Unitar Online Catalogue

Renewable Energies for Sustainable Development

□□ : Course

□□ : Web-based

□□ : 6 □□ 2017 to 1 □□□ 2017

□□ : 8 Weeks

□□□□ : Environment, , Governance

□□ : https://www.gaiaeducation.org/index.php/en/online/resd-online/

□□ : US$496.00

□□□□□ email: elearning@gaiaeducation.org

□□ : University of Strathclyde and Gaia Education

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“Sustainable energy — energy that is accessible, cleaner and more efficient—powers opportunity. It grows economies. It lights up homes, schools and hospitals. It empowers women and local communities. And it paves a path out of poverty to greater prosperity for all.” UN Sustainable Energy for All

Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive. Development is not

possible without energy, and sustainable development is not possible without sustainable energy.

This online programme will give a comprehensive overview of renewable energy as a means to enable sustainable development at a global scale. It will present the case on how renewable energies represent at the same time an environmental necessity and an economic opportunity.

The programme supports the UN Sustainable Energy for All initiative (SE4ALL), which aims to provide universal access to modern energy services; double the global rate of improvement in energy efficiency; and the share of renewable energy in the global energy mix.

The course aims to enhance the capacity of local decision makers, energy/sustainable development officers and other personnel to make an informed decision on which renewable energy technologies will meet their own needs or the needs of their countries, communities, villages or neighbourhoods.

Through a discussion of key benefits and suitability for a range of applications, together with extensive case studies, the programme aims to provide an overview of clean, secure and sustainable technology options for the development and offer insights into the management of renewable energy projects, from small scale, through to major projects.

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This course offered in collaboration with Strathclyde University and UNITAR, aims to enhance the capacity of local decision makers, energy/sustainable development officers and other personnel to make an informed decision on which renewable energy technologies will meet their own needs or the needs of their countries, communities, villages or neighbourhoods. It provides an overview of clean, secure and sustainable technology options and offers insights into the management of renewable energy projects, from small scale, through to major projects.

By the end of the course the participant will be able to:

- Determine how renewable energy technologies can help to drive sustainable development
- Discuss the role that energy plays in advancing the Sustainable Development Goals

- Explain the benefits and drawbacks associated with a range of sustainable technologies and how they may be integrated
- Apply basic principles to determine the most appropriate renewable energy strategy in a given situation
- Compare and assess different business models and their suitability for different energy solutions
- Identify and use tools to overcome barriers achieving sustainable energy goals
- Share best practices of their communities

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Module 1 The Role of Energy in Society: A Global Perspective

The importance of energy to society and to achieving development goals. We will discuss some of the ways in which energy underpins health, food production, education and economic growth. We will then go on to explore some global issues affecting access to and use of energy, including climate change, resource scarcity and increasing demand, all of which are of critical importance to developing countries. Finally, we define what we mean by sustainable energy and describe a set of principles on which a sustainable energy future could be built.

Module 2 Selecting a Sustainable Energy Solution

Detailed introduction to what we mean by sustainable energy solutions and some of the key technologies that are relevant on the demand side and the supply side. You will be presented with a step-by-step methodology for selecting the most suitable sustainable energy solution for a given situation, encompassing resource mapping, geographical assessment, infrastructure audit and application market maturity.

Module 3 Elements of a Sustainable Energy Solution

Description of the main elements that comprise a renewable energy system including generation, conversion, storage and distribution. The technical considerations and constraints will be discussed and the implications for the use of renewables for different applications explored. The principle the benefits of interconnecting points of production with points of consumption are also discussed and the appropriateness of distributed or off-grid solutions is compared

with network-based solutions. Strategies for developing local, regional and national level networks are discussed and the advantages of doing so investigated. Technologies that can be used to enable networks in the often challenging environments found in developing countries are highlighted.

Modules 4 to 7 will follow a similar pattern to one another. Each will provide a basic overview of the principles underlying a particular technology before going on to discuss some of the specific features and considerations that might be relevant in terms of technology selection. It will discuss applications for which the technology might be suited, with reference to the four major axes of development described in Module 1, namely food production, education, health and economic growth. The modules will draw extensively on case studies from developing countries and will make clear reference to the SE4All Sectoral Action Areas.

