



**AVIT**  
AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY



**VINAYAKA MISSION'S  
RESEARCH FOUNDATION**  
(Deemed to be University under section 3 of the UGC Act 1956)



**CIRCULAR**

Ref No:23-24/Even/Mech/EEC 03

Date:21.3.2024

The Department of Mechanical Engineering is organising a Employability Enhancement Course on Integrating solar, wind and Alternative fuels for a sustainable future from 28.3.2024 to 30.3.2024 & 4.4.2024 to 5.4.5024. All the final year Mechanical students are requested to register and participate for the course.

The invitation is herewith attached.

**HOD**

Circulated to:	<ol style="list-style-type: none"><li>1. All the faculty members</li><li>2. All the students</li></ol>
Copy to	<ol style="list-style-type: none"><li>1. Principal Office</li><li>2. Department Notice Board</li></ol>



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## DEPARTMENT OF MECHANICAL ENGINEERING

*Cordially invites you all for*

## EMPLOYABILITY ENHANCEMENT COURSE

ON

INTEGRATING SOLAR, WIND AND  
ALTERNATIVE FUELS FOR A SUSTAINABLE  
FUTURE

**DATE & TIME:** 28.3.2024 to 30.3.2024 & 4.4.2024 to 5.4.2024, 9.00am

### Resource Person

Dr.J.M.BABU  
PROFESSOR/MECHANICAL  
RANGARAJAN, Dr.SAGUNTHALA R&D INST.OF.SCI&TECH

### Presidential Address

**Dr.G.Selvakumar**

**Principal**

### Welcome Address

**Dr.M.Prabhakar**  
**Professor&HOD-MECHANICAL**

### Coordinator

**Mr.R.Mahesh, AP/ MECH/AVIT**



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## DEPARTMENT OF MECHANICAL ENGINEERING

### BROCHURE



**AVIT**  
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*Cordially invites you all for the*

## **Employability Enhancement Course on Integrating Solar, Wind and Alternative Fuels for a Sustainable Future**

📅 28.3.2024 to 30.3.2024 & 4.4.2024 to 5.4.2024 (30 HOURS)

🕒 09.30 a.m     👤 Digital Classroom

### **Resource Persons**

**Dr. J.M. Babu**

Prof/Mech., Vel Tech Rangarajan Dr. Sagunthala  
R&D Institute of Science and Technology



Dr. M. Saravana Kumar, AP (G-II), Mech, AVIT  
Dr. S. Prakash, AP (G-II), Mech, AVIT  
Dr. G. Antony Casmir, AP (G-II), Mech, AVIT  
Mr. R. Mahesh, AP (G-II), Mech, AVIT  
Mr. A. Senthikumar, AP (G-II), Mech, AVIT  
Mr. K. Vijayakumar, AP (G-II), Mech, AVIT  
Mr. B. Samuvel Michael, AP (G-II), Mech, AVIT  
Mr. P. Kumaran, AP (G-II), Mech, AVIT  
Mr. A. Elanthiraiyan, AP (G-II), Mech, AVIT



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Accredited with  
A Grade by NAAC

**Organized by : Department of Mechanical Engineering**

AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY  
DEPARTMENT OF MECHANICAL ENGINEERING

Ref:23-24/Even/EEC/03

Date:10.4.2024

From

Mr.R.Mahesh  
Assistant Professor Gr II  
Mechanical Engineering  
Aarupadai Veedu Institute of Technology  
Paiyanoor-603 104

To

The Principal,  
Aarupadai Veedu Institute of Technology  
Paiyanoor-603 104

Respected Sir,

Sub: Submission of Mechanical Engineering Department Event-Report- Reg.

The Department of Mechanical Engineering has organized an **Employability Enhancement Course on INTEGRATING SOLAR, WIND AND ALTERNATIVE FUELS FOR A SUSTAINABLE FUTURE** from.28.3.2024 to 5.4.2024.The report of the programme is herewith attached for your kind perusal.

