

6.10.52 Implementation Regulations for the Bachelor's Programme in Energy and Raw Materials at the Clausthal University of Technology, Faculty for Energy and Economics from 21 July 2015

In the version from the 2nd amendment from June 25, 2019

The Faculty for Energy and Economics agreed on the following implementation regulations on 21 July 2015, in accordance with § 7 para 3 in relation with § 44 para 1 of the Higher Education Act of Lower Saxony (NHG). These regulations were authorised by the chairmanship of the Clausthal University of Technology on 01 September 2015.

Last amended by the faculty board decree from 17 January 2017 and the authorisation from the chairmanship from 14 February 2017. Last amended by the faculty board decree from June 25, 2019 and the authorisation from the chairmanship from July 11, 2019.

Preamble

These implementation regulations solely apply in relation with the general exam regulations (APO) of the TU Clausthal in the respectively valid version, and contain all programme-specific additions, amendments and regulations.

Objective of the Programme

The content and structure of the bachelor's programme in Energy and Raw Materials at the Clausthal University of Technology is determined by the fact that the tasks that academically educated engineers need to fulfil in science and practice are due to the complexity of engineering problems and the change in the requirements of their professional specialisation, while also demand a suitable academic degree.

The bachelor's programme in Energy and Raw Materials serves the scientific qualification requirements graduates need for their profession requiring the application of basic as well as up-to-date scientific knowledge and methods. The course content and the practical relevance will enable graduates to quickly integrate in the professional realm of an energy and raw material company and to actively participate in operational tasks.

The knowledge acquired during the programme and the key competencies of the Bachelor's degree prepare graduates for a professional career based mainly upon professional knowledge and experience up to taking on management responsibilities in the energy and raw material industry and related industries.

To achieve this goal, the following skills will be developed during the programme:

- Uptake and Processing of Knowledge

- Analytical Thinking
- Planning, Organising and Decision Making
- Argumentation and Communication
- Teamwork

The programme teaches the basic knowledge and skills of an engineer employed in the field of energy and raw material supply. A prerequisite for this is a broad-based, generalist basic knowledge in the fields of natural sciences, engineering, geoscience, law and economics as well as in the field of social competence.

On § 5 Programme-specific implementation regulations

The Bachelor's programme in Energy and Raw Materials has a modular structure. Appendix 1 (module overview) lists the credit points (CP) assigned to individual modules in accordance with ECTS (European Credit Transfer System) as well as the type and scope of academic and/or examination requirements.

The following fields of study are available, one of which must be selected:

- a. Energy and Raw Material Supply Procedure
- b. Petroleum Engineering

Annexes 2a and 2b contain a model study plan for each curriculum, showing the recommended course of study.

A detailed description of the modules and their content is provided in the separate module manual.

On § 6 Duration and structure of the programme, assessment

The programme can be started in winter or summer semester. The model study plan is set to begin in the winter semester. Beginning of the programme in the summer semester and compliance with the regular study time requires an increased study effort.

The standard period of study of the fulltime Bachelor's programme, including the Bachelor thesis, is 6 semesters. The scope of Bachelor's programme equates to a total of 180 credit points, including 12 credits for the Bachelor's thesis including colloquium.

Prior to starting the programme, students are required to take a 4-week industrial internship (pre-study internship) and to verify participation at the latest for enrolment in the Bachelor's thesis. During the programme, students are required to take a 4-week industrial internship (specialized internship).

Details are found in the general internship regulations of the Clausthal University of Technology in conjunction with the internship regulations for the Bachelor's programme in Energy and Raw Materials, as amended.

On § 10 Admission for exam

The concentration selection is binding with the first test attempt in one of the modules of the curriculum. Changing the concentration is only possible if no test attempts have been made in said module. Changing the concentration is possible only once and must be submitted in writing to the Examination Office in good time before placing the newly selected module of the other concentration.

The module selection is binding with the first test attempt in a compulsory elective module. Changing the compulsory elective module is only possible if no test attempts have been made in a compulsory elective module.

On § 13 Structure of the examinations, additional examinations and conditional examinations

According to Annex 1, the programme consists of compulsory and elective modules with module and sub-module examinations, an industrial internship as well as a Bachelor thesis according to § 16 APO.

The Faculty Council will update the elective module catalogue (Annex 1) once a year. Changes made to elective module catalogues, are published by the study centre by the end of August for the next academic year (winter/summer semester). Changes will be published in exceptional cases by the end of February for the following summer semester:

<https://www.studium.tu-clausthal.de/studienangebot/energie-und-rohstoffe/energie-und-rohstoffe-bachelor/>

The admission to module and/or sub-module examinations as well as proof of performance can stipulate unrestrictedly repeatable admission requirements (so-called preliminary examinations). Annex 1 lists all compulsory preliminary examinations (module overview).