Module 4 Solar Energy and its Applications

Technologies: solar photovoltaic (PV), concentrating solar and solar thermal.

Module 5 Bioenergy: Health and Environment

Module 6 Wind: Small and Large Technologies

Technologies: small wind, large wind

Module 7 Marine and Hydro Technologies

Technologies: Wave, tidal, small hydro and large hydro

Module 8 The Role of the Public and Private Sectors in Ensuring the Development of Low Carbon Energy Solutions

The range of policy measures that may be adopted by governments in order to encourage investment in energy and to stimulate the transition towards sustainable solutions is discussed in module 8. The potential for combining private enterprise and entrepreneurship with government action in order to achieve energy development goals is investigated and the opportunities for exploiting expertise and competitive advantage in sustainable energy to aid economic growth discussed. In addition, appropriate business models that might be employed and encouraged are discussed making reference to examples already presented in Modules 4 – 7. The role of private sector investment is discussed and the ways in which this might be supplemented by public sector measures outlined. Reference will be made to the Enabling Action Areas

identified by SE4All.

Learning activities are based on UNITAR's sound adult learning pedagogical principles. They are distributed in such a way to ensure the achievement of the learning objectives in a flexible manner: learning materials can indeed be consulted in a non-linear way so as to provide participants with a high degree of flexibility in choosing the learning pace that is the most adequate to them. Thus, participants are responsible for their own learning throughout the course. Recognised experts from the University of Strathclyde, a world leader in renewable energy, moderate the course. Each module aims to deepen the participant's skills and understanding as well as provide them with the opportunity to network and dialogue with other participants, sharing country specific experiences and good practice in sustainability issues.

Learning materials include the following elements:

- Basic reading materials (compulsory) intended to understand the basic concepts and principles of modules' subject matter;
- Advanced reading materials (optional) for participants willing to learn more about the topic;
- External links to relevant publications, reports and websites;
- Glossaries of terms and of acronyms as supportive learning tools;
- A community discussion board (forum) will allow participants to discuss topics initiated by the course moderator and to post questions, comments or new discussions.

Learning Time

The learning time is estimated to be about 5 hours per week. This includes study time (about 3 hours/week) and participation in collaborative activities (about 2 hours/week). Time dedicated to assessment activities is not taken into account in this estimation.

Course Completion & Certification

Successful completion of the course requires participants to achieve a minimum total score of 70% and entitles to a certificate of completion. A certificate of participation will be issued to participants who took all the exercises but achieved

a score inferior to 70%.

Assessment Activities

The assessment activities are organised as follows:

- 8 mandatory quizzes which aim at evaluating participants' comprehension of the course content. The 8 tests altogether account for 50% of the final grade.
- A case study where participants can apply their knowledge practically. The basis of the case study scenario takes as a basis the creation of a draft sustainable energy plan focused on participants' region/country. The case study accounts for 50% of the final grade.

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The course is open to those in the business, non-profit, public and academic sectors who wish to install renewable energy systems in both urban and rural settings or make their contribution to reducing carbon emissions through energy efficiency and use of sustainable energy sources. The course aims to provide delegates with a high level understanding of the key issues as well as sufficient technical insights to allow them to make informed decisions about technology choices.

- Sustainable Development Officers
- Energy Officers
- Strategic Managers of Planning and Environmental Services
- Community Planning Officers
- Local Authority representatives
- Policymakers and Regulators
- Development Officers
- Social and Economic Development Officers
- Entrepreneurs and private sector players who want to assess opportunities, develop strategies

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Technical Requirements

UNITAR recommends the following hardware and software to take our E-Learning courses:

Platform: Windows XP sp3, Vista sp2, Windows 7 sp1, MacOS X

Hardware: 2 GB of RAM and higher for Vista and Windows 7

Software: Microsoft Word, Microsoft Excel, Microsoft Powerpoint and Adobe Acrobat Reader (downloadable for free at adobe.com)

Browser: Internet Explorer 10, Chrome; Safari (please note that it is recommended to update your web browser before taking this course)

Internet connection: 128kbps and higher

Note: JavaScript, pop-ups & cookies must be enabled