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MITS ACHIEVEMENTS 2014

"DEPARTMENT OF MECHANICAL ENGINEERING"

AICTE SPONSORED

FACULTY DEVELOPMENT PROGRAM

Titlt of the programme : **Fatigue and Fracture Mechanics in Finite Element Analysis**

Programme Organized by : **Department of Mechanical Engineering**

Date(s) : **03-15 March, 2014**

Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

CHIEF GUEST

Dr. K. Hemachandra Reddy
REGISTRAR
JNTUA,Anantapur

Dr. K. Hemachandra Reddy has more than 23 years of experience in teaching. He is a Professor of Mechanical Engineering. He is specialized in I.C Engines and produced 14 Ph.D's. He has been honored with State Award as the Best Teacher, from Government of A.P., for the year 2011 and with Broad Outlook Learner Teacher Award (BOLT) by Air-India for the year 2006-07. He is the Life Member/Fellow of as many as eight professional bodies in the field of Mechanical Engineering and Technical Education. He is Editorial Board Member of "Research Journal of Engineering and Technology" as well as Honorary Executive Council Member of "Engineering Today" Journal.

He has more than 100 research publications in reputed International/National Journals and Conferences. He delivered number of expert lectures and key note addresses on various technical topics. He has served as Director of Academic & Planning, JNTUA; Principal of JNTUA College of Engineering, Pulivendula; Placement Officer & TEQIP Nodal Officer of JNTUA College of Engineering, Anantapur. At present, he is working as Registrar, JNTUA,Anantapur

Dr U.Chandrasekhar
DIRECTOR
Engineering Staff College of India

Dr. U. Chandrasekhar is the Director of Engineering Staff College of India (ESCI) and Chief Mentor of Visvesvaraya Technological University (VTU). He received BE in Mechanical Engineering from NIT, Suratkal, M Tech in Design Stream from IIT, Madras and PhD from VTU. For his academic excellence at IIT-Madras, he received an award from former President of India Dr. A. P. J. Abdul Kalam. He was trained in Germany, UK and Belgium in RP and sensor technologies.

He is currently leading a critical technology development project of high temperature thin film sensors in collaboration with NRC, Canada. For the past 29 years, he has been involved in design, analysis and testing of aero gas turbine engines. He set up the first-ever Rapid Prototyping laboratory in the country. He led a group of scientists at Moscow in a critical phase of in aero engine testing. For his research efforts, he received commendation medal from the Scientific Advisor to the Defence Minister. He is the founder member of the Rapid Prototyping Society of India. He currently serves in the council of the Institution of Engineers and National Design & Research Forum He serves on the editorial board of the International RP journal and Mechanical Engineering journal. He was also chosen to represent India in the Young Leaders Convention of World Federation of Engineering Organizations at Geneva. He has been invited by several national and international professional bodies as the key note speaker on advanced prototyping and sensor technologies. In recognition of his stellar efforts for Aeronautical Society of India, he received national AESI award from Dr. Vijay Mallya, Chairman of King Fisher Airlines. He is on the R&D vision team of the Visvesvaraya Technological University and Anna University, a role through which he trying to catalyse R&D culture among engineering colleges. In recognition of his professional efforts, he was selected to the post of the Chairman of R&D Committee of the Institution of Engineers. Currently he is supporting the Research Activities at UG, PG and PhD levels in about 80 engineering colleges and technical universities.

REPORT BY DR SURYANARAYANA PAKALPATI & DR ESWARA KUMAR

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Monday, March 3

INAUGURAL SESSION

In the inaugural session A Video Clipping is played showing the importance or role of mechanical engineer in the real world also mentioning the various activities organized earlier by the Mechanical Engineering Dept. The chief guest and Guest of Honour both enquired about the persons who prepared the video and both of them appreciated the effort of the students who prepared the video.

Dr. C. Yuvaraj Sir, Head of the Dept. of ME Dept in his address to the gathering explained about the department strengths, faculty, infrastructure and the major achievements of the department since its inception.

Principal Sir in his speech pointed out the major achievements of the college since its inception and addressed the participants to utilize this best opportunity to enhance or enrich the skills.