Proof of Performance can be graded or not. Annex 1 (module overview) shows whether a proof of performance is graded or not.

On § 14 Academic and examination requirements

Annex 1 (module overview) lists the types of academic and examination requirements (Module overview). In case the examiner requires a different type of examination, then the examiner will specify and make known all possible examinations and approved aids mentioned in Annex 1 during the first lecture. For written and oral exams (see § 15 para. 3 and 4 APO), the duration of the examination is defined in the module manual.

On § 16 Final thesis

The Bachelor's thesis, including the colloquium, comprises 12 credits and is to be completed in a period of 3 months.

According to § 10 APO the Bachelor Thesis requires a separate admission. When submitting the application, the primary examiner must be indicated.

The examiner must belong to the university lecturer group of the TU Clausthal and his or her department must be listed below:

- Department of Mining
- Department of Petroleum Engineering
- Department of Geotechnical Engineering and Mining-Surveying
- Department of Processing, Landfill Technology and Geomechanics

Exceptions are granted by the Examination Board.

In addition to the admission requirements pursuant to § 10 APO, students need a total of at least 150 credit points and have completed the industrial internship to be admitted to the Bachelor Thesis. Justified exceptions are granted by the Examination Board.

Grading of the module Bachelor's Thesis is based upon 90% of the written examination and 10% of the oral examination (Colloquium).

On § 18 Examination of exam performance, grading

The weighing of the individual modules for the final grade occurs in accordance with Annex 1 (Module Overview).

On § 20 Second attempt, repeating exams

Comparable courses of studies within the meaning of § 20 (5) APO are all bachelor and diploma programmes in the fields of:

- Energy and Raw Material Supply Technology
- Mining
- Mineral Resources Engineering
- Petroleum Engineering
- Geotechnical Engineering.

On § 22
Failure, cheating, exception regulations

The Bachelor's programme of Energy and Raw Materials is not intended for part-time studies.

On § 30
Coming into effect

These implementation regulations come into effect on the day after their announcement in the official announcement paper of the Clausthal University of Technology at the beginning of the examination period of the winter semester 2015/2016.

Transitional provisions to these implementation regulations of 21 July 2015

Students who commence their studies at the TU Clausthal in the winter semester 2015/2016 will be examined in accordance with these implementation regulations.

Students who are already enrolled in the second or higher semester of this course of study when these implementation regulations take effect, may complete the Bachelor's programme by the end of the winter semester 2019/2020 in accordance with the implementation regulations of the Master's programme for Energy and Raw Materials as of 12 February 2007 in the version of 21 July 2015. Students may change to these implementation regulations. However, the application must be submitted to the Examination Office at the latest before the application for admission to the thesis.

Any hardships arising from a change may be compensated by the Head of the Examination Board on a case-by-case basis.

Transitional provisions to the 1st Amendment of 17.01.2017

(1) Students, who commence their studies at the TU Clausthal this summer semester 2017 will be examined in accordance with this version of the implementation regulations.

(2) Students who have been enrolled in this programme at the TU Clausthal before the Summer Semester 2017 will be transferred into this version of the implementation regulations. The following provisional regulations apply to them:

Students who have already successfully passed the previous valid modules will keep the credits for these modules.

Students who have already passed the Module 26 "Deep Drilling Technology" within the scope of their free attempt will be given the opportunity to better their grades according to § 20 para. 1 APO after consulting the Faculty of Energy and Economics. Students can only register for the module examination within the scope of their free attempt to improve grades by submitting the Application For Admission to Examinations at the Examination Office.

Failed examination attempts for the replaced module examination in module 26 "Deep Drilling Technique" will not be included in the new sub-module examination according to this version of the implementation regulations.

(3) Any hardships arising from a change to the present implementation regulations may be compensated by the Head of the Examination Board on a case-by-case basis.

Transitional regulations of the 2nd amendment issued on June 25, 2019

(1) Students who are enrolled in this study programme when these amendments come into force will be transferred to this version of the Implementation Regulations. The following transitional regulations apply to them:

- Students who have already successfully completed the modules or module examinations previously in force will continue to receive credits for these modules or module examinations.
- Students who have already passed the previous module examinations as part of the free trial will be given a one-off opportunity to improve their grades in the winter semester 2019/2020 in accordance with § 20 Para. 1 APO. Applications for the module examination as part of the free attempt to improve grades can only be submitted to the Examination Office using the form (Application for Admission to Exams).
- Any failed attempts of the replaced module examination "Petroleum Engineering" will not be credited to the new module partial examinations "Petroleum Engineering Systems" and "Petroleum Engineering" according to this version of the Implementation Regulations.

