List of European universities offering training and education in the field of geothermal energy
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Training and education in the field of geothermal energy at European universities

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TRAINING AND EDUCATION

1 Introduction

There is an increasing demand of geothermal experts due to the growing geothermal energy sector world-wide, but also a high lack of specialists in many fields of expertise. The complexity of geothermal technology requires a wide range of experts on different levels of skills, multidisciplinary expertise and a good interaction of the several disciplines. Basic training in geothermal exploration, exploitation and utilization is available in most of the European countries, but still inadequate to supply the high skilled workforce needed in the geothermal sector. Table 1 shows an estimate of the needs in education and training with regard to deep geothermal energy and with a strong focus on electricity production.

<table>
<thead>
<tr>
<th>Qualification</th>
<th>European Workforce 2012</th>
<th>Estimated Education &amp; Training Needs 2012-2020 (new positions + replacements)</th>
<th>Estimated Education &amp; Training Needs 2020-2030 (new positions + replacements)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>2500</td>
<td>21 000 + 1000</td>
<td>35000 + 1450</td>
</tr>
<tr>
<td>Researchers</td>
<td>500</td>
<td>5000 + 200</td>
<td>5000 + 250</td>
</tr>
<tr>
<td>Engineers</td>
<td>1100</td>
<td>8000 + 400</td>
<td>15000 + 600</td>
</tr>
<tr>
<td>Technicians</td>
<td>900</td>
<td>8000 + 400</td>
<td>15000 + 600</td>
</tr>
</tbody>
</table>

Table 1: Education and training needs in the European Union Member States and Associated countries (SET Plan on Education & Training Initiatives Assessment Report for Geothermal energy, E. Schill, February 2013).

Actually, only a limited number of specific university degree programs are available. Many of them offer geothermal specialisation block courses integrated in programs of Geosciences and Georesources, Civil Engineering, Process and Environmental Engineering, Mechanical Engineering, Sustainable Energy and others. But most of them are only short-time courses, often on voluntary basis, covering basic skills.

Non-university academic institutions, mostly research institutes, offer graduate and postgraduate education courses and PhD programs in close cooperation with the universities, such as:
Only few European universities hold chairs in Geothermal Energy and offer specific BSc and/or MSc degree courses. Actually, nine chairs of Geothermal Energy exist European-wide: five in Germany, one in the Netherlands and three in Switzerland (November 2013).

**Germany (5)**

- RWTH Aachen University & E.ON Energy Research Center
  Institute of Applied Geophysics and Geothermal Energy
  1 endowed Professorship in Applied Geophysics and Geothermal Energy (GGE)

- Technical University Clausthal Institute of Petroleum Engineering
  1 endowed Professorship in Geothermal Engineering & Integrated Energy Systems

- Technical University Darmstadt
  1 full Professorship in Applied Geothermal Science and Technology

- KIT Karlsruhe Institute of Technology, Institute of Applied Geosciences
  1 full Professorship in Geothermics

- Technical University Munich / GFZ-Potsdam
  1 advertised Professorship in Geothermal Energy

**Netherlands (1 part-time)**

Technical University Delft & GFZ-Potsdam/Germany, Faculty of Civil Engineering & Geosciences
CITG, Endowed part-time Professorship in Geothermal Engineering

**Switzerland (3 advertised)**

- Swiss Federal Institute of Technology (ETH Zürich): 2 advertised professorships:
  Geological Institut, Professor of Deep Geothermal Energy and Geological Reservoirs
  Department of Mechanical and Process Engineering, Professor of Geoenergy and Process Technologies

- University of Neuchâtel: 1 advertised professorship
  Centre for Hydrogeology and Geothermics (CHYN), Professor of Geothermics.