Dr. U. Chandrasekhar delivered a key note address to the gathering. He mentioned about importance of conducting this type of FDPs and also explained the importance of the topic "Fatigue and Fracture mechanics in Finite Element Analysis" for the mechanical Engineers. He made a point to the participants that attending this FDP will enrich our knowledge practically and it can help us to narrow down the gap between the industrial requirements and the curriculum. Overall it is a very well addressed speech which motivated the young engineers and students.

Later in his speech Prof. K. Hemachandra Reddy advised the participants to make the best use of this FDP, because most of the resource persons who are handling the technical sessions are from various leading industries holding respectable positions. Also he pointed out that there is a gap between the industry requirements and academic curriculum, to narrow the gap there is a need to include the latest concepts and subjects in the syllabus, but due to some practical difficulties they are including only a few new

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concepts in the syllabus. He appreciated the efforts of MITS in organizing this FDP and conveyed his best wishes to the ME dept faculty and participants.

The inaugural session closed at 12.30 PM. After Tea break the technical session is handled by the Resource person: Sri Janakiramulu, Design Chief, Infotech, Hyderabad. The session I proceeded up to 1.30 PM. At 1.30 PM the participants were taken to lunch. The session II started again at 2.30 and went up to 5.30 PM. The topics covered on the first day are Aircraft Design- Fracture and Fatigue.

At the end of the day 1, Memento is presented to the Resourse person Sri Janakiramulu, Design Chief, Infotech, Hyderabad by the Principal and Head of the Department of Mechanical Engineering in the presence of the participants and the faculty members.

Overall the outcome of the day 1 is very worthy with the motivations, keynote addresses and the expert lectures given by the Chief Guest, Guest of Honour & Resource persons.

As the convener of this program, I would like to express my sincere thanks to the Correspondent sir, Principal, Deans, Vice Principal, Head of the Department and faculty members of Mechanical Engineering Department for their constant support and encouragement in making this program a grand success.

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AGENDA (For Inaugural Session)

1. Inviting the dignitaries on to the stage
   - Programme Convener : Dr.G.Harinath Gowd
   - H.O.D : Dr.C.Yuvaraj
   - Principal : Dr.K.Sreenivasa Reddy
   - Correspondent : Sri.N.Vijaya Bhaskar Choudary
   - Guest of Honour : Dr. U.Chandra Sekhar
     Director, Engg. Staff College of India
     Gachibowli, Hyderabad.
   - Chief Guest : Dr K. Hema Chandra Reddy
     Registrar, JNTUA,
     Anantapuramu.
2. Lighting the lamp
   – By the chief guest & other dignitaries
3. Invocation
   - By Miss C. Naga Nandini & Team –III Mechanical
4. Opening Remarks
   - By the Programme Convener, Dr. G. Harinath Gowd
5. Address the Gathering
   - By HOD, Dr. C. Yuvaraj
6. Welcome Note
   -By the Principal, Dr. K. Sreenivasa Reddy
7. Introduction of the Guest of Honour **(Dr. U. Chandra Sekhar)**
   - By Dr. P. Suryanarayana Raju (Professor)
8. Address the Gathering
   -By the Guest of Honor, Dr. U. Chandra Sekhar
9. Introduction of the Honorable Chief Guest (Dr. K. Hemachandra Reddy)
   - By Dr. B. Eswar Kumar (Professor)
10. Address the gathering
    -By the Chief Guest, Dr. K. Hemachandra Reddy
11. Releasing the Workshop Proceedings
    -By Honorable Chief Guest & other dignitaries
12. Releasing the workshop CD
    -By the Guest of Honor & other dignitaries
13. Closing Remarks
    -By Correspondent, Sri N.Vijaya Bhaskar Choudary
14. Honoring the Chief Guest
    - By the Dignitaries
15. Vote of thanks
    - By Mr. M.Vamsidhar (Associate Professor)
16. High Tea follows the key note talk by Dr. U. Chandra Sekhar

FORMAT OF SESSIONS

The technical sessions of the Faculty Development Program are moderated by Dr. Suryanarayana Pakalapati and Dr. Eswara Kumar Bandi, both faculty of Mechanical Engineering at MITS. The lectures were broken up into morning and afternoon sessions. Same speaker conducted the morning and evening sessions on most days but occasionally the speaker changed for the afternoon session. A short fifteen minute tea break is given in the middle of both the sessions.