(2) Any hardships resulting from these changes may be compensated by the examination board on application by way of individual case decisions.

Annex 1: Module Overview

Annex 2a: Sample Curriculum Energy and Raw Materials Supply Engineering

Annex 2b: Sample Curriculum Petroleum Engineering

Annex 1:

Sample Curriculum for the Bachelor's Programme in Energy and Raw Materials

The weighting factors of each module for the calculation of the final grade is given in the tables below. In each case, the module weighting factor X is divided by the sum of all module weighting factors Σ Modules for which a proof of successful participation is sufficient are not considered.

Compulsory modules of both concentrations

| Common compulsory modules of both concentrations | | | | | | | |
|--|-----------|------------------|----------|-----------|------------------------------|----------|-----------|
| All modules listed below must be passed with a total of 124 credit points. | | | | | | | |
| Course | Course No | Course type, SWS | CP | Exam form | Weight | Graded ? | Exam type |
| Module 1: Engineering Mathematics I | | | 8 | | 8/Σ | | |
| Engineering Mathematics I | W 0110 | 4V+2Ü | 8 | K od. M | 1,0000 | ben. | MP |
| Homework assignment for Engineering Mathematics I | | Ü | 0 | HA | 0,0000 | un-ben. | PV |
| Module 2: Engineering Mathematics II | | | 8 | | 8/Σ | | |
| Engineering Mathematics II | S 0110 | 4V+2Ü | 8 | K od. M | 1,0000 | ben. | MP |
| Homework assignment for Engineering Mathematics II | | Ü | 0 | HA | 0,0000 | un-ben. | PV |
| Module 3: Experimental Physics I | | | 6 | | 6/Σ | | |
| Experimental Physics I | W 2101 | 3V | 6 | K od. M | 1,0000 | ben. | MP |
| Exercises for Experimental Physics I | W 2103 | 1 Ü | | | | | |
| Module 4: Experimental Physics II | | | 6 | | 6/Σ | | |
| Experimental Physics k II | S 2101 | 3V | 6 | K od. M | 1,0000 | ben. | MP |
| Exercises for Experimental Physics II | S 2103 | 1 Ü | | | | | |
| Module 5: Technical Mechanics I | | | 6 | | 6/Σ | | |
| Technical Mechanics I | W 8001 | 3V+2Ü | 6 | K od. M | 1,0000 | ben. | MP |
| Module 6: Technical Mechanics II | | | 6 | | 6/Σ | | |
| Technical Mechanics II | S 8002 | 3V+2Ü | 6 | K od. M | 1,0000 | ben. | MP |
| Module 7: Introduction to Chemistry | | | 7 | | 7/Σ | | |
| Introduction to Organic Chemistry | S 3101 | 2V/Ü | 3 | K od. M | 0,5000 | ben. | MTP |
| Introduction to General and Inorganic Chemistry I | W 3080 | 3V/Ü | 4 | K od. M | 0,5000 | ben. | MTP |
| Module 8: Introduction to Geosciences I | | | 7 | | 7/Σ | | |
| Introduction to Geosciences I (incl. Geological Exercises I) | W 4001 | 4V+2Ü | 7 | K od. M | 1,0000 | ben. | MP |