The following list provides an overview about geothermal education at university level by continent and country. Due to the dynamic development in this field, the list limits to the country, the institution, the name of courses and degrees. For actual information please follow the links.
2 Universities holding chairs in Geothermal Energy

GERMANY

RWTH Aachen University, Technical University of Delft and ETH Zurich, Institute for Applied Geophysics and Geothermal Energy E.ON Energy Research Center

Name of courses / degrees: Joint Master’s in Applied Geophysics (MSc)

Topics:

TDU: Introduction to Reflection Seisics (1 ECTS), Petroleum Geology (3 ECTS), Matlab / Programming (2 ECTS), Geologic Interpretations of Seismic Data, Including Practical (3 ECTS), Electromagnetic Exploration Methods (6 ECTS), Advanced Reflection Seismology and Seismic Imaging (6 ECTS), Sedimentary Systems (3 ECTS), Geophysics Special Subjects (6 ECTS), Seismic Resolution (4 ECTS)

ETH: Reflection Seismology Processing (Practical) (6 ECTS), Groundwater II (6 ECTS), Modelling for Applied Geophysics (3 ECTS), Inverse Theory for Applied Geophysics (3 ECTS), Geophysical Field Work & Processing: Methods (2 ECTS), Geophysical Field Work & Processing: Preparation (2 ECTS), Geophysical Field Work & Processing: Fieldwork (5 ECTS), Soil Mechanics for Geophysics (4 ECTS), Case Studies in Engineering and Environmental Geophysics (4 ECTS)

RWTH: Geophysics Special Methods: NMR (3 ECTS), Geophysics Special Methods: Spectral IP (3 ECTS), Geophysical Logging and Log Interpretation (5 ECTS), Geothermics (5 ECTS), Hydrogeophysics (3 ECTS), Data Analysis in Geoscience (3 ECTS), Mineral Exploration (3 ECTS), Petroleum System Modelling (6 ECTS), Engineering Geophysics (3 ECTS)

http://www.idealeague.org/geophysics/

Technical University Clausthal, Institute for Applied Geophysics and Geothermal Energy

Name of courses / degrees: Petroleum Engineering (BSc, MSc)

Topics: Hydrogeology (3 ECTS), Introduction to Geosciences (14 ECTS), Structure of the crust (6 ECTS), Petrology and Geochemistry (6 ECTS)

http://www.ite.tu-clausthal.de/en/studies/degree-programmes/

University of Technology Darmstadt, Institute of Applied Geosciences (IAG)

Name of courses / degrees: Applied Geosciences (Geothermal Energy, Hydrogeology, Engineering Geology and Environmental Management) (MSc)


http://www.geo.tu-darmstadt.de/iag/index.de.jsp

Karlsruhe Institute of Technology, Division of Geothermal Energy of the Institute of Applied Geosciences

Name of courses / degrees: Applied Geosciences (BSc, MSc)

Topics: Physics (13 ECTS), Dynamics of the Earth I (7 ECTS), Dynamics of the Earth II (7 ECTS), Basics of Geology (6 ECTS), Basics of Geophysics (4 ECTS), Basics of Geochemistry (4 ECTS), Basics of Hydrogeology (6 ECTS), Basics of Engineering Geology (4 ECTS), Basics of Analysis of Geo Data (6 ECTS), Basics of Energy resources (3 ECTS), Geothermal Energy I (5 ECTS), Geothermal Energy II (5 ECTS), Geothermal Energy III (5 ECTS)
**University of Ludwig Maximilians Munich and University of Technology Munich**

Name of courses / degrees: Geosciences (BSc)
Topics: Applied Geophysics I (4 ECTS), Thermodynamics (3 ECTS), Tectonics (3 ECTS), Introduction to Engineering Geology (6 ECTS), Introduction to Hydrogeology (6 ECTS), Methods of Engineering Geology (4 ECTS), Environmental Geochemistry (4 ECTS), Geochemistry (6 ECTS), Global Geophysics I (6 ECTS)

Name of courses / degrees: Geophysics (MSc)