Each day, the program started promptly at the scheduled time with a brief introduction of the speaker to the audience given by the moderators. The speakers conducted the session from then on until the scheduled break. The sessions once again restarted promptly at the end of the break. All speakers answered questions from the audience both in the middle lectures and at the end of coverage on specific topics. Most Speakers allowed time at the end of their lectures for interaction with the participants. Moderators tried to facilitate healthy discussion between the speaker and the participants both during the lectures and during the interaction time at the end of the lectures.

A brief valedictory ceremony is conducted at the end of each speaker's assignment. In the valedictory ceremony, a brief summary of the topics covered and learning outcomes from the lectures is presented by the moderators followed by felicitation of the speaker by the college officials and the program organizers and a photo session. Mr. Sreenivasulu Bezawada, Assistant Professor in Mechanical Engineering oversaw the video recording of the lectures and photo sessions. Mr. Vamsi Krishna, Assistant Professor in Mechanical Engineering, took charge of setting up the equipment for the lecture, collecting the lecture material from the speakers and helping with the smooth conduction of the program. Speakers graciously shared the lecture material for distribution among the participants, although some had to remove sensitive material before providing the soft copies.

SUMMARY OF LECTURES

In what follows a brief summary of the lectures conducted on each day of the Faculty Development Program is provided along with short accounts on the credentials of the resource persons.

Monday, March 3

Topic : *Aircraft Design- Fracture and Fatigue*

Resource Person

Mr. P. Janakiramulu, Design Chief, Infotech, Hyderabad

Mr P. Janakiramulu has 43 years of experience in Aerospace and Manufacturing Industries. He retired as Deputy General Manager in Structural Design Group at Aircraft Research and Design Centre, Hindustan Aeronautics Limited (HAL), Bangalore. He also worked for Defence Research and Development Laboratory at Hyderabad. He received several accolades for his work on prestigious projects like Chandrayan and Sea King Helicopter. HGgdHe is currently working as the Design Chief at Infotech, Hyderabad. He received B.Tech in Mechanical Engineering from Jawaharlal Nehru Technological University (JNTU), Hyderabad and PGDBA from St. Joseph College of Business Administration.

TOPICS COVERED

Morning Session

The lecture was titled "Aircraft Design- Fracture and Fatigue Considerations." The speaker started with a short introduction to aerodynamics and fundamentals of lift force responsible for the flight of the aircrafts. Then an overview of design process of an aircraft is given. Details of different aspect such as pilot requirements, passenger requirements, fuel efficiency, commercial aspects, military requirements that are taken into consideration in the design process are given. The competing nature of requirements for safety of the aircraft and for its efficiency was particularly emphasized.

Afternoon Session

The same lecture as in the morning was resumed in the afternoon. The functions of different parts of an aircraft (wing, fuselage, tail etc.) are elucidated along with their typical configurations. Common causes for failure of aircrafts that lead to accidents are identified as bird strikes, engine failure, icing of wings and lightning. Primary loads that act on an aircraft are distinguished. Definition and explanations are given for terminology used in aircraft design. Concepts of failure due to fatigue and designing aircrafts against fatigue are introduced. The safe-life, fail-safe and damage tolerant design philosophies are covered. Finally the methods for aircraft life estimation are explained including the details of full-scale fatigue life testing.








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Tuesday, March 4

Topic : *Understanding Fatigue and Damage Tolerance Design of Aircraft Structures*

Resource Person

Dr. P. K. DASH, Chairman, Bangalore Aircraft Industries Limited, Bangalore.

Dr. P. K. Dash Retired as Head of Structural Integrity Division of National Aerospace Laboratories (NAL) in 2007. He is currently Founder Chairman of Bangalore Aircraft Industries Limited, Bangalore. During his 30 year career at NAL he made extensive contributions to the fatigue analysis of aircrafts and worked on several prestigious projects which include LCA, Hansa, Saras and MiG-21. He obtained B.Sc Engg in Civil Engineering from Sambalpur University and M.Sc Engg as well as PhD in Aerospace Engineering from Indian Institute of Science (IISC), Bangalore.

