Government College of Engineering, Salem - 11

Department of Mechanical Engineering

M.E. - Thermal Engineering

COs - POs and PSO Mapping

Course Articulation Matrix – 22 Regulation

Semester - I																
22THC11- Advanced Thermodynamics																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
CO1	Explain availability, second law efficiency and derive thermodynamic relations	3	2	-	1	-	2	-	-	-	-	-	-	3	1	3
CO2	Describe fugacity, real gas behaviour and Gibbs phase rule for non-reactive components.	3	3	-	1	2	2	-	-	-	-	-	-	3	1	3
CO3	Explain thermochemistry and characteristics of reacting system.	3	3	-	1	-	2	-	-	-	-	-	-	3	1	3
CO4	Demonstrate micro and macroscopic analysis of thermodynamics	3	3	-	1	-	2	-	-	-	-	-	-	3	1	3
CO5	Describe the concepts of irreversible thermodynamics	3	3	-	1	-	2	-	-	-	-	-	-	3	1	3
Average		3.0	2.8	-	1.0	2.0	2.0	-	-	-	-	-	-	3.0	1.0	3.0

Semester - I																
22THC12- Advanced Fluid Dynamics																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
CO1	Demonstrate different types of fluid flow and derive mathematical formulations for their characteristic	-	2	-	2	-	2	-	-	-	-	-	-	3	1	3
CO2	Derive the continuity and momentum equations using differential and integral approach	3	2	-	2	-	2	-	-	-	-	-	-	3	1	3
CO3	Derive the equations for transport theorem, stream function and velocity potential function.	3	2	-	2	-	2	-	-	-	-	-	-	3	1	3
CO4	Analyze the boundary layer concepts in fluid flow.	3	2	-	2	-	2	-	-	-	-	-	-	3	1	3
CO5	Derive the governing equation for turbulent flow	3	2	-	2	-	2	-	-	-	-	-	-	3	1	3
Average		3.0	2.0	-	2.0	-	2.0	-	-	-	-	-	-	3.0	1.0	3.0

Semester - I																
22THC13- Advanced Heat Transfer																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
CO1	Demonstrate three-dimensional conduction heat transfer mechanism and radiation concepts for various conditions.	3	3	2	2	-	1	-	-	-	-	-	-	3	3	-
CO2	Explain the turbulent forced convective heat transfer concepts and analyse the heat and momentum transfer.	3	3	2	2	-	1	-	-	-	-	-	-	3	3	-
CO3	Explain condensation concepts and analysis of heat exchangers	3	3	2	2	-	1	-	-	-	-	-	-	3	3	-
CO4	Utilize the concepts numerical methods for the heat transfer applications	3	3	2	2	-	1	-	-	-	-	-	-	3	3	-
CO5	Knowledge in combined heat and mass transfer mechanisms in engine applications.	3	3	2	2	3	1	-	-	-	-	-	-	2	2	2
Average		3.0	3.0	2.0	2.0	3.0	1.0	-	-	-	-	-	-	2.8	2.8	2.0

Semester - I																
22MLC-1- Research Methodology And IPR																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
CO1	Understand research problem formulation	3	3	2	2	-	1	-	-	-	-	-	-	3	3	-
CO2	Analysis research related information	3	3	2	2	-	1	-	-	-	-	-	-	3	3	-
CO3	Follow research ethics	3	3	2	2	-	1	-	-	-	-	-	-	3	3	-
CO4	Understand that today's world is controlled by computer, Information technology, but tomorrow's world is ruled by ideas, concepts and creativity.	3	3	2	2	-	1	-	-	-	-	-	-	3	3	-
CO5	Understand that IPR production provides an incentive to inventors for further research work and investment in R& D, which leads to creation of new and better products, and in turn brings about economic growth and social benefits	3	3	2	2	3	1	-	-	-	-	-	-	2	2	2
Average		3.0	3.0	2.0	2.0	3.0	1.0	-	-	-	-	-	-	2.8	2.8	2.0