**Technical University of Munich**

Name of courses / degrees: Engineering Geology and Hydrogeology (MSc)
Topics: Geoscientific Introduction to Applied Geology (1), Rock Mechanics and Rock Engineering (5), Soil Mechanics and Introduction to Engineering (6), Flow and Transport (10), Rock Mechanical Laboratory (Practice) and Hydrogeological Fluid Laboratory (Practice) (13), Regional Geology (2), Slope Movement (4), Hydrogeological Methods (9), Soil Mechanics Laboratory Training and Hydrochemical Laboratory Training (14), Landslide Mapping (1), Technical Petrology (4), Applied Quaternary Sciences (5), Hydrogeological Case Studies (8), Statistics and Geostatistics (9), Cross-disciplinary Qualifications (3), Geological Engineering Project Work (7), Geothermal (11), Mineral Resources I (2), Numerical Methods I Basics (6), Numerical Methods II Codes (7), Hydrochemistry (10), Technical Hydrogeology (11), Advanced Groundwater Modeling (12)

**NETHERLANDS**

**Delft University of Technology, Faculty of Engineering and Geosciences**

Name of courses / degrees: MSc in Applied Geophysics in collaboration with RWTH Aachen University and ETH Zurich


http://www.idealeague.org/geophysics/docs/brochure.pdf
http://www.citg.tudelft.nl/en/research/research-portfolio/
**SWITZERLAND**

**University of Neuchâtel, Center for Hydrogeology and Geothermics (CHYN)**

Name of courses / degrees: Master in Hydrogeology and Geothermics in cooperation with the Swiss Federal Institute of Technology (EPF-L) and the University of Lausanne (MSc, PhD)

Topics:

- **Study program:** General Hydrogeology, Flow and Transport Processes, Hydrochemistry and Microbiology, Introduction to Geothermics, Statistical Analysis and Modelling, Numerical Simulations, Applied Geology
- **Hydrogeology option:** Operational Hydrogeology, Integrated Management of Water Resources, Contaminant Hydrogeology
- **Geothermics option:** Reservoir Modelling, Geothermal Exploration and Engineering, Hydrogeochemistry,

Research Projects and Field Courses: Field Camps, Excursions and Study Trip, Master Thesis

4 semesters (120 ECTS)

http://www2.unine.ch/sciences/lang/en/formations/Hydrogeologie_et_geothermie

http://www2.unine.ch/files/content/sites/sciences/files/brochures/MSc_hydro_geo_ENG.pdf

**ETH Zurich, Institute of Geophysics**

Name of courses: MSc degree in Applied Geophysics, in collaboration with RWTH Aachen University and Delft University of Technology. Different courses are taught in each institution, ETH Zurich offers courses in Reflection Seismology Processing, Groundwater, Modeling for Applied Geophysics, Inverse Theory for Applied Geophysics, Geophysical Field Work & Processing: Methods, Geophysical Field Work & Processing: Preparation, Geophysical Field Work & Processing: Fieldwork, Soil Mechanics for Geophysics, Case Studies in Engineering and Environmental Geophysics.

http://www.idealeague.org/geophysics/
3 Universities offering courses in fields related to geothermal exploration, exploitation and utilization

CROATIA

University of Zagreb, Faculty of Civil Engineering
Name of courses / degrees: Geotechnical Engineering (BSc, MSc)
Topics: Geotechnical Engineering (6 ECTS), Hydrogeology and Engineering Geology (3 ECTS), Underground Constructions (6 ECTS), Site Investigations (6 ECTS), Rock Mechanics (6 ECTS)
http://www.grad.unizg.hr/en

FRANCE

University of Strasbourg, School and Observatory of Earth Science, is holding the project LabEx GE-EAU-THERMIE PROFONDE in cooperation with Groupe Electricité de Strasbourg and Groupement Européen d'Intérêt Économique
Name of courses / degrees: Module Géothermie : Méthodes géologiques d’exploration en géothermie

University of Lorraine, École Nationale Supérieure Géologie
Name of courses / degrees: Georesources engineering (MSc)
Topics: Subterranean Reservoirs of Energy: Hydrodynamics, Geology, Modelling
http://ensg.univ-lorraine.fr/index.php?id=35#c1167

GERMANY

Technical University of Berlin, Faculty of Applied Geosciences
Name of courses / degrees: course on Geothermal Energy Systems in the MSc program “Geotechnologies”