TOPICS COVERED

Morning Session

The lecture was titled "A Bird's eye view of the importance of Airframe Static, Fatigue and Damage Tolerance Design" The lecture started with a note on the serious implications of an aircraft accident. Aircraft structural design terminology was defined and explained. The ultimate goals to be achieved in the design of an aircraft design are clearly stated and explained. The said goals are then converted into mechanical engineering terms. The concept of fatigue failure is introduced and its importance in aircraft industry is stressed. A case history of benchmark accidents caused by fatigue is presented along with the lessons learned from those accidents by the designers and the regulatory authorities.

Afternoon Session

The lecture continued with categorization of Fatigue failures as normal fatigue, anomalous fatigue and unexpected normal fatigue. Each type of fatigue is explained in detail along with examples from history. The design philosophies of 'safe-life', 'fail-safe', and 'damage tolerance' are elucidated and their relationship with the types of fatigue failure is explained. The advantages and shortcomings of each of the design philosophies are discussed at length. Several aircraft accidents from history are discussed along with the findings of investigations conducted to find the cause of those accidents, which is then tied into the discussion of types of fatigue and design philosophies. Towards the end of the session, the speaker played a video of some of the fatigue experiments and analyses conducted at National Aerospace Laboratories.

Wednesday, March 5

Topic : Fracture, Fatigue and Damage Tolerance

Resource Person

Dr. Ganapathi Manickam, Head Design Validation Group in Engineering Solutions, Mahindra Satyam.

Dr. Ganapathi Manickam has 30 years of experience in Finite Element Methods, Computational Mechanics, Stability of Structures, Vibrations and Aero-Elasticity, Design Validation and Training and Mentorship. He worked at Defence Research and Development Organization (DRDO) for over 20 years in Missile Development Programme. He developed many engineering validation tools and an active vibration control facility. He also worked for 3 years in General Electric India Technology Centre, Bangalore before joining Mahindra Satyam. He authored over 170 technical publications. He has bachelor's degree in Aerospace Engineering from Madras Institute of Technology (MIT), and Masters as well as Doctorate degree from Indian Institute of Technology, Chennai.

TOPICS COVERED

Morning Session

The session was conducted as one to one interaction between the speaker and the participants. The basic definitions of fatigue terminology, history of fatigue, fatigue life and material failure modes are presented. The fatigue life of a component is discussed in detail. Videos of past aircraft disasters and their investigations are shown followed by a discussion of the incidents in terms of the fatigue aspects. Fatigue design philosophies, safe life design, fail safe design and damage tolerant design are discussed in the context of past failures of aircrafts, especially due to fatigue.

Afternoon session

The lecture resumed with a discussion about how to address the fatigue problem in an application oriented way. Major terminology used in Fatigue and Fracture Mechanics and its importance is elucidated. The topics that are emphasized include Design aspects of Fatigue, Fracture Mechanics (main terminology like Stress Intensity Factor), and modes of fracture (Crack opening, in plane sliding or shearing and Anti plane Tearing). At the end of the session, basics and essentials of Finite Element Methods are taught in order to enhance the appreciation of the participants towards the fundamental concepts and ideas involved in modeling studies.

Thursday, March 6

Topic : Concepts of FEM and case studies

Resource Person

Dr. C. S. Ramesh, Professor, PES Institute of Technology, Bangalore.

Dr. C. S. Ramesh has over 20 years' experience in teaching and academic research. His areas of expertise include Finite Element Analysis, Non-linear and Dynamic Modeling, Processing of Metal Matrix Composites (MMCs), Heat Treatment of MMCs, Solidification of MMCs, Hybrid Composites, and Extrusion of MMCs. He executed numerous funded projects and published over 100 research papers. He is recipient of several prestigious awards which include Prof. Satish Dhawan Award for Young Engineers from Karnataka State Government and Sudharshan Bhat Award from Indian Institute of Technology, Madras. He obtained Bachelors in Mechanical Engineering from University Visvesvaraya College of Engineering (UVCE), Masters in Metal Casting from M. S. Ramaiah Institute of Technology (MSRIT), and PhD from Indian Institute of Technology (IIT), Madras.

