

Semester Lecture Plan

Name of the college: Government College of Arts, Science & Commerce, Sanquelim Goa

Name of Faculty: Mr. Stephen Fernandes

Subject: VAC: Green Energy Systems

Paper code: VAC112

Program/Course: FYBA

Division: A

Academic year: 2025- 2026

Semester: II

Total Lectures: 15

Course Objectives: 1. To demonstrate the importance of solar energy collection and storage. 2. To understand the principles of wind energy and biomass energy. 3. To gain knowledge on geothermal and ocean energy. 4. To gain knowledge on geothermal and ocean energy. 5. To understand the concepts of green manufacturing systems.

Expected Outcomes:

Students will be able to

1. Explain the importance of solar energy collection and storage
2. Apply the principles of wind energy and biomass energy.
3. Analyze knowledge on geothermal and ocean energy.
4. Learn about energy efficient systems.
5. Discuss the concepts of green manufacturing systems

Month	Lectures From: To:		No. of lectures allotted	Topic, Subtopic to be covered	Exercises/ Assignment	ICT Tools	Reference books
December	01/12/2024	06/12/2024	01	SOLAR RADIATION: Role and potential of new and renewable sources, the solar energy option	Explain the advantages of Renewable Energy	Power point presentation, White Board	Khan B.H, Non- Conventional Energy Resources

December	08/12/2024	13/12/2024	01	Environmental impact of solar power	Describe the impacts of solar power on environment	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
December	22/12/2025	23/12/2025	01	Structure of the sun, the solar constant.	Draw the structure of the sun and	Power point presentation, White Board Youtube Videos	Khan B.H ,Non- Conventional Energy Resources
January	05/01/2026	10/01/2026	01	sun-earth relationships, coordinate systems and coordinates of the sun	Diagrammatically represent co-ordinates of the earth	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
January	12/01/2025	17/01/2025	01	Extra-terrestrial and terrestrial solar radiation, solar radiation on titled surface, instruments for measuring solar radiation and sun shine, solar radiation data, numerical problems.	Find out the radiations reaching the planet earth	Power point presentation, White Board	Khan B.H, Non- Conventional Energy Resources
January	19/01/2026	23/01/2026	01	Photo voltaic energy conversion – types of PV cells.	List out top 5 solar plants in India	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
February	02/02/2026	07/02/2026	01	SOLAR ENERGY COLLECTION: Flat plate and concentrating collectors, classification of concentrating collectors, orientation	How does flat plate collectors work?	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources

February	09/02/2026	14/02/2026	01	SOLAR ENERGY STORAGE AND APPLICATIONS: Different methods	What are the limitations of solar energy?	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
February	16/02/2026	21/02/2026	01	latent heat and stratified storage, solar ponds, solar applications- solar heating/cooling technique, solar distillation and drying	Applications of solar Energy	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
February	23/02/2026	28/02/2026	01	solar cookers, central power tower concept and solar chimney.	Applications of solar Energy	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
	02/03/2026	07/03/2026	01	WIND ENERGY: Sources and potentials	Explore the potential sites for Wind energy in Goa	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
March	09/03/2026	14/03/2026	01	horizontal and vertical axis windmills, performance characteristics,	Discuss the impacts of wind mills on environment	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
March	16/03/2026	21/03/2026	01	betz criteria, types of winds, wind data measurement	Types of Winds on the planet earth	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
March	23/03/2026	28/03/2026	01	BIO-MASS: Principles of bio-conversion, anaerobic/aerobic digestion	List out the sources of biofuels available in India	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources
April	30/03/2026	04/04/2026	01	types of bio-gas digesters, gas yield, utilization for cooking	Explain the working of Biogas plant	Power point presentation, White Board	Khan B.H ,Non- Conventional Energy Resources

April	06/04/2026	10/04/2025	01	Revision			
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