

KRISHNASAMY

College of
ENGINEERING & TECHNOLOGY

Approved by AICTE & Affiliated to Anna University
Anand Nagar, Nellikuppam Main Road, S. Kumarapuram, Cuddalore - 607 109, Tamil Nadu.
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DEPARTMENT OF MECHANICAL ENGINEERING

Date: 11.01.2022,

CIRCULAR

Ref.: KCET/MECH/VAC/CIRCULAR/2021-22/02.

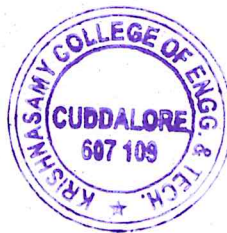
The following Value-Added Course will be conducted during the academic year 2021-2022. The course will be conducted from 18.01.2022 to 22.01.2022. Students are instructed to register their names in the course allotted to them.

Note: Students are instructed to attend the program without fail.

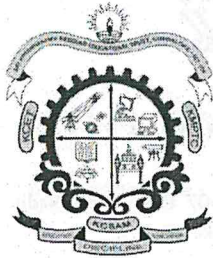
S. No.	Course Code	Name of the Course	Year / Sem	No. of Period	Course Coordinator
1	ME - VAC2101	Fundamentals of Solar Energy Sources	IV	30	Er.G.Senthilvel, Asst.Prof
2	ME - VAC2102	Fundamentals of Refrigeration	II / III	30	Er.P.Prakash, Asst.Prof

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HOD/MECH

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11/11/2022
Vice-Principal



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11/1/22
Principal



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SYLLABUS

COURSE CODE **ME-VAC2101**

COURSE NAME **FUNDAMENTALS OF SOLAR ENERGY SOURCES**

COURSE OBJECTIVES

- To acquire knowledge on solar radiation principles with respect to solar energy estimation.
- To familiarized with various collecting techniques of solar energy and its storage
- To learn the solar photovoltaic technology principles and different types of solar cells for energy conversion and different photovoltaic applications.
- To Understand the working principles of several solar appliances like Solar cookers, Solar hot water systems, Solar dryers, Solar Distillation, Solar greenhouses

Module I : Introduction to Solar Radiation

4

Sun as a source of energy, Solar radiation, Solar radiation at the Earth's surface,

Module II : Measurement of Solar radiation

4

Pyroheliometer, Pyranometer, Sunshine recorder, Prediction of available solar radiation, Solar energy-Importance, Storage of solar energy.

Module III : Solar Thermal Systems

8

Principle of conversion of solar radiation into heat, Collectors used for solar thermal conversion: Flat plate collectors and Concentrating collectors, Solar Thermal Power Plant, Solar cookers, Solar hot water systems, Solar dryers, Solar Distillation.

Module IV : Solar Photovoltaic Systems

8

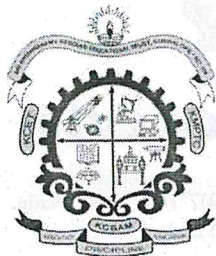
Conversion of Solar energy into Electricity - Photovoltaic Effect, Solar photovoltaic cell and its working principle, Different types of Solar cells, Series and parallel connections.

Module V : Photovoltaic applications

6

Battery chargers, domestic lighting, street lighting and water pumping , advancement in using resources

Total No. of Periods 30



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COURSE OUTCOMES

Solar energy is to be a major primary energy source; utilization requires solar capture and conversion. In this course we will discuss about various photovoltaics technologies, different generation of solar cells, device fabrication and characterization techniques and applications in industries.

REFERENCES

1. Duffie, J.A., and Beckman, W.A. Solar Energy Thermal Process, John Wiley and Sons, New York, Jui Sheng Hsieh, Solar Energy Engineering, Prentice-Hall, 2007.
2. Rai, G.D., Solar Energy Utilization, Khanna Publishers, N. Delhi, 2010.
3. Bob Ramlow & Benjamin Nusz, Solar Water Heating, New Society Publishing, 2006.
4. Charles Christopher Newton - Concentrated Solar Thermal Energy- Published by VDMVerlag, 2008.



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