 h
1 hour per week of case studies and company program	15 h	15 h
Preparation and follow-up		137 h
Project task	40 h & 16 h	56 h
This amounts to a workload of 300 hours per semester, which is equivalent to 10 credits.		
<b>8. Module examination and grading</b>		
Type of examination: ungraded portfolio evaluation; contribution to discussion 25 points, presentation material 50 points, oral presentation 25 points. Students who do not pass may repeat at the end of the current semester by taking a graded written exam (2 h).		
<b>9. Module duration</b>		
The module can be completed in one semester. It comprises approx. 5 weeks.		
<b>10. Number of participants</b>		
Maximum number of participants: 30		
<b>11. Registration formalities</b>		
Students can register for the eLearning course, the tutorial and the examination via TUBS.		
<b>12. Reading list and lecture notes</b>		
Lecture notes available in hard copy: No Lecture notes available in electronic format: Yes If yes, give internet page: On the Moodle platform for the program: <a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a> The reading list is provided on the eLearning course on Moodle.		

<b>Module title:</b> Compulsory elective module: Innovation	<b>ECTS credits:</b> 10	<b>Short title:</b> EM – Innovation Management			
<b>Responsible for the module:</b> Prof. Dr. Jan Kratzer	<b>Secretary:</b> Jan Suchanek	<b>Email:</b> <a href="mailto:suchanek@campus.tu-berlin.de">suchanek@campus.tu-berlin.de</a>			
<b>Module description</b>					
<b>1. Module aims</b>					
<p>The master's in Energy Management aims to develop the following skills in the students:</p> <p>In this module students look at innovations, team building, management processes and administrative, financial and theoretical issues in a specific practical context. Students learn to develop and present innovative business models in the energy sector.</p> <p>The module primarily develops the following competencies (put a cross next to the relevant competence or write in percentages): Subject-specific competence [50] Methodological competence [20] Systems competence [20] Social competence [10]</p>					
<b>2. Content</b>					
Innovation management; technically, economically and socially sustainable implementation of innovations; team building and team management; innovation assessment; systematic modelling; agile methods; software; synergy; innovation pathways; venture teams; temporary task forces; restrictive vs. promotive control; inter-organisational teams.					
<b>3. Module components</b>					
Course title	Course type	Hrs/week	ECTS credits:	Compulsory (C) / Elective (E) / Compulsory elective (CE)	Semester (WS/SS)
EM – Technology and <u>Innovation Management</u>	Integr. courses	4	10	CE	WS
EM – Technology and <u>Innovation Management</u>	eLearning	2			
Case Studies and Company Program	Integr. courses	1			
<b>4. Description of course types</b>					
Integrated course with eLearning components					

<b>5. Participation requirements</b>		
Enrolled on the continuing education master's in Energy Management at TU Berlin (3rd sem.)		
<b>6. Module can be taken in following programs</b>		
Continuing education master's in Energy Management at TU-Campus EUREF (TU Berlin)		
<b>7. Work load and credits</b>		
4 hours per week of integr. courses	4 x 15 h	60 h
2 hours per week of eLearning	4 x 8 h	32 h
1 hour per week of case studies and company program	15 h	15 h
Preparation and follow-up		137 h
eLearning project task	40 h & 16 h	56 h
This amounts to a workload of 300 hours per semester, which is equivalent to 10 credits.		
<b>8. Module examination and grading</b>		
Type of examination: ungraded portfolio evaluation; 50 points: presentation of 20 minutes, 50 points: written write-up of 10 pages. Students need 51 points to attain a pass. Students who do not pass may repeat at the end of the current semester by taking a graded written exam (2 h).		
<b>9. Module duration</b>		
The module can be completed in one semester.		
<b>10. Number of participants</b>		
Maximum number of participants: 30		
<b>11. Registration formalities</b>		
Students can register for the eLearning course, the tutorial and the examination via TUBS.		
<b>12. Reading list and lecture notes</b>		
Lecture notes available in hard copy: No		
Lecture notes available in electronic format: Yes		
If yes, give internet page: On the Moodle platform for the program: <a href="https://www.isis.tu-berlin.de/2.0/">https://www.isis.tu-berlin.de/2.0/</a>		
The reading list is provided on the eLearning course on Moodle.		