Thanking you,

With regards,



Event Coordinator



HOD



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## DEPARTMENT OF MECHANICAL ENGINEERING

Association with  
**ENERGY AND FUEL USERS' ASSOCIATION (ENFUSE)** Organizes

### **Employability Enhancement Skill Development Course on “INTEGRATING SOLAR, WIND AND ALTERNATIVE FUELS FOR A SUSTAINABLE FUTURE” (From 28.3.2024 to 5.4.2024 -30 Hours)**

The Department of Mechanical Engineering in association with Energy and Fuel users' Association & Institution's Innovation Council (IIC) organised a five day's **Employability Enhancement Skill Development Course** on " **INTEGRATING SOLAR, WIND AND ALTERNATIVE FUELS FOR A SUSTAINABLE FUTURE** "28.3.2024 to 5.4.2024 (30 Hours). The program was inaugurated by **Dr.M.Prabhakar, HOD / Mech.** Totally 10 sessions were conducted for five days with various resource persons. Around 43 Mechanical Engineering students have participated.

The students had an interaction with the experts and the following topics were discussed.

#### **SESSION 1:NON CONVENTIONAL ENERGY SOURCES: 28.3.24 (9 AM to 12 PM)**

The First session on **NON CONVENTIONAL ENERGY SOURCES** was conducted by **Dr.J.M.BABU** PROFESSOR/MECHANICAL from Veltech Dr.RANGARAJAN, Dr.SAGUNTHALA R&D INST.OF.SCI&TECH

He has shared his awesome speech on

- Non-Conventional Energy sources - sources that are continuously replenished by natural processes like solar energy, wind energy, bio-energy - bio-fuels grown sustainably), hydropower etc.,
- Tidal Energy -Power produced by the surge of ocean waters during the rise and fall of tides.
- Geothermal Energy- Heat is continuously produced inside the earth which can be used for electricity production.
- Hydel Energy - The use of falling or fast-running water to produce electricity or to power machine.
- Open and closed systems of OTEC – The process that can produce electricity by using the temperature difference between deep cold ocean water and warm tropical surface waters.



## **SESSION 2: BIO FUELS 28.3.24 (12.30 PM to 3.30PM)**

The second session on Bio fuels was conducted by **Mr.A.Senthilkumar**, Assistant Prof/Mech/ AVIT. He has shared his magnificent proficiency on

- Biodiesel production and Ethanol production
- Transesterification and Esterification methods of biodiesel production
- Biogas production from vegetables and animal fats
- Biodiesel production from sugarcane Bagasse and wood waste
- Biogas production from KVIC digester





### **SESSION 3:ON BOARD DIAGNOSTICS 29.3.24( 9 AM to 12 PM)**

The Third session on On Board Diagnostics was conducted by **Dr.M.SARAVANAKUMAR**, AP/Mech, AVIT.

He has shared his outstanding presentation on

- The present engineering industries are rapidly moving to adopt Industry 4.0 approach.
- The Automation in present engineering practices
- Vehicle air-conditioning systems
- Engine diagnostics
- Auto electrical test bench
- Industrial Sensors
- Industrial Mechatronics and Robotics



#### **SESSION 4:BIOMASS 29.3.24( 12.30 PM to 03.30 PM)**

The fourth session on Biomass was conducted by **Mr.R.MAHESH AP/Mech AVIT.**

He has shared his outstanding presentation on

- Biomass - Plant or animal material used as fuel to produce electricity or heat.
- Biomass collection – Biomass is collected from waste of Grasses, agricultural crops (such as corn and sugar cane), landfill waste, and manure.
- Energy production from waste- There are number of ways of generating energy from waste. These include combustion, gasification, Pyrolysis, anaerobic digestion and landfill gas recovery.
- Opportunities in waste technology- The prospects of Waste Management in our country have reached its highest level today and the field is considered to be a great career option.,
- Biogas preparation from Animal waste, Food waste .wood waste etc – The method of using anaerobic digestion of organic waste (food waste and animal manure) to produce biogas as an alternative process to reduce food waste and generate energy.



#### **SESSION 5:ENERGY AUDITING 30.3.24( 9 AM to 12 PM)**

The fifth session on Energy Auditing was conducted by **Mr.K.VIJAYAKUMAR AP/Mech AVIT.**

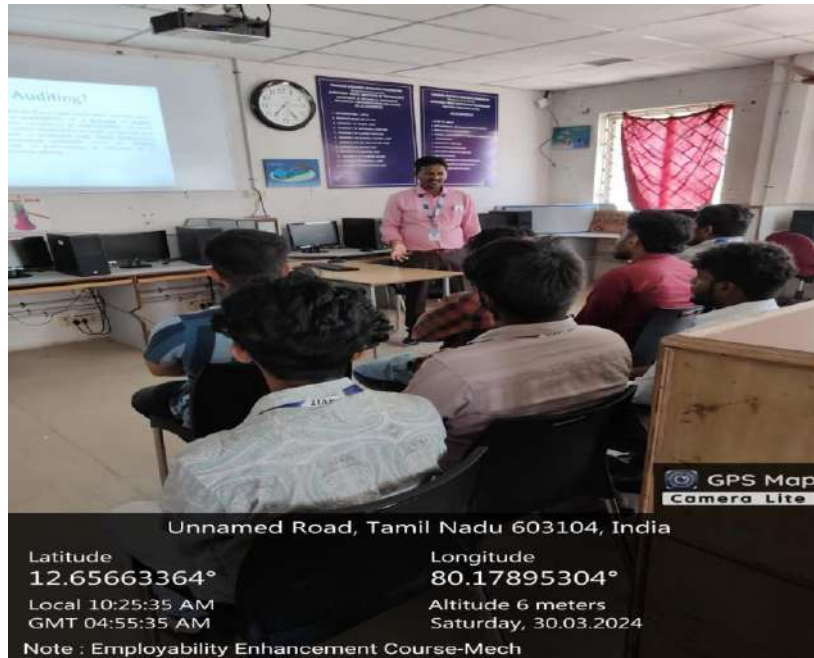
He has shared his outstanding speech on

- Energy audit - An inspection survey and an analysis of energy flows for energy conservation in a building.
- Purpose of Energy Auditing- To determine whether your home wastes energy, and to pinpoint where energy is being lost so you can evaluate what measures you can take to make your home more energy efficient.
- Methods and Instruments of Energy Auditing- Like Flue Gas Analysers, Temperature Indicators , Infrared Thermometers , Thermal Insulation scanner ,Steam Trap Monitor Energy consumables



- Utilization of Energy in Industries - Energy is used in the industrial sector for a wide range of purposes, such as process and assembly, steam and cogeneration, process heating and cooling, and lighting, heating, and air conditioning for buildings

Employment opportunities in Energy Auditing – Job such as assisting in identifying energy efficiency projects, their estimated cost, estimated energy savings, and estimated return on investment for clients.



### **SESSION 6:SOLAR ENERGY 30.4.24 (12.30 PM to 3.30PM)**

The sixth session on Solar Energy was conducted by **Mr.P.KUMARANAP/MECH/AVIT**

- Energy production from solar –How Solar radiation is converted directly into electricity by solar cells.
- Methods of energy production from Solar-The two main methods: photovoltaic cells and solar thermal collectors.
- CSP System - How plants use mirrors to concentrate the sun's energy to drive traditional steam turbines or engines that create electricity.
- Solar Collectors – How the Flat plate collectors and Concentrator collectors works
- Energy storage systems -The capture of energy produced at one time for use at a later time to reduce imbalances between energy demand and energy production.
- Solar power plant - The type of facility that converts sunlight either directly, like photovoltaics, or indirectly, like solar thermal plants, into electricity



### SESSION 7: ALTERNATIVE FUELS 4.4.24 (9 AM to 12 AM)

The Seventh session on **ALTERNATIVE FUELS** was conducted by **Dr.G.ANTONY CASMIR JAYASEELAN AP/Mech AVIT**.

He has shared his spectacular articulation on

- Biodiesel production- the process of producing the biofuel, biodiesel, through the chemical reactions of Transesterification and Esterification.
- Ethanol preparation- The steps in the ethanol production process include milling, Liquefaction, Saccharification, Fermentation, Distillation and Dehydration
- Methodology for biodiesel - Various biodiesel production methods have been introduced, such as direct use and blending, microemulsion, transesterification, and pyrolysis.
- Energy production from Waste- Waste-to-energy plants burn municipal solid waste (MSW), often called garbage or trash, to produce steam in a boiler that is used to generate electricity.

Usage of Ethanol in I.C.Engines- Pros and cons of ethanol usage



### SESSION 8:VCR ENGINE 4.4.24(12.30 PM to 3.30 PM)

The Eighth session on Variable compression ratio engine testing was conducted by **Mr.B.SAMUVEL MICHAEL**, AP/MECH/AVIT

He has shared his fine presentation on

- The VCR engine operating on liquid fuels and dual-fuel mode,
- Different compression ratios
- Combinations with different blends
- Various Nozzles usage in VCR engine
- Multi-fuel capability, Increasing of fuel economy and reduction of emissions
- Gas Analysers



### SESSION 9:WIND ENERGY 5.4.24 (9AM to 12 PM)

The ninth session on Wind energy was conducted by **Mr.A.ELANTHIRAIYAN**, AP/MECH/AVIT.

He has shared his magnificent speech on

- Production of Wind Energy - Wind turbines use blades to collect the wind's kinetic energy. The blades are connected to a drive shaft that turns an electric generator, which produces (generates) electricity.
- Design parameters - The turbine performance has been varying with the design parameters such as, pitch angle, number of blades, airfoil type, turbine radius and its chord length.
- Availability - If the turbine is “available” and grid-connected, and the wind and other conditions are within the turbine specification, then power will be generated.
- Types of axis in wind turbines - Horizontal-Axis Turbines and Vertical-Axis Turbines
- Employment opportunities in Wind Energy system - The partial list of the **types** of engineers employed in the **wind** power industry: aerospace engineers, civil engineers, computer engineers, electrical engineers, environmental engineers, health and safety engineers, industrial engineers, materials engineers, and mechanical engineers.



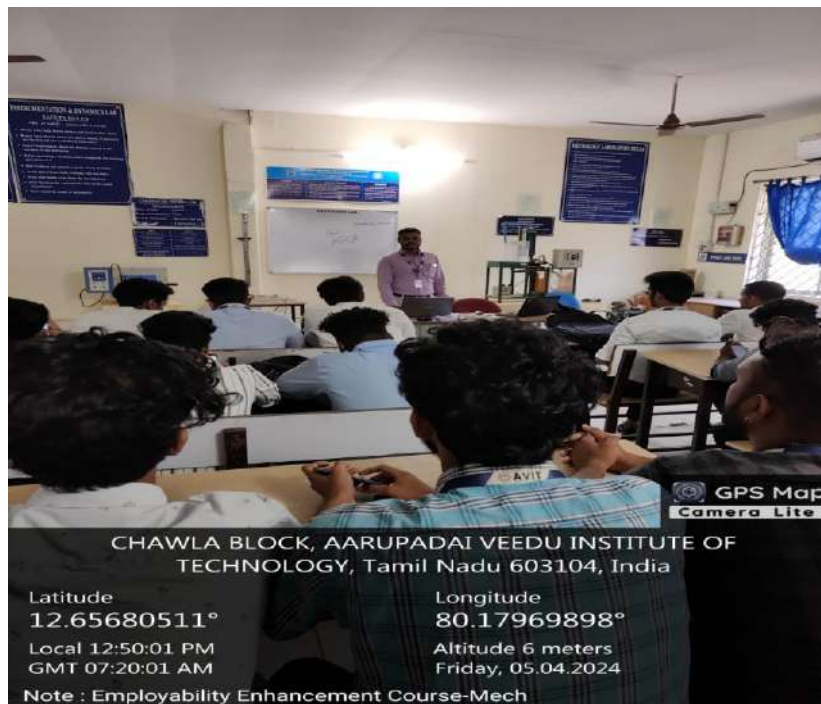


### SESSION 10: INDUSTRIAL SAFETY 5.4.24 (12.30 PM to 3.30PM)

The sixth session on Industrial safety was conducted by **Dr.S.PRAKASHAP/Mech/AVIT**.

He has shared his spectacular articulation on

- Safety management practices that apply to the industrial sector
- To protect industrial workers, machinery, facilities, structures, and the environment.
- General safety,Material safety, Fire safety, Electrical safety, Building and Electrical safety and Environmental safety
- The Importance of Industrial Safety
- Industrial safety planning-Plant layout, Fire prevention systems, Health and hygiene, Safety training, Alarms and warning systems



### End of the session:

Online test was conducted at the end of tenth session.

Feedback regarding the sessions was collected from the students

Course completion certificates was issued to the students

## ONLINE TEST



## FEEDBACK FROM STUDENTS



## Outcome:

The programme was conducted on the employability enhancement for Mechanical students. The students gained knowledge in Production of energy, Utilisation of energy, Estimation and Cost return investment on Energy Auditing, Bio-fuels, Wind Energy, Solar systems, and various renewable resources. They received information on various job opportunities in Wind power industry, Aerospace areas, Environmental, Health areas, solar



power plants and Energy production Industries. They were provided adequate details on self employment in the same field.

The Employability Enhancement Course was conducted by Mr.R.Mahesh,AP/Mech,AVIT.



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**Employability Enhancement Course on  
“INTEGRATING SOLAR, WIND AND ALTERNATIVE FUELS FOR A SUSTAINABLE  
FUTURE”**

(From-28.3.2024 to 30.3.2024 & 4.4.2024 to 5.4.2024 30 Hours)

**PARTICIPANTS NAME LIST**

SN	NAME OF THE STUDENT	REGISTER NUMBER
1	SANTHOH.A	3441915537
2	AKASH KUMAR	3442010504
3	CHANDAN KUMAR	3442010506
4	GOPIKRISHNA.H	3442010507
5	PONNARASU.S	3442010511
6	RANJAN KUMAR MANDAL	3442010512
7	SARANRAJ.P	3442010514
8	THARUN KUMAR.S	3442010515
9	UDHAYAM.K	3442010516
10	VASANTHRAJ.R	3442010517
11	VIGNESH.R	3442010518
12	DEEKESWAR.Y.R	3442010520
13	BALAJI.A	3442120501
14	BALAJI.P	3442120502
15	GOKUL.T	3442120504
16	GOVARTHAN.P	3442120505
17	MADHAN RAJ.L	3442120506
18	MANIKANDAN.M	3442120507
19	MOHAMED RIYASKHAN.S	3442120508
20	NIRMAL KUMAR.M	3442120510
21	SANJAY KRISHNAN.K	3442120511
22	SUGUMAR.B	3442120516
23	TAMIL SELVAN.C	3442120517
24	THARUN.R	3442120518
25	VASEEM RAGUMAN.A	3442120519
26	VIGNESH.S	3442120520
27	VIGNESH.V	3442120521
28	VIJAYAKUMAR.A	3442120522
29	YUGENDRAN.S	3442120523
30	VYSHNAV NR	3442154501
31	ABIJITH.S	3442255501
32	MOHAMMED FAVAS C	3442256501
33	ABHIRAM S	3442357501
34	ADIL ABDULLA	3442357502
35	ADIL MEHABOOB	3442357503
36	AJMAL N	3442357504
37	JENSON TEJI	3442357505
38	KAAVIYAN D	3442357506
39	KARTHIK R	3442357507