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|--|--------|-------|-----------|---------|-------------|---------|-----|
| Module 9: Introduction to Geosciences II | | | 7 | | 7/Σ | | |
| Introduction to Geosciences II (incl. Geological Exercises II) | S 4001 | 4V+2Ü | 7 | K od. M | 1,0000 | ben. | MP |
| Module 10: Electrical engineering for engineers | | | 10 | | 10/Σ | | |
| Electrical engineering for engineers I | W 8810 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Electrical engineering for engineers II | S 8813 | 2V | 3 | | | ben. | |
| Practicum for the basics of electrical engineering I | W 8850 | 1P | 2 | PrA | 0,0000 | un-ben. | LN |
| Practicum for the basics of electrical engineering II | S 8851 | 1P | 2 | PrA | 0,0000 | un-ben. | LN |
| Module 11: Mechanical Engineering | | | 11 | | 11/Σ | | |
| Mechanical Engineering I | W 8107 | 3V | 4 | K od. M | 0,5000 | ben. | MTP |
| Mechanical Engineering II | S 8307 | 3V | 4 | K od. M | 0,5000 | ben. | MTP |
| Machine Drawing / CAD | S 8103 | 2Ü | 3 | PrA | 0,0000 | ben. | LN |
| Module 12: Data Processing | | | 6 | | 6/Σ | | |
| Data processing for engineers | S 8730 | 2V/Ü | 2 | K od. M | 1,0000 | ben. | MP |
| Introduction to programming (for engineers) | W 8733 | 2V/Ü | 2 | | | | |
| Engineering software tools | S 8734 | 1Ü | 2 | | | | |
| Module 13: Basics of Business Administration | | | 6 | | 6/Σ | | |
| Introduction to business administration for engineers and scientists | W 6601 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Introduction to cost and profitability analysis | S 6601 | 2V | 3 | | | | |
| Module 14: Basics of law | | | 6 | | 6/Σ | | |
| Introduction to law I (Civil Law) | W 6503 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Introduction to law II (Public law) | S 6502 | 2V | 3 | | | | |
| Module 15: Mining and Environmental Law | | | 6 | | 6/Σ | | |
| Mining and Environmental Law I (Mining law) | W 6501 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Mining and Environmental Law II (Environmental Law) | S 6500 | 2V | 3 | | | | |
| Module 30: Industrial Placement | | | 6 | | 0 | | |
| Industrial Placement (4 weeks) + report | | 4 Wo. | 6 | IP | 0,0000 | un-ben. | LN |
| Module 31: Thesis | | | 12 | | 12/Σ | | |
| Bachelor Thesis + Colloquium | | 3 Mo | 12 | AB | 1,0000 | ben. | MP |
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Elective module selection „Key Qualification“ of both concentrations

- Students must select modules/courses worth 2 credit points from the compulsory elective module catalogue "Key Qualifications" and pass them all. Further examinations can only be carried out as additional examinations.
- The module selection is binding with the first test attempt in a compulsory elective module. Changing the compulsory elective module is only possible if no test attempts have been made in a compulsory elective module.
- The Faculty Council will update the list of offered modules for the next academy year once a year. The Study Centre will publicly announce the updated lists:
<https://www.studium.tu-clausthal.de/studienangebot/energie-und-rohstoffe/energie-und-rohstoffe-bachelor/>

| Course | Course No | Course type, SWS | CP | Exam form | Weight | Graded ? | Exam type |
|--|-----------|------------------|----------|-----------|----------|----------|-----------|
| Module: Intercultural Communication | | | 2 | | 0 | | |
| Intercultural Communication | S 9220 | 2S | 2 | ThA | 0,0000 | un-ben. | LN |
| Module: Primecup Germany | | | 2 | | 0 | | |
| Primecup Germany | S 6699 | 2S | 2 | PrA | 0,0000 | un-ben. | LN |
| Module: Lecture startup and company management | | | 2 | | 0 | | |
| Lecture startup and company management | W 9600 | 2V | 2 | ThA | 0,0000 | un-ben. | LN |
| Module: Social Competence I (Basics of communication) | | | 2 | | 0 | | |
| Social Competence I (Basics of communication) | W 9003 | 1V+1Ü | 2 | ThA | 0,0000 | un-ben. | LN |
| Module: Social Competence II (Basics of operational Communications) | | | 2 | | 0 | | |
| Social Competence II (Basics of operational Communications) | S 9006 | 1V+1Ü | 2 | ThA | 0,0000 | un-ben. | LN |

Field of study

Concentration Energy and Raw Material Supply Technology

- Students need to choose one concentration.
- The concentration selection is binding with the first test attempt in one of the modules of the curriculum. Changing the concentration is only possible if no test attempts have been made in said module. Changing the concentration is possible only once and must be submitted in writing to the Examination Office in good time before placing the newly selected module of the other concentration.

Compulsory modules Energy and raw material supply technology

All modules listed below must be passed with a total of 45 credit points.

