SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Electrical and Electronics Engineering	LP: OE18606
B.E/B.Tech: Automobile, Civil, Chemical, Computer Science, Electronics and Communication, and Mechanical Engineering & Information Technology Regulation: 2018	**Rev. No: 00**
PG Specialisation : Not Applicable	**Date: 02/03/2022**
Sub. Code / Sub. Name : OE18606 - RENEWABLE ENERGY SYSTEMS	
Unit : I	

Unit Syllabus: RENEWABLE ENERGY (RE) SOURCES

Environmental consequences of fossil fuel use-Importance of renewable sources of energy-Sustainable Design and development-Types of RE sources-Limitations of RE sources-Present Indian and international energy scenario of conventional and RE sources.

Objective: Awareness about renewable Energy Sources and technologies.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Environmental consequences of fossil fuel use	T2	PPT
2	Importance of renewable sources of energy	T2	PPT
3	Sustainable Design and development	T2	PPT
4	Types of RE sources	T2	PPT
5	Limitations of RE sources	T2	PPT
6	Present Indian and international energy scenario of conventional sources.	T2	PPT
7	Present Indian and international energy scenario of RE sources.	T2	PPT
8	**Applications and future of REs**	T2	PPT

Content beyond syllabus covered (if any): Applications and future of REs

* Session duration: 50 mins

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COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: OE18606 - RENEWABLE ENERGY SYSTEMS

Unit : II

Unit Syllabus: WIND ENERGY

Power in the Wind – Types of Wind Power Plants (WPPs)–Components of WPPs-Working of WPPs- Siting of WPPs-Grid integration issues of WPPs.

Objective: Adequate inputs on a variety of issues in harnessing renewable Energy.

Session No *	Topics to be covered	Ref	Teaching Aids
9	Introduction to How wind energy covert to useful energy.	T1	PPT
10	Major parts of wind power plants	T1	PPT/BB
11	Coefficient of power of a wind turbine	T1	PPT/BB
12	Types of Wind Power Plants (WPPs)	T1	PPT/BB
13	Components of WPPs	T1	PPT/BB
14	Working of WPPs	T1	PPT/BB
15	Siting of WPPs	T1	PPT/BB
16	Grid integration issues of WPPs	T1	PPT/BB
17	**Design of 1KW wind power plant.**	T1	PPT

Content beyond syllabus covered (if any): Design of 1KW wind power plant.

* Session duration: 50 mins

Sub. Code / Sub. Name: OE18606 - RENEWABLE ENERGY SYSTEMS

Unit : III

Unit Syllabus: SOLAR PV AND THERMAL SYSTEMS

Solar Radiation-Solar Thermal Power Plant- Thermal Energy storage system with PCM Solar Photovoltaic systems - Basic Principle of SPV conversion – Types of PV Systems- Types of Solar Cells- PV Module I-V Characteristics-maximum power point tracking- Applications.

Objective: Adequate inputs on a variety of issues in harnessing renewable Energy.

Session No *	Topics to be covered	Ref	Teaching Aids
18	Solar Radiation	R3	PPT
19	Solar Thermal Power Plant	R3	PPT
20	Thermal Energy storage system with PCM Solar	R3	PPT
21	Photovoltaic systems	R3	PPT
22	Basic Principle of SPV conversion	R3	PPT
23	Types of PV Systems	R3	PPT/BB
24	Types of Solar Cells	R3	PPT/BB
25	PV Module I-V Characteristics	R3	PPT/BB
26	maximum power point tracking- Applications	R3	PPT/BB
27	**Design of 1kW Solar PV system**	R3	PPT
Content beyond syllabus covered (if any): Design of 1kW Solar PV system			

* Session duration: 50 minutes

Sub. Code / Sub. Name: OE18606 - RENEWABLE ENERGY SYSTEMS
Unit : IV

Unit Syllabus: BIOMASS AND GEOTHERMAL ENERGY

Introduction- Bio mass resources – Energy from Bio mass-conversion processes- Biomass Cogeneration-Environmental Benefits-Geothermal Energy-Basics- Geothermal Electricity-Mini/micro hydro power- Classification of hydropower schemes.