Semester - I																
22THC14- Thermal Engineering Laboratory																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
CO1	Demonstrate the potential use of various alternate fuels available for IC engines and emission measurement of variable compression ratio SI engine	2	-	-	3	3	-	-	2	-	-	-	-	3	1	1
CO2	Test the performance characteristics of a cooling tower, water heater and refrigeration system.	2	-	-	3	3	-	-	2	-	-	-	-	3	1	1
CO3	Demonstrate the properties and measurement of various renewable energy sources	2	-	-	3	3	-	-	2	-	-	-	-	3	1	1
CO4	Conduct performance study of boiler and heat exchanger	2	-	-	3	3	-	-	2	-	-	-	-	3	1	1
CO5	Demonstrate performance and characteristics of fan, and fuel cell	2	-	-	3	3	-	-	2	-	-	-	-	3	1	1
Average		2.0	-	-	3.0	3.0	-	-	2.0	-	-	-	-	3.0	1.0	1.0

Semester - I																
22THC15- Technical Seminar – I																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Identify and choose appropriate topic of relevance.	-	-	-	3	3	-	-	2	3	-	-	-	-	-	-
2	Assimilate literature on technical articles of specified topic and develop comprehension.	-	-	-	3	3	-	-	2	3	-	-	-	-	-	-
3	Prepare technical report.	-	-	-	3	3	-	-	2	3	-	-	-	-	-	-
4	Design, develop and deliver presentation on specified technical topic	-	-	3	3	3	-	-	2	3	-	-	-	-	-	-
5	Communicate in a structured way	-	-	-	3	3	-	-	2	3	-	-	-	-	-	-
Average		-	-	3.0	3.0	3.0	-	-	2.0	3.0	-	-	-	-	-	-

Semester - II																
22THC21- Hydrogen And Fuel Cell Technologies																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Describe and analyze the techniques of Hydrogen generation.	3	-	-	-	3	2	-	-	-	-	1	-	1	1	-
2	Describe and classify various options for Hydrogen storage.	3	2	2	2	2	-	-	-	-	-	-	-	1	1	-
3	Explain the principal operations of fuel cell, its thermodynamics and kinetics.	3	-	-	3	2	2	-	-	-	-	2	-	1	1	-
4	Comprehend the different types of fuel cells compare their merits and demerits.	3	-	-	2	1	1	-	-	-	-	-	-	1	1	-
5	Identify the potential application of a fuel cells for domestic, automotive, space craft power generations and evaluate the techno-economics of a fuel cells.	2	2	-	2	-	2	-	-	-	-	-	-	1	1	-
Average		2.8	2.0	2.0	2.2	2.0	1.7	-	-	-		1.5	-	1.0	1.0	-

Semester - II																
22THC22- Computational Fluid Dynamics for Thermal Systems																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Explain and apply governing equations, boundary conditions various discretization techniques.	2	3	3	3	-	2	-	-	-	-	1	-	2	3	-
2	Solve solving diffusion heat transfer problems using finite volume based numerical method.	2	2	3	3	-	2	-	-	-	-	-	-	2	3	-
3	Solve convection-diffusion heat transfer problems using finite volume based numerical method.	2	3	3	3	-	3	-	-	-	-	-	-	2	2	3
4	Write computer code for incompressible flow problems.	2	3	3	3	-	3	-	-	-	-	-	-	2	2	3
5	Explain and formulate various turbulence modeling.	3	2	2	3	-	-	-	-	-	-	-	-	2	3	-
Average		2.2	2.6	2.8	3.0	-	2.0	-	-	-	-	1.0	-	2.0	2.6	3.0

Semester - II																
22THC23- Instrumentation For Thermal Systems																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Describe characteristics of measurement system and do errors encountered during measurements.	1	2	-	3	-	2	-	-	-	-	-	-	-	-	-
2	Handle modern data acquisition system and interfacing of sensors with them.	1	2	2	3	3	-	-	-	-	-	-	-	-	-	3
3	Describe the measurement technique for the measurement of physical properties.	1	2	2	2	3	-	-	-	-	-	-	-	-	1	3
4	Explain the advanced measurement technique for the measurement of physical properties.	1	2	-	1	3	-	-	-	-	-	-	-	-	1	3
5	Describe the measurement analysis for the measurement of smoke, physical and magnetic properties.	1	2	-	1	3	-	-	-	-	-	-	-	-	2	3
Average		1.0	2.0	2.0	3.0	2.4	2.0	-	-	-	-	-	-	-	1.3	3.0