| Course | Course No | Course type, SWS | CP | Exam form | Weight | Graded ? | Exam type |
|--|-----------|------------------|----------|-----------|------------|----------|-----------|
| Module 16: Introduction to Raw Material Extraction | | | 2 | | 0 | | |
| Introduction to Raw Material Extraction | S 6015 | 1V | 1 | Ex | 0,0000 | un-ben. | LN |
| Introduction to Raw Material Extraction / Excursion | W 6015 | 1Ü | 1 | | | | |
| Module 17: Raw Material Supply I (Surface mining) | | | 6 | | 6/Σ | | |
| Opencast Mining | W 6606 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Dimensioning and scheduling of Construction and Opencast Mining Machines | S 6065 | 2V | 3 | | | | |
| Module 18: Raw Material Supply II (Underground mining) | | | 6 | | 6/Σ | | |
| Underground Mining I | W 6042 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Underground Mining II | S 6032 | 2V | 3 | | | | |
| Module 19: Raw Material Supply III (Underground mining) | | | 8 | | 8/Σ | | |
| Conveyor Technology I incl. exercise | W 6030 | 2V+1Ü | 4 | K od. M | 0,5000 | ben. | MTP |
| Weather engineering and air conditioning I incl. exercise | W 6033 | 2V+1Ü | 4 | K od. M | 0,5000 | ben. | MTP |
| Module 20: Raw Material Processing | | | 6 | | 6/Σ | | |
| Processing I | W 6200 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Processing II | S 6210 | 2V | 3 | | | | |
| Module 21: Surveying | | | 6 | | 6/Σ | | |
| Basics of Surveying I | W 6301 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Basics of Surveying II | S 6302 | 2V | 3 | | | | |
| Module 22: Rock and Soil Mechanics | | | 6 | | 6/Σ | | |
| Soil mechanics - analysis / Geomechanics I | W 6230 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Rock Mechanics / Geomechanics II | S 6231 | 2V | 3 | | | | |

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|---|--------|----|---|----|--------|------|----|
| Module 29: Seminar | | | 5 | | 5/Σ | | |
| Seminar for Energy and Raw Materials Supply Engineering I | W 6076 | 2S | 5 | SL | 1,0000 | ben. | MP |

Elective module selection " Energy and raw material supply technology "

- Students must select modules worth 9 CP plus max. 3 CP from the compulsory elective module catalogue "Energy and raw material supply technology" and pass them all. Further examinations can only be carried out as additional examinations.
- The module selection is binding with the first test attempt in a compulsory elective module. Changing the compulsory elective module is only possible if no test attempts have been made in a compulsory elective module.
- The Faculty Council will update the list of offered modules for the next academy year once a year. The Study Centre will publicly announce the updated lists:
<https://www.studium.tu-clausthal.de/studienangebot/energie-und-rohstoffe/energie-und-rohstoffe-bachelor/>

| Course | Course No | Course type, SWS | CP | Exam form | Weight | Graded ? | Exam type |
|--|-----------|------------------|----|-----------|--------|----------|-----------|
| Module ERST 1: Basics of Binders and Building Materials | | | 3 | | 3/Σ | | |
| Basics of Binders and Building Materials | W 7815 | 2V/Ü | 3 | K od. M | 1,0000 | ben. | MP |
| Module ERST 2: Planning and Construction of Caverns | | | 3 | | 3/Σ | | |
| Planning and Construction of Caverns | W 6259 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Module ERST 3: Engineering Geology | | | 3 | | 3/Σ | | |
| Engineering Geology | W 6361 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Module ERST 4: Introduction to Applied Geophysics / Geophysical Exploration | | | 3 | | 3/Σ | | |
| Introduction to Applied Geophysics / Geophysical Exploration | W 4040 | 2V/Ü | 3 | K od. M | 1,0000 | ben. | MP |
| Module ERST 5: Work safety, environmental and health protection | | | 3 | | 3/Σ | | |
| Work safety, environmental and health protection | S 6069 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Module ERST 6: Special Drilling Technology | | | 3 | | 3/Σ | | |
| Special Drilling Technology | S 6040 | 2V/Ü | 3 | K od. M | 1,0000 | ben. | MP |
| Module ERST 7: Recycling I | | | 3 | | 3/Σ | | |
| Recycling I | W 6205 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Module ERST 8: Sewage technology I | | | 3 | | 3/Σ | | |
| Sewage technology I | W 6204 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Module ERST 9: Basics of soil treatment | | | 4 | | 4/Σ | | |
| Basics of soil treatment | W 6224 | 3V | 4 | K od. M | 1,0000 | ben. | MP |