University of Applied Sciences Bochum/International Geothermal Center Bochum (GZB)
Name of courses / degrees: Construction Engineering / Geothermal Energy Systems (MSc)
Topics: Geothermics and Geohydraulics, Groundwater Hydraulics and Exploration (9 ECTS*), Heat and Fluid Mechanics, Thermodynamics, Fluid Mechanics (7 ECTS), Shallow Drilling Engineering (4 ECTS), Deep Drilling Engineering (6 ECTS), Geothermal Plant Construction and Heat Mining (6 ECTS), Borehole Geophysics (6 ECTS), Reservoir Engineering (6 ECTS), Hydrochemistry and Geochemistry (6
University of Bonn
Name of courses / degrees: Geosciences (BSc)
Topics: Geological Processes and Lithogenesis (10 ECTS), Introduction to Geophysics (6 ECTS), Applied Geosciences (8 ECTS), Hydrogeology (7 ECTS), Quantification of Rock-Forming Processes (8 ECTS) Hydro-and Environmental Geology (6 ECTS)
http://www.steinthann.uni-bonn.de/studium-geowissenschaften/geow.-bsc.-studiengang

University of Bremen, Department of Geosciences
Name of courses / degrees: Geosciences (BSc, MSc)
Topics: BSc: Hydrogeology/Engineering geology (18 ECTS), MSc: Hydrogeology (15 ECTS), Applied Geophysics (15 ECTS)
http://www.geo.uni-bremen.de/page.php?pageid=84&langid=EN

Albert-Ludwigs University, Faculty of Geosciences
Name of courses / degrees: Geosciences (BSc)
Topics: Processes of the Earth (10 ECTS), Geochemics I (3 ECTS), Structural Geology and Tectonics (4 ECTS), Energy Resources and Geothermal Energy (3 ECTS), Pressure and Deformation of Rocks (2 ECTS), Hydrogeology (2 ECTS), Geochemistry of Natural Water I (2 ECTS), Geochemical Material Cycles (1 ECTS)
http://portal.uni-freiburg.de/geowissenschaften

Albert-Ludwigs University, Geosciences, Centre for Renewable Energy
Name of courses / degrees: Renewable Energy Management (MSc)
Topics: Introduction to Geothermal Energy and its Technologies
http://www.zee-uni-freiburg.de/index.php?id=26

Leibniz University of Hannover
Name of courses / degrees: Geosciences (BSc, MSc)
Topics: System of the Earth I (8 ECTS), Structural Geology (7 ECTS), Geophysics (3 ECTS), Geochemistry (5 ECTS), Methods of Applied Geophysics (5 ECTS), Geochemical Analysis 1+2 (10 ECTS), Plate Tectonics and Continental Deformation (6 ECTS), Hydrogeology (3 ECTS), Geographic, Informationsystems GIS (4 ECTS), Project Management (4 ECTS), Hydrogeology / Water Economics (7 ECTS), Engineering Geology (6 ECTS)
http://www.geowissenschaften.uni-hannover.de" target="_blank

University of Technology Hamburg-Harburg (TUHH)
Name of courses / degrees: Energy and Environmental Engineering (BSc, MSc)
Topics: Thermodynamics I (5 ECTS), Thermodynamics II (5 ECTS), Thermodynamics III (5 ECTS), Basics of Electrical Engineering I (4 ECTS), Basics of Electrical Engineering II (4 ECTS), Fluid Dynamics I (5 ECTS), Fundaments of Reciprocating Engines and Turbomachinery (3 ECTS), Gas-Steam Power Plant (4 ECTS), Heat and Mass Transfer I (5 ECTS), Heat and Mass Transfer II (4 ECTS), Steam Generators (4 ECTS)
Topics: Compulsory Technical Courses
Fluid Dynamics II (5 ECTS), Apparatus Engineering - Heat Exchanger- High Pressure Technique (4
ECTS), Fluid Process Engineering (5 ECTS)
Elective Technical Courses - Energy Engineering
Steam Turbines (4 ECTS), Thermal Engineering (4 ECTS), Combined Heat and Power (3 ECTS), Air Conditioning (4 ECTS), Electricity Generation from Renewable Sources (6), Alternative Energy Systems (2 ECTS)
Elective Technical Courses - Environmental Engineering:
Thermal Waste Treatment (4 ECTS), Special Areas in Energy and Environmental Engineering I (2 ECTS), Special Areas in Energy and Environmental Engineering II (3 ECTS)
http://www.tu-harburg.de/alt/tuhh/education/students/examination-regulations/bsc-eut.html

