

Course code	Course Title	C	H	I	E	T
17U4PAC4/ 17U5PAC3	Renewable energy sources	1	2	25	75	100

Unit 1: Solar thermal systems

Solar radiation and its measurements – Solar constant – Applications of solar energy – Solar collectors – Solar water heating systems (natural circulation, pressurized).

Unit 2: Applications of solar energy

Solar pumping – Solar distillation – Solar cooking – Box type solar cooker.

Unit 3: Solar photovoltaic systems

Solar electric power generation – Solar photo – Voltaics and solar cell principles – Applications of solar photovoltaic systems.

Unit 4: Energy from wind and biomass

Wind energy – Principles and applications – Energy from biomass – Bio gas generation – Bio gas plants – KVIC digesters.

Unit 5: Geothermal energy and tides

Geothermal sources – Vapour dominated systems – Energy from oceans – Ocean thermal energy conversion (OTEC) – Open cycle OTEC systems – Energy from tides – Simple single basin tidal system.

Text Books:

1. G.D.Rai, Non-conventional energy sources, IV Edn., 1997.

Unit 1: Chapter 2, Sections 2.1, 2.2, 2.5; Chapter 5, Sections 5.1, 5.2.

Unit 2: Chapter 5, Sections 5.5, 5.8, 5.9, 5.11;

Unit 3: Chapter 5, Section 5.6

Unit 4: Chapter 6, Sections 6.1, 6.2; Chapter 7, Sections 7.1–7.4, 7.9

Unit 5: Chapter 8, Sections 8.1–8.4; Chapter 9, Sections 9.1, 9.2.1–9.2.3, 9.3.1, 9.3.2, 9.3.5

References:

1. S.P.Sukhatme, Solar energy, II Edn., 1998, McGraw Hill Education (India) Private Limited, New Delhi.