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|--|--------|-------|----------|---------|------------|------|-----|
| Module ERST 10: Chemical thermodynamics | | | 4 | | 4/Σ | | |
| Chemical thermodynamics | S 8411 | 2V+1Ü | 4 | K od. M | 1,0000 | ben. | MP |
| Module ERST 11: Technical Thermodynamics I | | | 4 | | 4/Σ | | |
| Technical Thermodynamics I | W 8500 | 2V+1Ü | 4 | K od. M | 1,0000 | ben. | MP |
| Module ERST 12: Control Engineering I | | | 4 | | 4/Σ | | |
| Control Engineering I | S 8904 | 2V+1Ü | 4 | K od. M | 1,0000 | ben. | MP |
| Module ERST 13: Energy systems | | | 4 | | 4/Σ | | |
| Energy systems | W 8804 | 3V | 4 | K od. M | 1,0000 | ben. | MP |
| Module ERST 14: Production and Sales | | | 6 | | 6/Σ | | |
| Marketing | W 6620 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Production | S 6651 | 2V | 3 | | | | |
| Module ERST 15: English Language Competence | | | 6 | | 6/Σ | | |
| Technical English | W 9000 | 2V+2Ü | 4 | K od. M | 0,666 | ben. | MTP |
| English for International Commerce | S 9093 | 2V/Ü | 2 | K od. M | 0,333 | ben. | MTP |
| | | | | | | | |

Concentration Petroleum Engineering

- Students need to choose one concentration.
- The concentration selection is binding with the first test attempt in one of the modules of the curriculum. Changing the concentration is only possible if no test attempts have been made in said module. Changing the concentration is possible only once and must be submitted in writing to the Examination Office in good time before placing the newly selected module of the other concentration.

Compulsory modules Petroleum Engineering

All modules listed below must be passed with a total of 43 credit points.

| Course | Course No | Course type, SWS | CP | Exam form | Gewichtung | Graded ? | Exam type |
|---|----------------------|------------------|-----------|----------------------|-------------|----------|-----------|
| Module 23: Geoscience Basis of Petroleum Engineering | | | 7 | | 7/Σ | | |
| Basics of oil, natural gas geology | S 2014 | 2V+1Ü | 4 | K od. M | 0,5714 | ben. | MTP |
| Introduction to Applied Geophysics / Geophysical Exploration | W 4040 | 2V | 3 | K od. M | 0,4286 | ben. | MTP |
| Module 24: Basics of Petroleum Engineering | | | 11 | | 11/Σ | | |
| Basics of Drilling Technology | S 6141 | 2V+1Ü | 4 | K od. M | 0,3636 | ben. | MTP |
| Basics of Natural Gas Transport and Distribution | S 6140 | 2V | 3 | K od. M | 0,2727 | ben. | MTP |
| Deposit Technology I | S 6155 | 2V+1Ü | 4 | K od. M | 0,3636 | ben. | MTP |
| Module 25: Oil / Natural Gas Deposit Technology | | | 7 | | 7/Σ | | |
| Deposit Technology II | W 6157 ₁₎ | 2V+3P | 7 | K od. M | 1,0000 | ben. | MP |
| Module 26: ¹⁾ Deep Drilling Technology | | | 6 | | 6/Σ | | |
| Rinsing / Cementing and Raking Practicum | W 6144 | 2P | 3 | PrA | 0,5000 | ben. | MTP |
| Drilling & Workover Systems and Equipment | W 6143 | 2V | 3 | K od. M | 0,5000 | ben. | MTP |
| Module 27: Petroleum Engineering | | | 7 | | 7/Σ | | |
| Petroleum Engineering Systems | W 6146 | 2V | 3 | K od. M ² | 0,4286 | ben. | MTP |
| Petroleum Engineering | W 6163 | 2V+1Ü | 4 | K od. M | 0,5714 | ben. | MTP |
| Module 28: Seminar | | | 5 | | 5/Σ | | |
| Seminar | | 2S | 5 | SL | 1,0000 | ben. | MP |

¹⁾ 1st Amendment of the implementation regulations of 17 January 2017

²⁾ 2nd Amendment of the implementation regulations of June 25, 2019

Elective module selection "Petroleum Engineering I" PE 1

- Students must select modules worth 8 CP and pass them all. Further examinations can only be carried out as additional examinations.
- The module selection is binding with the first test attempt in a compulsory elective module. Changing the compulsory elective module is only possible if no test attempts have been made in a compulsory elective module.
- The Faculty Council will update the list of offered modules for the next academy year once a year. The Study Centre will publicly announce the updated lists:
<https://www.studium.tu-clausthal.de/studienangebot/energie-und-rohstoffe/energie-und-rohstoffe-bachelor/>

| Course | Course No | Course type, SWS | CP | Exam form | Weight | Graded? | Exam type |
|--|-----------|------------------|----|-----------|--------|---------|-----------|
| Module PE 1.1: Well Testing | | | 4 | | 4/Σ | | |
| Basics of well testing | W 6145 | 2V+1Ü | 4 | K od. M | 1,0000 | ben. | MP |
| Module PE 1.2: Fluid Mechanics I | | | 4 | | 4/Σ | | |
| Fluid Mechanics I | S 8007 | 2V+1Ü | 4 | K od. M | 1,0000 | ben. | MP |
| Module PE 1.3: Technical Thermodynamics I | | | 4 | | 4/Σ | | |
| Technical Thermodynamics I | W 8500 | 2V+1Ü | 4 | K od. M | 1,0000 | ben. | MP |

