Renewable Energy and Green Technology

Course Code : AENGG-311
Credit Hours : 2(1+1)

Theory Part:

Classification of energy sources, Contribution of these sources in agricultural sector, Familiarization with biomass utilization for bio-fuel production and their application, Familiarization with different types of biogas plants and gasifiers, bio-alcohol, biodiesel. Familiarization with briquetting techniques, Introduction of solar energy, Solar collectors and their application, Familiarization with solar energy gadgets: solar cooker, solar water heater. Application of solar energy: solar drying, solar distillation, solar photovoltaic system and their application, introduction of wind energy and its application.

Lecture schedule: Theory

S. No.	Topic	No. of lectures
1.	Classification of energy sources, contribution of these sources in agricultural sector.	1
2.	Familiarization with biomass utilization for bio fuel production and their application.	2
3.	Familiarization with different types of biogas plants.	2
4.	Biogas production techniques and various uses of biogas.	2
5.	Biomass gasification and familiarization with different gasifiers.	2
6	Concept of briquetting and familiarization with briquetting machines.	1
7	Introduction of solar energy, solar collectors and their application.	2
8	Solar thermal applications in different gadgets.	2
9	Solar photovoltaic techniques and applications.	1
10	Introduction of wind energy and its application.	1

Practical Part:

Familiarization with renewable energy gadgets. To study biogas plants. To study gasifier. To study briquetting machine. Familiarization with different solar energy gadgets. To study solar photovoltaic system: solar light, solar pumping, solar fencing. To study solar cooker. To study solar dryers. To study solar distillation system.

Lecture schedule: Practical

S.N.	Topic	No. of lectures
1	Study of fixed dom and floating drum type biogas plants	2
2	Study of cross draft, updraft and down draft gasifiers	2
3	To study briquetting machine	1
4	Study of box type solar cooker	1
5	Study of solar water heating system	1
6	Study of solar distillation system	1
7	Study of solar dryer	2
8	Study of solar animal concentrate cooker	1
9	Study of solar photovoltaic water pumping system and visit to nearby solar photovoltaic water pumping system	2
10	Study of solar photovoltaic sprayer	1
11	Study of wind mill	1
12	Study of improved cook stove	1

References:

1. G.D. Rai. Non-Conventional Energy Sources, Kh Publishers, New Delhi.
2. N. S. Rathore. A.K. Kurchania, N.L. Panwar. (2007). Non Conventional Energy Sources, Himanshu Publications.
3. N.S. Rathore. A. K. Kurchania, N.L. Panwar. (2007). Renewable Energy, Theory and Practice, Himanshu Publications.
4. K.C. Khandelwal. & S.S. Mandi. (1990). Biogas Technology.

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