

Short Term Course on Finite Element Method

Indian Institute of Technology Mandi and Karlsruhe Institute of Technology Germany organized a four day short term course on “Finite Element Method” and one day workshop on “ Smart Materials and Structures” during 25-29 July. Prof. T. A. Gonsalves, Director IIT Mandi inaugurated the program. Dr. Rajeev Kumar briefed about the coverage of the course and workshop. The course comprises of 14 lectures and 14 hours lab sessions followed by a workshop incorporating 7 talks.



Inauguration function: (counterclockwise) Prof. Timothy. A. Gonsalves, Director IIT Mandi, Ms. Mamta, Dr. Moh. Talha, Dr. Atul Dhar, and Dr. Rajeev Kumar

In his inaugural, Prof. T. A. Gonsalves emphasized the importance of FEM and compared its pros and cons with conventional prototype testing of the product. He gave a very interesting example of IBM, a leading company in computation which predicted the worldwide market of computers and explained about the drastic changes in human life due to computer, mobile phones and other technologies. Prof. Gonsalves also discussed about an interesting study made by E. N. Morris who had quantified the changes from prehistoric time to present with the index of changes, which varies from 7 (at ancient) to 1000 (present) and explained an image of the development which the future will hold. In the continuation he also discussed about the power of computers and internet, how they are replacing the human beings, and compared this developing trend with the development in the field of engineering design and their future aspects. He also briefed the importance of smart materials to reduce the cost of product. Dr. Venkat Krishnan, Asso. Dean research briefed the research activities and facilities, at IIT Mandi. At the end Dr. Mohammad Talha delivered vote of thanks.



Inauguration function: Prof. Timothy. A. Gonsalves, Director IIT Mandi during his inaugural speech.

The course was particularly beneficial for engineers and scientists working in structural, fluidflow, environmental, geo-technical, thermal engineering, research organizations, Govt. R&D departments, consulting companies, and self-employed practitioners engaged in the analysis, design, planning, construction, operation, maintenance and management. How finite element method (FEM) is utilized to solve engineering problems related to stress analysis, heat transfer, fluid flow, manufacturing and electromagnetics was discussed. It was a learning experience for 45 participants who attended the course. The participants were given the certificate of participation.



Concluding Session and valedictory function: (counterclockwise), Prof. K. Gupta, and former director, IIT Delhi, Prof. Wolfgang Seemann, Prof K. Sundarajan and Participant



Group photo with participants

The speakers of short term course were Dr. Rajeev Kumar, Dr. Mohammad Talha, Dr. Rajesh Gosh, Dr. Arpan Gupta and Dr. Kaustav Sarakar

Workshop on Smart Materials and Structures

The above one day workshop was conducted by IIT Mandi, on 29th July, 2016. During his talk, Dr Wolfgang Seemann, Prof. Karlsruhe Institute of Technology Germany, briefed the applications of piezoelectric materials as ultrasonic actuators, transformer, and motor and shared his experience about ultrasonic levitation, ultrasonic friction reduction in bearing. He also explained modeling of adjustable two-lobe bearing Dr. K Gupta, professor & former director; IIT Delhi discussed some very important studies on vibration control of rotor using shape memory alloy. He also explained use of magnetorheological fluid as damper and vibration control of rotor using piezoelectric materials. Dr. T. Sundarajan, professor IIT Madras explained cooling with Nano fluids possibilities for smart effects. He also discussed heat transfer enhancement in nano-fluids. Dr. Rajeev Kumar, School of Engineering IIT Mandi discussed the geometric nonlinear shape and vibration control of functionally graded smart structures. He briefed application of piezoelectric material in vibration & shape control of space craft antenna reflector and deployment of satellites, and instrument positioning. Dr. Rahul Vaish, School of Engineering IIT Mandi discussed important findings in pyroelectric conversion for the use of energy harvesting and refrigeration. Mr. Anuruddh Kumar presented energy harvesting from human motion using piezoelectric tile. Mr. Vishrut Shah summarized different type smart materials and their applications.

During valedictory, Prof. K. Gupta distributed certificates to the participants from Himachal Pradesh, Punjab, Haryana, Uttarakhand, Uttar Pradesh, West Bengal, Bihar, Jharkhand, Kerala and Tamil Nadu.



Keynote talk by Prof. Wolfgang Seemann, KIT Germany



Keynote talk by Prof. K. Gupta, former Director IIT Delhi



Group Photo