Certificate Course on

Energy Management & Renewable Energy Systems

CENTRE FOR CONTINUING EDUCATION
CEPT University
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Background

Our current development trends focus on actions, policies and programmmes that facilitate various opportunities to achieve economic prosperity and decent quality of life. This growth pattern is putting immense pressure on current energy supplies and is raising certain apprehensions. The prime concern regarding energy is availability as well as access to affordable, adequate, appropriate and reliable source of energy, which is absolutely essential to meet our increasing energy demand. The second major concern is regarding the critical environmental threats (like rising GHG emissions and climate change) due to our energy usage pattern, energy production techniques and dependence on conventional sources. Hence Energy Security is becoming one of the most critical challenges for sustainable development i.e. not only ensuring adequate energy supply, but to see that it does not cause further adverse environmental and socio-economic impacts. Thus we can see rapid change in Energy generation and supply due several factors like global movements, political actions, large financial investments, enormous consumption of limited quantity of natural resources, GHG emissions and impacts on climate change.

Course Objectives

This e-course is designed for a person of both technical as well as non-technical backgroung, as it gives overall understanding on various aspects related to current energy supply-demand trends, dependence on various sources of energy & sustainability issues arising due to reliance on fossil fuels. The course shall provide detailed understanding of relationship between energy & sustainable development. The course aims to provide fundamental clarity regarding various renewable & alternative energy sources/ technologies options available today, its usage potential & related aspects like cost, impact on environment, etc. After attending this course, participants shall have a good understanding of sustainable energy options, its opportunities & barriers; & implementation.

Who may benefit / Target Group

The course shall be useful for Planning and Management professionals; self employed professionals; Employees working in energy and environment sectors, NGOs workers, Environmental Consultants, persons working in public and private sector development projects of; officers/engineers working in Municipalities/ Development Authorities/other Government depts; academicians, researchers, journalists & Science/ Engineering graduate/post graduate students.

Course Fees

For Professionals: INR 17000/-, For Students: INR 14000/-

Eligibility

- Graduation in any discipline with minimum 50% marks,
- Diploma in any discipline with 50% marks and a minimum one year of work experience.
- Final year student of professional under-graduate courses.

Contact Person

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Course Delivery and Structure

Total duration of course is 24 weeks. The course is divided into 12 modules (60 sessions) & will be delivered through internet.

MODULE	TITLE
Section A: Background & Introduction	
1	Energy Studies – basics
2	Worldwide trends in energy use and reserves
3	Need for Sustainable Energy Management
	Quiz / Assignment 1
Section B: Governance & Market Mechanism	
4	Institutions & Policy initiatives
5	Energy Markets: Conventional & Renewable
	Quiz / Assignment 2
Section C: Sustainable Energy Production - Overview	
6	RES - Biomass, Geothermal and OTEC
7	RES - Solar Energy (including PV, STE, CSP)
8	RES - Wind Energy; Hydroelectric
9	Alt Energy Technology - Nuclear Energy
10	Alt Energy Technology – other technologies
	Quiz / Assignment 3
Section D: Demand side management	
11	Innovative concepts
12	Energy Efficient built-form
	Final Term paper

Application for Admission

This e-course is offered twice every year (in the months of April & November). For admission, the applicants are required to fill up 'Online Application Form' and submit required documents. Please visit our website www.cept.ac.in/cce for more details and instructions related to admission. Alternatively, hard copy of duly filled up and signed application form may also be sent.

	Module Title	Session no.	Session Title
	Section A: Background and Introduction		
MODULE 1	Energy Studies - basics	S 1	Introduction to the course & delivery plan
		S 2	Overview of issues related to energy sector
		S 3	Definitions; Types of energy & Forms of energy
		S 4	Energy Resources: Conventional & Non-conventional
		S 5	Energy, Economy & Environment Linkage
MODULE 2	Worldwide trends in energy use and reserves	S 6	World energy consumption
		S 7	Energy consumption – Thematic
		S 8	Future projections and predictions
		S 9	Energy Reserves - Fossil fuels
		S 10	Availability of Alternative Energy Resources
MODULE 3	Need for Sustainable Energy Management	S 11	Energy Crisis – 1
		S 12	Energy Crisis – 2
		S 13	Internationally raised issues and concerns – 1 (Energy, Environment and Climate Change / Energy & Economy)
		S 14	Internationally raised issues and concerns – 2 (Energy and Gender, Energy and Social issues)
		S 15	Concepts - Sustainable Energy Management & Energy Security
	Section B: Governance & Market Mechanism		
MODULE 4	Institutions & Policy initiatives	S 16	Energy Agencies/Institutions
		S 17	Renewable Energy policies of various countries
		S 18	Renewable Energy policies of various countries
		S 19	Renewable Energy policies of various countries
		S 20	Institutional & policy level issues
MODULE 5	Energy Market	S 21	Linkage between Energy Economics
		S 22	World energy Market – Overview
		S 23	Growth potential and future scope - conventional / renewable sources
		S 24	India - Conventional Energy Market
		S 25	India - Renewable Energy Potential
	Section C: Sustainable Energy Production – Overview		
MODULE 6	RES - Biomass, Geothermal and OTEC	S 26	Renewable Energy Sources
		S 27	Biopower - Basics/Energy potential; Technologies & Adv/Disadv.
		S 28	Geothermal - Basics/Energy potential; Technologies & Adv/Disadv.
		S 29	OTEC - Basics/Energy potential; Technologies & Adv/Disadv.
		S 30	Case studies

	Module Title	Session no.	Session Title
MODULE 7	RES - Solar Energy (including PV, Solar Thermal, CSP)	S 31	Solar Energy - Basics / Energy potential
		S 32	Solar Photovoltaics (PVs) Systems
		S 33	Solar Thermal Energy (STE)
		S 34	Concentrated Solar power
		S 35	Case studies
MODULE 8	RES - Wind Energy; Hydroelectric (small and large)	S 36	Wind energy - Basics / Energy potential
		S 37	Power generation: Wind Energy projects (Technology / Methods, Economic & Environmental analysis); Adv./ Disadv.
		S 38	Hydro power - Basics / Energy potential
		S 39	Power generation: Hydro power projects (Technology / Methods, Economic & Environmental analysis); Adv./ Disadv.
		S 40	Case studies
MODULE 9	Alt Energy Technology - Nuclear Energy	S 41	Nuclear energy - Basics / Energy potential
		S 42	Nuclear energy – development
		S 43	Power generation: Nuclear Energy projects (Technology / Methods, Economic & Environmental analysis)
		S 44	Issues, Advantages and Disadvantages
		S 45	Case studies
MODULE 10	Alt Energy Technology - Other Technologies	S 46	Co & Tri generation; Fuel switch; fossil fuel innovation
		S 47	Hydrogen energy & fuel cell
		S 48	Comparative assessment of all sources of energy
		S 49	Framework for Evaluation Renewable Energy Technologies
		S 50	Greenhouse Accounting and Life Cycle Assessment
	Section D: Demand Side Management		
MODULE 11	Innovative Concepts	S 51	Distributed Generation, Smart Grids
		S 52	Solar cities, Energy parks
		S 53	Low Carbon development
		S 54	Master plans, Development Plans & townships
		S 55	Case studies
MODULE 12	Energy Efficient built-form	S 56	Need for energy efficient built form
		S 57	Overview: Building energy consumption/use, Energy auditing
		S 58	Green Building - Concepts & Rating Systems
		S 59	Codes & practices
		S 60	Passive building design & energy efficient fitting/fixtures