Semester - II																
22THC24- Analysis And Simulation Laboratory																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Understand the concepts of electrostatics, electrical potential, and their applications.	2	3	1	1	-	1	-	-	-	-	-	1	1	-	-
2	Interpret the concepts of dielectrics, capacitance and apply Poisson's or Laplace's equations to various electrostatic problems	3	2	2	3	-	1	-	-	-	-	-	2	2	1	1
3	Apply the concepts of magneto statics, magnetic fields in matter and their application.	2	2	1	1	-	-	-	-	-	-	-	1	1	-	-
4	Apply the concepts of Faraday's laws, Ampere's Law, Maxwell's Equation.	3	3	2	2	-	1	-	-	-	-	-	2	2	1	1
5	The concepts of electromagnetic waves and Poynting vector.	3	2	2	2	-	-	-	-	-	-	-	2	1	-	2
Average		2.6	2.4	1.6	1.8	-	1.0	-	-	-	-	-	1.6	1.4	1.0	1.3

Semester - II																
22THC25- Applied Thermal Engineering Laboratory																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Calibrate temperature and pressure transducers.	3	3	1	3	3	-	-	-	-	2	-	-	2	3	2
2	Find thermal flow properties of liquid fuel.	3	3	1	3	3	-	-	-	-	2	-	-	2	3	2
3	Practically understand the pool boiling concept.	3	3	1	3	3	-	-	-	-	2	-	-	2	3	2
4	Conduct performance test on vapour absorption system and engine using biodiesel.	3	3	1	3	3	-	-	-	-	2	-	-	2	3	2
5	Conduct performance test on engine using biodiesel	3	3	1	3	3	-	-	-	-	2	-	-	2	3	2
Average		3.0	3.0	1.0	3.0	3.0	-	-	-	-	2.0	-	-	2.0	3.0	2.0

Semester - II																
22THC26- Technical Seminar –II																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Develop the capacity to observe intelligently and propose and defend opinions and ideas with tact and conviction	-	1	2	2	2	1	-	-	3	-	-	-	1	1	1
2	Develop skills regarding professional communication and technical report writing.	-	1	2	2	2	1	-	-	3	-	-	-	1	1	1
3	Learn the methodology of publishing technical papers.	-	1	2	2	2	1	-	-	3	-	-	-	1	1	1
4	Identification of good journal through various analyses for publication.	-	1	2	2	2	1	-	-	3	-	-	-	1	1	1
5	Creation of scholar ID through various international forums for research identity	-	1	2	2	2	1	-	-	3	-	-	-	1	1	1
Average		-	1.0	2.0	2.0	2.0	1.0	-	-	3.0	-	-	-	1.0	1.0	1.0

Semester - III																
22THE51- Design Of Solar and Wind Systems																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Describe solar fundamentals, collectors and classify them.	3	2	2	-	2	1	-	-	-	-	-	-	3	1	-
2	Describe the principle and design the solar heating, cooling and other solar applications.	3	1	3	-	2	-	-	-	-	-	-	-	3	2	-
3	Explain the principle, working, design optimization of PV system for different applications.	3	-	2	2	2	-	-	-	-	-	-	-	3	2	2
4	Describe the basics and measurements of wind energy.	3	-	3	-	2	-	-	-	-	-	-	-	3	2	-
5	Explain the aerodynamic constructional details of wind turbine.	3	-	3	2	2	2	-	-	-	-	2	-	3	2	-
Average		3.0	2.0	2.6	0.8	2.0	1.5	-	-	-	-	2.0	-	3.0	1.8	2.0