Elective module selection I "Petroleum Engineering II" PE 2

- Students must select modules worth 3CP and pass them all. Further examinations can only be carried out as additional examinations.
- The module selection is binding with the first test attempt in a compulsory elective module. Changing the compulsory elective module is only possible if no test attempts have been made in a compulsory elective module.
- The Faculty Council will update the list of offered modules for the next academy year once a year. The Study Centre will publicly announce the updated lists:
<https://www.studium.tu-clausthal.de/studienangebot/energie-und-rohstoffe/energie-und-rohstoffe-bachelor/>

| Course | Course No | Course type, SWS | CP | Exam form | Weight | Graded? | Exam type |
|--|-----------|------------------|----|-----------|--------|---------|-----------|
| Module PE 2.1: Rock Mechanics / Geomechanics II | | | 3 | | 3/Σ | | |
| Rock Mechanics / Geomechanics II | S 6231 | 2V | 3 | K od. M | 1,0000 | ben. | MP |
| Module PE 2.2: Work safety, environmental and health protection | | | 3 | | 3/Σ | | |
| Work safety, environmental and health protection | S 6069 | 2V | 3 | K od. M | 1,0000 | ben. | MP |

Explanation:

| | | |
|--------------------------|--------|---|
| (1) Type of course: | E | Excursion [Exkursion] |
| | P | Practical training [Praktikum] |
| | S | Seminar [Seminar] |
| | T | Tutorium [Tutorium] |
| | V | Lecture [Vorlesung] |
| | Ü | Excercise [Übung] |
| (2) Form of examination: | K | Written examination [Klausur] |
| | M | Oral examination [Mündliche Prüfung] |
| | SL | Seminar performance [Seminarleistung] |
| | PrA | Practical work [Praktische Arbeit] |
| | ThA | Theoretical work [Theoretische Arbeit] |
| | SA | Student research project [Studienarbeit] |
| | PA | Project work [Projekt Arbeit] |
| | IP | Internship [Industriepraktikum] |
| | HA | Homework [Hausarbeit] |
| | Ex | Excursions [Exkursion] |
| | Ab | Final Thesis [Abschlussarbeit] |
| (3) Type of examination: | LN | Certificate of performance [Leistungsnachweis] |
| | MP | Module-related examination [Modulprüfung] |
| | MTP | Partial module-related examination [Modulteilprüfung] |
| | PV | Preparatory assessment [Prüfungsvorleistung] |
| (4) Other abbreviations | ben. | Evaluated performance [benotete Leistung] |
| | unben. | Performance without evaluation [unbenotete Leistung] |
| | od. | or [oder] |
| | LV | Course [Lehrveranstaltung] |
| | Prüf. | Examination [Prüfung] |
| | LP | Credits [Leistungspunkte] |
| | SWS | Number of hours per week [Semesterwochenstunden] |

Annex 2a: Model Study Programme - Study Field : Energy and Raw Materials Supply Engineering new starting in WS 15/16

