

RES | the School for Renewable Energy Science

## English



*The harnessing and utilisation of renewable energy sources is rapidly becoming one of mankind's greatest challenges. This pursuit has called for more experts educated with a multidisciplinary and international approach that will be able to apply local practice to a global scale and adapt international initiatives to meet local demands. RES is a globally oriented platform, dedicated to developing quality programmes for ambitious students who want to contribute in the quest for a worldwide solution for clean and sustainable energy sources. We seek young visionaries that see themselves as part of this solution.*

## Be a Part of the Driving Force

Global warming is a reality, fossils fuels are dwindling, and the future of our planet depends on the decisions we make moving forward. Welcome to RES School for Renewable Energy Science, the progressive institution where tomorrow's energy challenges are being met today.

Headquartered in Iceland – long renowned for its knowledge and experience in geothermal energy – RES is focused on creating a sustainable environment for generations to come, by creating a world-class school for those who aspire to break new ground in renewable energy.

RES offers a 12 month MSc program in Renewable Energy Science in affiliation with both the University of Iceland and the University of Akureyri. While the school is an independent institution, owned by Orkuvördur Ltd, the program relies heavily on facilities and resources provided by University of Akureyri, University of Iceland and RES's other partner institutions.



## Renewable Energy in Iceland

Iceland is unique for its knowledge and development in the field of renewable energy. This provides the main rationale for establishing a specialized educational institution in the field of renewable energy in Iceland:

- High proportion of primary energy consumption is met with renewable energy sources
- Iceland's official government policy is to continue the development of renewable energy sources and their utilization, and in particular to emphasize the development of Iceland's Hydrogen Society
- Specialized knowledge base in the fields of geothermal energy utilization, hydro electric and hydrogen as an energy carrier. Icelandic companies offer international consulting services in the field of geothermal energy utilization all over the world
- The United Nations University Geothermal Training Program (UNU-GTP) has been operating in Iceland since 1979. Groundbreaking work has been carried out by the UNU-GTP creating a strong foundation of Iceland's

international partnerships in the field of geothermal energy development.

Iceland is therefore a particularly advantageous environment to build up an institution of higher education in the field of renewable energy.



## International Masters Program

RES's primary objective is to offer a one year international masters degree in the field of renewable energy, in total 90 ECTS credits. The program is aligned with the Bologna Process.

All types of renewable energy will be covered in the program: geothermal energy (high- and low temperature; and the use of Kalina technology), hydropower, wind energy, tidal power, solar power, biomass, etc., including emphasis on fuel cells, and in particular the use of hydrogen as future energy carrier in the transportation sector.

In this program, all instruction and correspondence is in English. Teaching staff are researchers and professors from RES, the University of Akureyri, University of Iceland, energy experts from engineering and energy consulting firms in Iceland, and visiting professors from foreign research universities.

While developing the program, the directors of the program have built up an international network of partner universities which is now called RESnet. More than 30 universities in Europe and North America have signed agreements to participate in the network, which primary purpose will be to serve as a platform for cooperation in the field of renewable energy education and research.



## Program Outline

The MSc trimester program is 90 ECTS credits which the students will complete in one year. All courses will be taught as condensed modules where each module takes one to three weeks to complete (2 - 6 credits), with three to four lecture hours per day along with lab exercises and short field trips. The program's strict entry requirements request that students have a background in engineering and/or natural sciences and economics.

The first trimester (15 weeks and 30 ECTS) includes a comparative analysis of renewable and non-renewable energy sources, highlighting some of the main physical, chemical and technical aspects of each energy source; an overview of the methods of exploration, exploitation, and technical aspects of utilization of all the different forms of renewable energy sources; in addition to environmental impacts of use, social and economic considerations, and EU renewable energy policies. During the first trimester students also take part in a 12 day study tour to locations in Iceland where renewable energy is being utilized.

The second trimester (15 weeks and 30 ECTS) emphasizes on a detailed analysis and feasibility study of various renewable energy sources, and students complete 30 ECTS in their chosen specialization. Students choose one of the following seven concentrations:

- Geothermal Energy
- Fuel Cell Systems & Hydrogen
- Biofuels & Bioenergy
- Hydropower
- Solar Power
- Wind & Wave (Tidal) Energy
- Energy Systems & Policies

Special emphasis is placed on practical and technical aspects of energy production and utilization and for students to be able to

actively participate in the successful execution of renewable energy projects, from the initial exploration to the stages of implementation and utilization.

During the third trimester (15 weeks and 30 ECTS) students will complete their Master Thesis (30 ECTS) with the support of advisors from the University of Iceland, the University of Akureyri, specialists from Icelandic energy and engineering companies, or experts from our international partner universities. Each student will present his or hers findings with a formal presentation at RES.

## RES Executive School Program

The Executive School will be formally launched during the fall of 2009. It will offer managers and directors of international companies and financial institutions short practical courses in the field of renewable energy and environmental policy. Consumers are increasingly demanding information about companies environmental and energy policies. To meet this demand, firms and organizations need to educate their directors and equip them with the skills to create environmental and energy policies.

## RES Summer School Program

RES offers both short and longer summer school programmes focusing on renewable energy, sustainability, environmental policies and energy economics. The RES Summer School program gives students from around the world the opportunity to undergo intensive coursework and to gain experience through field excursions during Iceland's best season. As with the Graduate School, the Summer School focuses on renewable energy science and technologies, particularly geothermal power, hydroelectric power, hydrogen fuel and other alternative fuels, as well as environmental issues and energy economics. All courses and communication are in English.



## Affiliation

Most of the faculty at RES come from international partner universities and research institutions, as well as from Icelandic affiliates such as University of Iceland, the University of Akureyri and Iceland GeoSurvey (ISOR).

Despite RES's academic and financial independence, services and facilities at the University of Akureyri will be utilized according to a special service agreement. This includes the library, research labs and access to databases.

The education at RES is accredited by the Icelandic Ministry of Education through both the University of Iceland and University of Akureyri, which also serve as degree awarding bodies.

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