Semester - III																
22THE52- Design And Analysis of Turbo Machines																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Analyze the energy transfer process in thermodynamic systems.	3	2	2	-	-	2	-	-	-	-	-	-	2	2	-
2	Calculate the performance of centrifugal flow and axial flow combustion systems.	3	-	3	2	-	2	-	-	-	-	-	-	2	2	-
3	Design and analyze the combustion chamber for turbomachines.	3	2	3	2	-	2	-	-	-	-	-	-	2	2	-
4	Compute and analyze the performance of axial and radial flow turbines.	3	2	3	2	-	2	-	-	-	-	-	-	2	2	-
5	Predict the performance of gas turbines and thermodynamic energy systems.	3	2	3	2	-	2	-	-	-	-	-	-	2	2	-
Average		3.0	2.0	2.8	2.0	-	2.0	-	-	-	-	-	-	2.0	2.0	-

Semester - III																
18MTE14- Fire Engineering and Explosion Control																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Describe the fundamentals of fire, explosion and theory of combustion.	2	-	-	2	-	-	-	-	-	2	2	-	2	-	-
2	Classify the fire, class of fire and equipment for fire extinguishing.	2	-	-	2	-	-	-	-	-	2	2	-	2	-	-
3	Explain various industrial fire protection systems components and their working.	2	-	-	2	-	1	-	-	1	1	1	-	2	-	-
4	Design the building with fire protection and concepts of their design.	2	-	-	2	-	1	-	-	1	1	1	-	2	-	-
5	Describe the explosion protection system for various application.	2	-	-	2	-	1	-	-	1	1	1	-	2	-	-
Average		2.0	-	-	2.0	-	1.0	-	-	1.0	1.4	1.4	-	2.0	-	-

Semester - III																
22THE54- Waste To Energy																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Understand the various types of wastes from which energy can be generated.	3	-	-	2	-	2	-	-	-	-	-	-	2	2	-
2	Gain knowledge on biomass pyrolysis process and its applications.	3	-	-	3	3	2	-	-	-	2	-	-	2	2	-
3	Develop knowledge on various types of biomass gasifiers and their operations.	3	3	3	2	-	2	-	-	-	-	-	-	2	2	-
4	Gain knowledge on biomass combustors and its applications on generating energy.	3	3	3	2	-	2	-	-	-	-	-	-	2	2	-
5	Understand the principles of bio-energy systems and their features.	3	-	3	-	-	2	-	-	-	-	-	-	2	2	2
Average		3.0	3.0	1.8	2.2	3.0	2.0	-	-	-	2.0	-	-	2.0	2.0	2.0

Semester - III																
22THE55- Solar Refrigeration and Air-Conditioning																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Explain the concept of Carnot cycle, thermodynamic process and environmental effects.	3	-	1	-	-	-	2	-	-	-	-	-	2	2	-
2	Classify and explain solar cooling and hybrid air conditioning system.	3	2	-	-	-	1	1	-	-	-	-	-	-	-	2
3	Articulate the technical fundamentals of solar thermal energy storage and heating systems.	3	2	-	1	-	1	-	-	-	-	-	-	3	3	-
4	Describe the spectrum of possible solar thermal applications for day-to-day life.	3	2	-	1	-	-	-	-	-	-	-	-	2	3	-
5	Communicate technological and socio-economic issues involved in solar energy.	3	2	2	-	-	-	-	-	-	2	-	-	-	-	-
Average		3.0	2.0	2.0	1.0	-	1.0	1.5	-	-	2.0	-	-	2.3	2.6	2.0

Semester - III																
22THE61- Environmental And Pollution Control																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	To describe the background of present condition of the environment and remedial action required.	1	1	2	1	1	2	-	3	-	2	-	-	1	1	1
2	Elaborate the sources of air pollution and the equipment for control them.	1	1	2	1	1	2	-	3	-	2	-	-	1	1	1
3	Elaborate the sources of water pollution and the equipment for control them.	1	1	2	1	1	2	-	3	-	2	-	-	1	1	1
4	Elaborate the sources of solid waste, their characteristics and managements.	1	1	2	1	1	2	-	3	-	2	-	-	1	1	1
5	Describe the other sources of pollution from the industries and their controlling techniques.	1	1	2	1	1	2	-	3	-	2	-	-	1	1	1
Average		1.0	1.0	2.0	1.0	1.0	2.0	-	3.0	-	2.0	-	-	1.0	1.0	1.0