University of Friedrich-Schiller Jena, Institute for Geosciences
Name of courses / degrees: Geosciences (BSc)
Topics: Basic Course Mechanics, Heat (8), Experimental Physics I (8), Geophysical fields and methods (Part I) (3), Experimental Physics II (8), Hydrogeology (Part I) (3), Geophysical - Practices (6), Hydrogeology (Part II) (3), Tectonics (5), Geothermal and Geothermal Energy (3) Borehole Geophysics and Groundwater Exploration (6), Tectonics and Seismology (6)

University of Leipzig, Institute for Geophysics and Geology
Name of courses / degrees: Geosciences, Environmental Dynamics and Georisks (MSc)
Topics: Endogenous Georisks, Applied Environmental Geophysics
http://www.geo.uni-leipzig.de/

Johannes Gutenberg University Mainz, Institute for Geosciences and University of Applied Sciences Bingen, Institute for Geothermal Resource Management
Name of courses / degrees: Geosciences (BSc, MSc)
Topics: 4 days course, 1 field trip on deep geothermal for graduate students.
http://www.igem-energie.de/index.html

University of Potsdam
Name of courses / degrees: Geosciences (Geothermal part of studies) (BSc, MSc)
Topics: Geosciences I+II (12 ECTS), Experimental Physics (6 ECTS), Materials of the Earth I (6 ECTS), Basics of Structural Geology (6 ECTS), Numerical Methods (6 ECTS), Advanced Petrology and Geochemistry I (6 ECTS), Hydrogeology (6 ECTS)
http://www.geo.uni-potsdam.de/950.html" target="_blank

HUNGARY

University of Miskolc, Faculty of Earth Science
Name of courses / degrees: Post Graduate Diploma in Geothermal Energy Technology / Postgraduate Certificate in Geothermal Energy Technology (PGCertGeothermTech)

Topics: Renewable Energy (5), Advanced Geology (6), Advanced Geophysics (6), Fluid Dynamics (6), Hydrogeology (5), Drilling Well Design (6), Geothermal Reservoir (5), Geothermal Water Production

http://www.kfgi.uni-miskolc.hu/index_en.html

**University of Miskolc, Faculty of Earth Science**

Name of courses / degrees: MSc Petroleum and Natural Gas Institute, MSc Hydrogeological Engineering, BSc Earth Science and Engineering, PhD


http://www.mfk.uni-miskolc.hu/2_b.html

**ICELAND**

**RES The School for Renewable Energy Science**

Name of courses/degrees: M.Sc. specialization on Geothermal Energy

http://www.res.is/graduateschool/page/geothermal

**University of Iceland, Faculty of Industrial Engineering, Mechanical Engineering and Computer Science**

Name of courses/degrees: Mechanical Engineering B.Sc., M.Sc., PhD specializations on geothermal energy, geothermal reservoir physics and engineering, geothermal power plants, geothermal wells

Topics: Reservoir Engineering (7.5 ECTS), Geothermal Power Plants (7.5 ECTS), Geothermal Drilling (7.5 ECTS), Direct Geothermal Utilization (7.5 ECTS)


**UNU United Nations University Geothermal Training Program**

Name of courses / degrees: 6 months Geothermal Training Program, UNU certificate, diploma can be extended to MSc or PhD degrees in geothermal sciences in cooperation with the University of Iceland

Topics: 1) introductory lectures, 2) specialised training, 3) research project30 ECTS units

http://www.unugtp.is

**Reykjavik University REYST - Reykjavik Energy Graduate School of Sustainability System, University of Iceland and Reykjavik Energy**