Objective: Recognize current and possible future role of renewable energy sources.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Introduction to Biomass and Geothermal	T3 and R4,R5	PPT
29	Bio mass resources	T3 and R4,R5	PPT
30	Energy from Bio mass-conversion processes	T3 and R4,R5	PPT
31	Biomass Cogeneration	T3 and R4,R5	PPT
32	Environmental Benefits of Biomass	T3 and R4,R5	PPT
33	Geothermal Energy-Basics	T3 and R4,R5	PPT
34	Geothermal Electricity	T3 and R4,R5	PPT
35	Mini/micro hydro power	T3 and R4,R5	PPT
36	Classification of hydropower schemes.	T3 and R4,R5	PPT
37	**Site selection and Design of Biomass plant**	T3 and R4,R5	PPT

Content beyond syllabus covered (if any): Site selection and Design of Biomass plant

* Session duration: 50 mins

Sub. Code / Sub. Name: OE18606 - RENEWABLE ENERGY SYSTEMS

Unit : V

Unit Syllabus : OTHER ENERGY SOURCES

Tidal Energy- Energy from the tides- Barrage and Non Barrage Tidal power systems- Wave Energy- Energy from waves, wave power devices- Ocean Thermal Energy Conversion (OTEC)- Hydrogen Production and Storage- Fuel cell- Principle of working- various types - construction and applications- Energy Storage System- Hybrid Energy Systems.

Objective: Recognize current and possible future role of renewable energy sources.

Session No *	Topics to be covered	Ref	Teaching Aids
38	Tidal Energy	T3,R6	PPT
39	Energy from the tides	T3,R6	PPT
40	Barrage and Non Barrage Tidal power systems	T3,R6	PPT
41	Wave Energy	T3,R6	PPT
42	Energy from waves, wave power devices	T3,R6	PPT
43	Ocean Thermal Energy Conversion (OTEC)	T3,R4	PPT
44	Hydrogen Production and Storage	T3,R4	PPT
45	Fuel cell- Principle of working	T3,R4	PPT
46	Fuel cell- various types	T3,R4	PPT
47	construction and applications of Fuel cell	T3,R4	PPT
48	Energy Storage System	T3,R4	PPT
49	Hybrid Energy Systems.	T3,R4	PPT
50	**Design of compact fuel cell.**	T3,R4	PPT

Content beyond syllabus covered (if any): Design of compact fuel cell.

* Session duration: 50 mins

TEXT BOOKS:

1. Joshua Earnest, Tore Wizeliu, 'Wind Power Plants and Project Development', PHI Learning Pvt.Ltd, New Delhi, 2011.
2. D.P.Kothari, K.C Singal, Rakesh Ranjan "Renewable Energy Sources and Emerging Technologies", PHI Learning Pvt.Ltd, New Delhi, 2013.
3. Scott Grinnell, "Renewable Energy & Sustainable Design", CENGAGE Learning,USA, 2016.

REFERENCES:

1. A.K.Mukerjee and Nivedita Thakur," Photovoltaic Systems: Analysis and Design", PHI Learning Private Limited, New Delhi, 2011
2. Richard A. Dunlap," Sustainable Energy" Cengage Learning India Private Limited, Delhi, 2015.
3. Chetan Singh Solanki, " Solar Photovoltaics : Fundamentals, Technologies and Applications", PHI Learning Private Limited, New Delhi, 2011
4. Bradley A. Striebig,Adebayo A.Ogundipe and Maria Papadakis," Engineering Applications in Sustainable Design and Development", Cengage Learning India Private Limited, Delhi, 2016.
5. Godfrey Boyle, "Renewable energy", Open University, Oxford University Press in association with the Open University, 2004.
6. Shobh Nath Singh, 'Non-conventional Energy resources' Pearson Education, 2015.

	Prepared by	Approved by
Signature	2/3/2022 2/3/22	KR.Santha 2.3.22
Name	T Annamalai / C Venkatesan	Dr KR Santha
Designation	Assistant Professor	Vice Principal, Professor & HOD EEE
Date	02.03.2022	02.03.2022
Remarks *:		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD