

A report on one week workshop on “THERMAL ENERGY SYSTEMS-OPTIMIZATION OF DESIGN FOR FLUID FLOWS AND HEAT TRANSFER”

19th - 23rd December, 2016

(Under TEQIP-II)

One week workshop on “Thermal Energy Systems-Optimization of Design for Fluid Flows and Heat Transfer” was conducted during 19th - 23rd, December, 2016 in Mechanical Engineering Department. The workshop was inaugurated by lightening lamps by the Chief Guest Dr.C.Balaji, Professor of Mechanical Engineering, IIT Madras, on 19th, December, 2016. The convener of the program Dr. Hariprasad Tarigonda has given the brief introduction of the workshop. A keynote speech was delivered by the Chief Guest on Thermal Energy Systems-Optimization of Design for Fluid Flows and Heat Transfer. The course work of the workshop started after the completion of inauguration.



Day 1 (19-12-2016): In the morning session, Dr.C.Balaji, Professor of Mechanical Engineering, IIT Madras delivered a lecture on Advances in Heat Transfer. He explained the recent developments in the field of heat transfer. He also explained the research works happening in the heat transfer laboratory of IITM. He emphasized the importance of the optimization in the design of thermal systems. In the afternoon Session, Prof. T. Srinivas, VIT University, Vellore delivered a lecture on solar energy, exergy analysis, trigeneration and MAT Lab coding. He explained about the effective utilization of solar energy, exergy analysis applied to various thermal systems and its design optimization with MAT Lab coding.

Day 2 (20-12-2016): In the morning session, Prof. R. Thundil Karuppa Raj, VIT University, Vellore given lecture on Numerical Analysis of Fluid Flows & Heat Transfer and also Hands on practice was provided to participants. In the afternoon session, he explained about the ansys software tool window in detail. ICMCFD tool in used for model creation and for meshing. The participants practiced various models and various meshing generation techniques with quality check.

Day 3 (21-12-2016): In the morning session, Dr. Kulasekaran from Fiat Chrysler Automobiles, Chennai delivered a lecurer on simulation of thermal

energy systems. He explained the Ansys fluent tool in detail and various commands used in the ansys fluent tool. Later various simulation of thermal systems were explained in Ansys fluent tool. In the afternoon session, the participants practiced simulation of various models for different boundary conditions in the ansys fluent tool.

Day 4 (22-12-2016): In the morning session, Dr.Prasad Patnaik, Professor, IIT Madras, Chennai delivered a lecture on turbulent flows and its application in heat transfer. He explained the various governing equations of fluid flows and heat transfer.He discussed the importance of turbulence in variuos applications of fluid flows and heat transfer. In the afternoon session, Dr. M. Suresh from SSN College of Engineering, Chennai given lecture on Heat pipes. He discussed the fabrication methods of heat pipes and its various practical applications. He explained about various thermal energy systems developed with application of heat pipes.

Day 5 (23-12-2016): In the morning session, Dr. P. Karthikeyan from PSG – Tech, Coimbatore given lecture on Fuel cell. He discussed the concepts of fuel cell and its various applications. He shown the some of the fuel cells wich are developed in their Lab. He explained the various materails used for manufacturing of fuel cells. In the afternoon session, Dr. N. Nallusamy from SSN College of Engineering, Chennai deliverd a lecture on Thermal energy storage systems. He explained about the various fluids used for thermal energy storage and various mehtods used for storing the thermal energy and analysis of various thermal energy systems. Finally Validictory function and certificate distribution was conducted.



Dr.C.Balaji, Professor of Mechanical Engineering, IIT Madras delivering lecture on Advances in Heat Transfer & Fluid Flows



Prof. T. Srinivas from VIT University, Vellore giving lecture on Solar energy and exergy analysis



Prof. R. Thundil Karuppa Raj from VIT University, Vellore giving hands on practice on Numerical Fluid Flows & Heat Transfer



Dr. Kulasekaran from Fiat Chrysler Automobiles, Chennai giving hands on practice on simulation of Thermal energy systems



Dr. Prasad Patnaik, Professor, IIT Madras, Chennai delivering lecture on turbulence and its application in heat transfer



Dr. M. Suresh from SSN College of Engineering, Chennai delivering lecture on Heat Pipes



Dr. P. Karthikeyan from PSG – Tech, Coimbatore discussing the concepts of Fuel cells



Dr. N. Nallusamy from SSN College of Engineering, Chennai in the session on Thermal energy storage systems