Name of courses / degrees: Engineering, Earth Sciences (MSc, PhD) through the University of Iceland and Reykjavik University


Optional courses offered in cooperation with University of Iceland and Reykjavik University
Reykjavik University, School of Science and Engineering
Name of courses / degrees: Mechanical - and Energy Engineering (BSc)
Topics: Thermodynamics (6 ECTS), Fluid Mechanics and Heat Transfer (6 ECTS)
Thermodynamics II (6 ECTS), Overview of Sustainable Energy Systems (6 ECTS), Heating, Ventilation and Air Conditioning (6 ECTS), Thermo and Hydraulics Lab (6 ECTS)
http://en.ru.is/sse/

Keilir Atlantic Center of Excellence, Reykjanesbær in association with University of Iceland, Reykjavik energy and HS-Orka
Name of courses / degrees: Geothermal power plant technician
Topics: Steam conditioning supply: Wells, total wellhead equipment, steam separator, control equipment, Reinjection: The reinjection of geothermal hot water, the equipment, plumbing, total wellhead and control equipment, Steam Turbines, Geothermal Storage Tanks, Geothermal Power Plants: the fundamental organization: Machine elements, thermal- and fluid dynamics, Heat transfer: Heat Exchangers, Condition monitoring and maintenance, Geophysics, GeoReservoirs Reinjection and Inventory planning.
http://en.keilir.net/en/moya/page/geothermal-power-plant-technician_1
http://en.keilir.net/kit

ITALY

Many universities in Italy offer geothermal programs and courses, bachelor and master programs. The University of Pisa and the University of Roma3 offer specialization courses for geothermal resource exploration.

University of Pisa, Department of Geosciences
Name of courses / degrees: BSc and MSc in Geology, Course on Geothermal
Topics: basic principles and types of geothermal systems, techniques of geothermal exploration, geological aspects related to the use and exploitation of geothermal fluids

University of Pisa, Department of Earth Science, Department of Engineering, Department of Physics
http://www.unipi.it

University of Roma3
Name of courses / degrees: Course on Geothermal , Degree in Geology of the Territory and of the Resources.
Topics: Introductory concepts, classification of geothermal resources, geothermal exploration, regional geothermal, use of geothermal resources.
The following universities cover geothermal topics in courses related to Earth Sciences disciplines (geology, hydrogeology, geophysics, geochemistry and rock mechanics). Engineering Departments offer courses with reference to power production and H&C plant design.

**University of Camerino**
Name of courses / degrees: course on Energy Resources and Risk, MSc degree in Geoenvironmental Resources and Risks

**University of Milano, Department of Energy**
Name of courses / degrees: Geothermics
Topics: design, manufacturing and operational assistance of ORC power plants for renewable energy sources utilization (solar, geothermal, biomass), analysis of advanced power generation systems from geothermal energy

**University of Bologna, Department of Civil, Chemical, Environmental and Materials Engineering**
Name of courses / degrees: Geoengineering and Natural Resources focusing on Mines and Quarries, Geothermal and Excavations with courses in simulation of hydrocarbon and geothermal reservoirs.
[http://www.eng.unibo.it/PortaleEn/Academic+programmes/Teachings/dettaglio.htm?AnnoAccademico=2013&IdComponenteAF=377650&CodDocente=030601&CodMateria=34757](http://www.eng.unibo.it/PortaleEn/Academic+programmes/Teachings/dettaglio.htm?AnnoAccademico=2013&IdComponenteAF=377650&CodDocente=030601&CodMateria=34757)

**Politecnico di Torino**
[http://www.diseg.polito.it/la_ricerca/aree_tematiche/meccanica_delle_rocce_stabilita_dei_pendii_e_gallerie/geotermia](http://www.diseg.polito.it/la_ricerca/aree_tematiche/meccanica_delle_rocce_stabilita_dei_pendii_e_gallerie/geotermia)

**Seconda Università degli Studi di Napoli, Department of Industrial Engineering and Information**
[http://www.dii.unina2.it/](http://www.dii.unina2.it/)

**University of Bari, Earth and Geoenvironmental Science Department**
[http://www.geo.uniba.it](http://www.geo.uniba.it)

**University of Trieste, Department of Geoscience**
[http://www.units.it/](http://www.units.it/)

**University of Florence, Department of Earth Sciences, Department of Mechanical and Industrial Technology**
[http://www.unifi.it/](http://www.unifi.it/)

**University of Padova, Department of Geosciences**
[http://www.unipd.it/international-area/node/78](http://www.unipd.it/international-area/node/78)
University of Rome, La Sapienza, Department of Earth Sciences
http://en.uniroma1.it/study-us/degree-programmes

MACEDONIA

St. Ciril and Methodious, Faculty of Mechanical Engineering, Department on Thermal Energy
Name of courses / degrees: Energy and Ecology (Bachelor of Engineering, Master of Engineering)
Topics: Non-Conventional Energy Sources (Solar, Geothermal, Biomass and Wind) (5 ECTS)
Name of courses: Applied Thermal Engineering (Bachelor of Engineering, Master of Engineering)
Topics: Renewable Energy Sources (Solar, Geothermal, Biomass and Wind) (5 ECTS)
Name of courses: Thermal Engineering (MSc)
Topics: Non-Conventional Thermal Power Plant (Solar, Geothermal and Biomass) - one year fulltime course (6 ECTS)
Name of courses / degrees: Courses: Power Engineering and Ecology (MSc)
Topics: Non-Conventional Thermal Power Plant (Solar, Geothermal and Biomass) - one year full time course (5 ECTS)
Name of courses / degrees: Non-Conventional Energy Sources (MSc)
Topics: Non-Conventional Energy Sources (Solar, Geothermal and Biomass), Geothermal Heat Pumps (ECTS 5)
http://www mf.ukim.edu.mk

POLAND

AGH - University of Science and Technology, Faculty of Geology, Geophysics and Environment Protection, Department of Energy Resources
MSc: Geothermal Energy

Wroclaw University of Technology, Faculty of Mechanical and Power Engineering, Power Engineering
Name of courses / degrees: Power Engineering - Specialization in Renewable Sources of Energy (MSc)
Topics: Geothermal Power Engineering (1 ECTS)

**ROMANIA**

**University of Oradea, Faculty of Energy Engineering and Industrial Management**  
Name of courses / degrees: Engineering of Renewable Energy Systems (BSc), Renewable Energy (MSc)  
Topics: Specialization on Geothermal Energy  
BSc: course on geothermal energy has 4 ECTS out of the total 240 ECST for the 4 years program.  
MSc: 2 years, 120 ECTS, of which 8 are for the course on "Technologies for geothermal energy utilization".  
http://iemi.uoradea.ro/

**TURKEY**

**Middle East Technical University, Ankara**  
Name of courses / degrees: Mechanical Engineering/Petroleum and Natural Gas Engineering  
http://www.metu.edu.tr/

**DokuzEylul University, Izmir**  
Name of courses / degrees: undergraduate and MSc programs in Geophysical Engineering as well as Geological Engineering, master’s programs in Geothermal Energy, Economic Geology and Applied Geology  
http://www.deu.edu.tr/ders-katalog/eng/eng-c1.html
IV International

IGA International Geothermal Associations Academy

Name of course(s)/degree(s): 1-week or 2-week specializations courses, IGA certification

Topics: Drilling technologies for geothermal wells, District heating systems, Geothermal heat pump technologies, Power plant technologies, Reservoir Engineering & Reservoir Modeling, Hydrochemistry/Geochemistry, Numeric modeling for heat and fluid transfer, Project management and financing, Regulatory framework conditions, 3 level drilling course (Enhanced) Geothermal Response Tests, Geothermal heat pump technology, Power plant technologies, Reservoir development and reservoir monitoring

http://www.geothermal-energy.org/iga_academy.html

For further international geothermal training courses see IGA website: www.geothermal-energy.org