Semester - III																
22THE62- Nanotechnology																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Design the different types of solar collectors for a given cooling load.	3	3	3	3	1	2	2	-	-	-	1	-	3	2	-
2	Delineate systems for solar water heating.	3	3	3	3	1	2	2	-	-	-	1	-	3	2	-
3	Describe the principles and working of absorption cooling system.	3	3	3	3	1	2	2	-	-	-	1	-	3	2	-
4	Design the solar powered vapour compression refrigeration system.	3	3	2	2	1	3	2	-	-	1	1	-	3	2	-
5	Describe the various techniques for the implementation of solar energy in refrigeration and air conditioning system.	3	3	-	-	1	1	-	-	-	1	-	-	3	2	-
Average		3.0	3.0	2.7	2.7	1.0	2.0	2.0	-	-	1.0	1.0	-	3.0	2.0	-

Semester-III																
22THE63- Solar Energy for Industrial Process Heating																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Design the different types of solar collectors for a given cooling load.	3	3	3	3	1	2	2	-	-	-	1	-	3	2	-
2	Delineate systems for solar water heating.	3	3	3	3	1	2	2	-	-	-	1	-	3	2	-
3	Describe the principles and working of absorption cooling system.	3	3	3	3	1	2	2	-	-	-	1	-	3	2	-
4	Design the solar powered vapor compression refrigeration system.	3	3	2	2	1	3	2	-	-	1	1	-	3	2	-
5	Describe the various techniques for the implementation of solar energy in refrigeration and air conditioning system.	3	3	-	-	1	1	-	-	-	1	-	-	3	2	-
Average		3.0	3.0	2.7	2.7	1.0	2.0	2.0	-	-	1.0	1.0	-	3.0	2.0	-

Semester-III																
22THE64- Energy Efficient Buildings Design																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Will be familiar with climate responsive building design and basic concepts.	3	3	1	1	2	2	1	2	1	-	-	-	3	-	-
2	Will Know the basic terminologies related to buildings.	3	3	3	1	1	-	-	-	-	1	1	-	3	-	-
3	Will Know the passive (air) conditioning techniques.	3	1	3	-	1	2	-	1	-	2	2	-	3	-	3
4	Will be able to evaluate the performance of buildings.	3	3	3	2	2	2	-	-	-	2	2	-	2	-	2
5	Gets acquainted with Renewable energy systems in buildings.	3	2	3	-	3	1	-	2	-	2	2	-	2	-	2
Average		3.0	2.4	2.6	1.3	1.8	1.7	1.0	1.6	0.2	1.7	1.7	-	2.6	-	2.3

Semester-III																
22THE65-Analysis Of Thermal Power Cycles																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Understand the number system and the functioning of logic gates with various logic families.	3	2	2	2	3	2	3	2	-	-	-	-	2	1	-
2	Design and analyse combinational logic circuits and Logic gates.	3	3	2	2	3	3	2	1	1	-	-	-	3	2	-
3	Design the sequential logic circuits using Flip flops	2	2	3	3	2	1	2	1	1	-	-	-	2	2	-
4	Design and analyse asynchronous sequential logic circuits	2	1	2	1	2	2	3	1	-	-	-	-	2	1	-
5	Understandtheconceptsofmemoriesand PLDsandimplementationofcircuitsusingmemoryandPLDs.	2	1	2	1	3	2	1	2	-	-	-	-	3	2	-
Average		2.4	1.8	2.2	1.8	2.6	2.0	2.2	1.4	1.0	-	-	-	2.4	1.6	-