TOPICS COVERED

Morning Session

The session started with a concise discussion of fundamentals of Fatigue and Fracture, and non-Linear analysis (Material Non-linearities and Geometric Non-linearities) in Finite Element Methods (FEM). The process involved in solving a structural problem using FEM is explained in detail. The topics of Matrix Algebra, Structural Mechanics, and Continuum Mechanics which are essentials of FEM are touched upon. The concept of finite elements is then introduced and basic differences between 1D, 2D and 3D elements is explained along with their specific applications. It was emphasized that an understanding of these concepts is essential to solve any problem using FEM. Several videos about the experiments and experimental setups at the speakers institution are shown to the participants followed by a discussion of various projects that were conducted which include the Design and Analysis of Biomedical Stent (FEM application), and Blood flow simulation through arteries using CFD analysis. The topics of crack propagation, inter laminar shear stress, shape functions, derivation of elemental properties and composites are covered.

Afternoon Session

This session is dedicated to case studies of applications of FEM in various engineering problems. The case studies presented were from the projects conducted by the speaker. The following FEM applications using commercial software are presented: Fatigue life estimation of prosthetic knee using FEA, Casting simulation using FEA (to improve the quality of cast products, it has been a longstanding research issue in manufacturing industries), Slip drive/over running clutch for Tractor PTO (Power Takeoff), and Sheet metal forming. At the end of the session, upon the request of the participants, a short description of facilities, equipment and machinery available at the speaker's home institution is provided.

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Friday, March 7

Topic : *Prediction of Tearing and Rupture of structures under impact loading using finite element method*

Resource Person

Mr RamaJeyathilagam, Senior Professor, Hindusthan University, Chennai

Dr. K. Ramajeyathilagam worked as a Scientist for 23 years in Shock and Vibration Centre, Naval Science and Technology Laboratory (NSTL), Visakhapatnam, a Defence Research and Development Organization (DRDO) Laboratory. He also worked as a Principal Consultant at Infotech Enterprises, Hyderabad before joining Hindustan University, Chennai. His areas of specialization include shock and vibration, shock testing, non-linear dynamic analysis for impact, drop and explosion loads, prediction of inelastic failure modes, analysis of metallic and composite aircraft structures and interiors. He received bachelor's degree in Aeronautical Engg from MIT,Chennai and Master's as well as Doctoral Degrees in Ocean Engineering from IIT, Chennai.

TOPICS COVERED

Morning Session

The first part of the lecture was on the topic of predicting structural failure under dynamic loading. The lecture began with an overview of applications where dynamic loads are encountered and types of dynamic loads, impact loads, shock loads and vibrations. Fundamental theory and equations for dynamic loading problems are presented along with the constitutive material models, failure criteria and hardening related phenomena. Fundamentals of time domain and frequency domain calculations are described briefly. Details of predicting vibration response of system components are given. Model selection procedure for a given structural problem is described. Case studies on results obtained using different analysis methods are presented. In the second part of the lecture, different modes of failure under shock loads such as dishing, tearing, rupture are discussed. Several case studies are shown where the Finite Element Analysis yielded accurate predictions of failure under impact loading.

Afternoon Session

This session was dedicated to the topic of "Fatigue and Damage Tolerance of Aircraft Structures.' The lecture started with a review on the basics of fatigue, factors affecting fatigue, design against fatigue failure and importance of fatigue in aircraft industry. A historical perspective is given on the aircraft accidents due to fatigue failure. Basics of fatigue prediction methods and fatigue design methods are presented. Fundamentals of fatigue characterization of materials are described. Basics of fracture mechanics are explained including the topics of strain energy release, fracture toughness, criteria for fracture, stress intensity factor, damage tolerance and residual strength. Typical fatigue loads on an aircraft and the details of how the load curve is used in design analysis are elucidated. Finally an overview is presented on fatigue failures in composite and laminate materials which are alternative materials for aircraft structures.

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Saturday, March 08

No lecture was scheduled on Saturday and the participants are taken on a sightseeing trip to nearby tourist attractions.


MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE
Welcomes the Dignitaries & Participants to
AICTE Sponsored Two Week Faculty Development Programme On
Fatigue & Fracture Mechanics in Finite Element Analysis
Department of Mechanical Engineering.


Fatigue & Fracture Mechanics


FDP
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Fracture Mechanics

Monday, March 10 FN

Topic : *Specific Finite Element Method (FEM) software to solve problems in fatigue*

Resource Person

Mr. Pankaj Kulkarni, Engineer - Structures at Innovent Engineering Solutions Pvt. Ltd., Bangalore

Mr. Pankaj Kulkarni is an engineering professional with experience in providing training on ANSYS family software products, Finite Element Modeling of Mechanical Structures and guiding student and corporate projects. He has B.Tech degree in Mechanical Engineering from Rajasthan Technical University.

TOPICS COVERED

This session concentrated on using one specific Finite Element Method (FEM) software to solve problems in fatigue. The tools in ANSYS software family such as ANSYS Design modeler (to clean the geometry before the analysis) are discussed. Case studies on some of the projects delivered by the speaker using ANSYS FEM software are presented. The step by step process involved in obtaining a solution from ANSYS software starting with a problem definition is taught. At the end of this session there was a discussion on different elements available in ANSYS software, their properties and their applications.

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Monday, March 10 AN

Topic : *Case studies on LS-Dyna like automotive crash simulations, Pressurization testing for fuel tanks.*

Mr. Ramesh Venkatesan, Director,

C. Nandakumar, Senior Application Engineer and

Jitesh Eranachari, Head Customer Support, Kaizenat Technologies Pvt. Ltd., Bangalore

Mr. Ramesh Venkatesan is founder director of Kaizenat Technologies Private Limited which focuses on (Computer Aided Engineering) CAE solutions using LS-DYNA software. He is expert in CAE applications using various software tools like LS-DYNA, ANSA, CarSIM, Lattice3D. He worked at EASi Engineering and Altair Engineering offering technical consultancy for close to 150 companies. He has a B.E. in Mechanical Engineering, M.E. in Tool Design and MBA in Operation Management.

Nandakumar is experienced in offering technical support and training for CAE tools like LS-DYNA and ANSA. He worked at ESAi Technologies before joining Kaizenat. Nandakumar has BE in Mechanical Engineering from Visvesvaraya Technological University and M.Tech in CAD/CAM from VIT University. Jitesh Eranachari has over 10 years of experience in aerospace domain, working on dynamic problems like bird strike, blade containment, bird ingestion. Earlier, he worked at Altair Engineering and EASi Technologies. He has B. Tech in mechanical engineering and M. Tech in Tool Engineering.

TOPICS COVERED

The session started with a brief introduction to the start-up company called Kaizenat Technologies Pvt. Ltd given by the founder chairman Mr. Ramesh Venkatesan. Then salient features, solution strategies, and applications, of a commercial Finite Element Method (FEM) software LS-Dyna are presented. Optimization using LS-Dyna and introduction to Fracture and Failure analysis using LS-Dyna are also covered. Case studies of applications using LS-Dyna are presented which included automotive crash simulations, consumer product drop testing, stamping, earth quakes, Sloshing analysis and pressurization testing for fuel tanks.

More case studies on using LS-Dyna for Failure applications are presented by Jitesh Eranachari. The following applications using LS-Dyna are demonstrated: Fatigue analysis, CFD applications (Moving mesh, simulate the rotation of turbine blades of Horizontal axis wind turbines and vertical axis wind turbines), Fluid structure interaction, and Turbulence modeling. Website details to download the technical papers and for technical support on LS-Dyna is provided.

A freely available Pre and post processing tool for LS-Dyna software is demonstrated by Mr. Nandakumar. The website details to download the pre and post processor for free are provided.

Tuesday, March 11

Topic : *Hands on Training using ANSYS software.*

Resource Person

Mr. Rodriguez Arthur SA, Polytech Solutions, Bangalore

Mr. Rodriguez Arthur is an early career professional with a high degree of proficiency in using Computer Aided Engineering tools like ANSYS, CATIA, Hypermesh CFX, and FLUENT. He has B.E in Mechanical Engineering.