| SWS | 1. Sem | 2. Sem | 3. Sem | 4. Sem | 5. Sem | 6. Sem | |
|-------|--|--|---|---|--|---|---------------------------------------|
| 1 | Engineering Mathematics I 8 LP | Engineering Mathematics II 8 LP | Electrical engineering for engineers I 3 LP | Electrical engineering for engineers II 3 LP | Introduction to business administration for engineers and scientists 3 LP | Introduction to cost and profitability analysis 3 LP | |
| 2 | | | Practicum for electrical engineering I 2 LP | Practicum for electrical engineering II 2 LP | Soil mechanics - analysis / Geomechanics I 3 LP | Rock Mechanics / Geomechanics II 3 LP | |
| 3 | | | Mechanical Engineering I 4 LP | Mechanical Engineering II 4 LP | Weather engineering and air conditioning I incl. exercise 4 LP | Elective Module 3 LP | |
| 4 | | | Machine Drawing/CAD 3 LP | Underground Mining II 3 LP | Mining and Environmental Law I (Mining law) 3 LP | | |
| 5 | | | Experimental Physics I 6 LP | Experimental Physics II 6 LP | Underground Mining I 3 LP | Mining and Environmental Law II (Environmental Law) 3 LP | Bachelor Thesis + Colloquium 12 LP |
| 6 | | | | | Conveyor Technology I 4 LP | Data processing for engineers 3 LP | |
| 7 | Technical Mechanics I 6 LP | Technical Mechanics II 6 LP | | | Opencast Mining 3 LP | Dimensioning and scheduling of Construction and Open-cast Mining Machines 3 LP | |
| 8 | | | Basics of Surveying II 3 LP | Key Qualification 2 LP | | | |
| 9 | | | Introduction to General and Inorganic Chemistry I 4 LP | | Basics of Surveying I 3 LP | Processing II 3 LP | |
| 10 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Processing I 3 LP | Introduction to law II (Public law) 3 LP | | | |
| 11 | | | Introduction to law I (Civil Law) 3 LP | | | | |
| 12 | | | | | | | |
| 13 | | | Introduction to Raw Material Extraction / Excursion 1 LP | | | | |
| 14 | Introduction to Raw Material Extraction 1 LP | | | | | | |
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| 25 | | | | | | | |
| 26 | | | | | | | |
| Σ SWS | 25 | 24 | 21 | 20 | 19 | 14 | |
| Σ LP | 32 | 31 | 31 | 29 | 31 | 21 | |
| | Industrial Placement (4 weeks) + report / 6 LP | | | | | | |

Annex 2b: Model Study Programme - Study Field: Petroleum Engineering
New starting in WS 15/16

| SWS | 1. Sem | 2. Sem | 3. Sem | 4. Sem | 5. Sem | 6. Sem | | | | | | |
|--|--|--|--|---|--|--|--|--|-------------------------------|-------------------------------------|--|---|
| 1 | Engineering Mathematics I 8 LP | Engineering Mathematics II 8 LP | Electrical engineering for engineers I 3 LP | Electrical engineering for engineers II 3 LP | Key Qualification 2 LP | Seminar 5 LP | | | | | | |
| 2 | | | Practicum for electrical engineering I 2 LP | Practicum for electrical engineering II 2 LP | | | Mining and Environmental Law II (Environmental Law) 3 LP | Mining and Environmental Law I (Mining law) 3 LP | | | | |
| 3 | | | Mechanical Engineering I 4 LP | Data processing for engineers 3 LP | Introduction to programming 3 LP | Elective Module PE 2 3 LP | | | | | | |
| 4 | | | | | | | | | Machine Drawing/CAD 3 LP | Mechanical Engineering I II 4 LP | Engineering software tools 2 LP | Bachelor Thesis + Colloquium 12 LP |
| 5 | | | Introduction to law I (Civil Law) 3 LP | Introduction to law I (Civil Law) 3 LP | Petroleum Engineering Systems 3 LP | | | | | | | |
| 6 | | | | | | Introduction to business administration for engineers and scientists 3 LP | Introduction to cost and profitability analysis 3 LP | Petroleum Engineering 4 LP | | | | |
| 7 | Experimental Physics I 6 LP | Experimental Physics II 6 LP | Basics of oil, natural gas geology 4 LP | Basics of Drilling Technology 4 LP | Rinsing / Cementing and Raking Practicum 3 LP | | | | | | | |
| 8 | | | | | | | | | Technical Mechanics I 6 LP | Technical Mechanics II 6 LP | Basics of Natural Gas Transport and Distribution 3 LP | Drilling & Workover Systems and Equipment 3 LP |
| 9 | | | | | | | | | | | | |
| 10 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | | | | | |
| 11 | | | | | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | |
| 12 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | | | | | |
| 13 | | | | | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | |
| 14 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | | | | | |
| 15 | | | | | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | |
| 16 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | | | | | |
| 17 | | | | | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | |
| 18 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | | | | | |
| 19 | | | | | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | |
| 20 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | | | | | |
| 21 | | | | | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | |
| 22 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | | | | | |
| 23 | | | | | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | |
| 24 | Introduction to Geosciences I (incl. Geological Exercises I) 7 LP | Introduction to Geosciences II (incl. Geological Exercises II) 7 LP | Elective Module PE 1 4 LP | Elective Module PE 1 4 LP | | | | | | | | |
| Σ SWS | | | | | 24 | 23 | 17 | 23 | 23 | 14 | | |
| Σ LP | 31 | 30 | 25 | 33 | 32 | 23 | | | | | | |
| Industrial Placement (4 weeks) + report / 6 LP | | | | | | | | | | | | |