Semester-III																
22THE71- Energy Forecasting, Modelling and Project Management																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Have knowledge in the National energy scenario.	-	1	2	1	1	1	1	1	-	3	3	-	-	1	-
2	Do Energy prediction using various forecasting techniques.	-	2	3	3	3	2	-	-	-	2	2	-	1	3	2
3	Develop optimization model for energy planning.	-	3	3	3	3	-	2	-	-	1	1	-	-	-	2
4	Capable of writing project proposals.	-	1	1	2	-	2	2	2	-	2	2	-	-	-	2
5	Understand the National and state energy policies.	-	1	-	-	-	2	2	2	-	2	2	-	-	1	1
Average		-	1.6	1.8	2.2	2.3	1.7	1.7	1..6	-	2.0	2.0	-	1.0	1.6	1.7

SEMESTER-III																
22THE72- Energy Management and Environmental Benefits																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Recognize the importance of energy conservation and suggest measures for improving per capita energy consumption.	3	-	-	-	-	-	-	-	-	1	1	-	-	2	2
2	Analyses the energy sharing and cost sharing pattern of fuels used in industries.	3	2	2	2	1	1	-	-	2	2	2	-	-	2	-
3	Apply Gantt Chart, CPM and PERT in energy conservation projects.	2	1	1	1	2	-	1	2	3	-	-	-	-	2	3
4	Evaluate the techno-economics of a project adopting discounting and non- discounting cash flow techniques.	2	1	-	1	1	-	1	1	3	2	2	-	-	-	2
5	Assess the sources of additional revenue generation for energy conservation projects adopting UNFCC.	2	-	-	-	-	2	1	-	2	1	1	-	-	-	-
Average		2.4	1.3	1.5	1.3	1.3	1.5	1.0	1.5	2.5	1.5	1..5	-	-	2.0	2.3

Semester-III																
22THE73- Solar Energy Appliances																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Diagnose the fundamental concepts about solar energy systems and devices.	2	-	1	-	2	1	-	-	-	-	-	-	2	2	2
2	Will be familiar with concepts of solar home lighting and solar street lighting systems.	2	2	3	3	-	-	-	-	-	-	2	-	2	2	-
3	Identify the solar cooker technologies for suitable applications.	2	2	3	2	-	-	-	-	-	-	2	-	2	2	-
4	Recognize the applications and types of solar dryers.	2	2	3	2	-	-	-	-	-	-	2	-	2	2	-
5	Aware about various desalination techniques and material problems in solar still.	2	-	2	2	-	-	-	-	-	-	-	-	2	2	-
Average		2.0	2.0	2.4	1.8	2.0	1.0	-	-	-	-	2.0	-	2.0	2.0	2.0

Semester-III																
22THE74- Cost Management of Engineering Projects																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Understand the costing concepts and their role in decision making.	-	2	-	-	3	2	-	-	1	-	-	-	-	-	2
2	Understand the project management concepts and their various aspects in selection.	-	-	-	-	-	-	-	-	3	-	3	-	-	-	2
3	Interpret costing concepts with project execution.	-	2	-	-	2	-	-	-	3	-	3	-	-	-	2
4	Gain knowledge of costing techniques in service sector and various budgetary control techniques.	-	2	-	-	-	-	-	-	2	-	2	-	-	-	2
5.	Become familiar with quantitative techniques in cost management.	-	2	-	-	3	-	-	-	2	-	2	-	-	-	2
Average		-	2.0	-	-	2.6	2.0	-	-	2.2	-	2.5	-	-	-	2.0

Semester-III																
22THE75- Advanced Composite Materials																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1-**	**11**	**12**	**1**	**2**	**3**
1	Choose and select the suitable composite material and their reinforcements.	1	2	1	3	1	-	-	-	2	-	1	-	-	-	-
2	Select constituent materials glass, carbon, aramid, ceramic fibres and resins.	1	1	1	2	2	1	-	-	-	-	1	-	-	-	1
3	Understand & Apply engineering mechanics, analysis and design, macro and micro mechanics of composites.	2	2	1	1	2	2	3	-	-	2	1	-	1	-	-
4	Highlight the appropriate use of composite structures in the industry.	1	1	1	1	2	-	-	-	1	-	1	-	-	1	-
5	Describe the concepts of nano composite and their chrematistics.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average		1.2	1.5	1.0	1.4	1.4	1.5	3.0	-	1.5	2.0	1.0	-	1.0	1.0	1.0