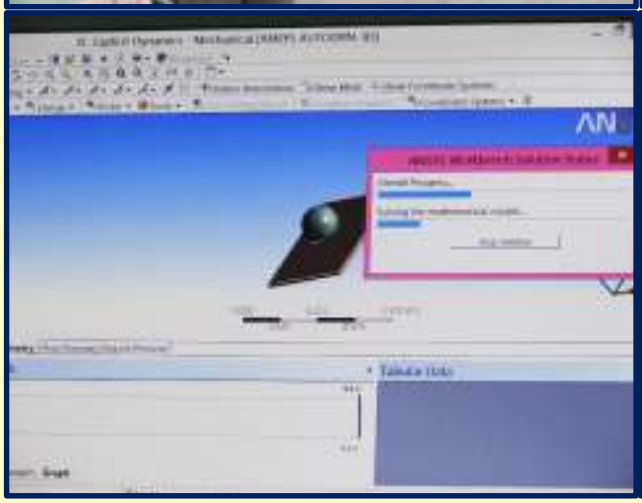
TOPICS COVERED

Morning Session

This session was meant to be a hands-on training event for the participants. It began with a brief introduction to the commercial software ANSYS, it features and capabilities. The participants were then asked to sit in front of the computers and follow the step by step instructions from the speaker to create a geometry using design software CATIA. The model geometry was then loaded into ANSYS and static stress analysis and fatigue analysis was performed under different types of loading such as axial and bending loading.

Afternoon Session

The hands on training continued in the afternoon session with a different model geometry and analysis was done for dynamic loading. Some participants approached the speaker with specific problems they encountered in their research or academic work and the speaker offered them his advice and assistance.



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Wednesday, March 12 FN

Topic: *Durability Analysis using Siemens CAE Products*

Resource Person

Mr. Shivakumar Chanal, CAE Solution Manager- Center of Excellence, Siemens Industry Software, Bangalore.

Mr. Shivakumar Chanal is an expert in using Computer Aided Engineering (CAE) tools for design and analysis of mechanical structures. He worked at Versabyte Data Systems Pvt. Ltd. and at IFB before joining Siemens.

TOPICS COVERED

This session was dedicated to introduce commercial Computer Aided Engineering (CAE) software to the participants. NX SEIMENS CAE software (NX NASTRAN), its working environment, options available in the software and its capabilities are presented by the speaker. Step by step process involved in going from problem definition to final solution using the software is shown in the real time. Some cases studies of the industrial applications solved by the NX NASTRAN software are also discussed.

Wednesday, March 12 AN

Topic: *Importance of the stress analysis in Aerospace Engineering applications*

Resource Person

Mr. A. J. Jayaprakash, Associate Consultant, Tata Consultancy Services, Bangalore.

Mr. Jayaprakash is highly experienced in Analysis of Aerospace Structures. He worked with various aerospace clients under various capacities of technical lead, project lead and project manager. Earlier he worked at Indian Space Research Organization (ISRO). He was a project manager for design and analysis of small satellite-HAMSAT. He is also involved in structural analysis activities for various INSAT series of satellites. He authored three technical publications. He has B.E. degree in Mechanical Engineering from Sir M. Visvesvaraya Institute of Technology, Bangalore and M.E. degree from B. M. S. College of Engineering, Bangalore.

TOPICS COVERED

The lecture started with a discussion on importance of the stress analysis in Aerospace Engineering applications. Some interesting videos regarding past aircraft accidents and their causes are shown. The design process involved in building a new aircraft is explained with emphasis on how stress estimation is important in the process. In the later part of the session the details of work flow and activities from concept to realization/solution in engineering services industries are presented. A general overview of what is expected from an entry level engineer by the employers in engineering services industries is discussed. The session ended with a brief presentation on Tata group of companies and Tata Consultancy Services.

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Thursday, March 13 FN

Topic: *Hypermesh - Practical insight in fatigue and fracture Mechanics: A tool based approach*

Resource Person

G. Kartik, Technical Manager, Designtech Systems Limited, Hyderabad.

Mr. Karthik is an expert in Engine Design and Linear and Non Linear Simulations. He is well experienced in customer support and technical assistance. He offered technical software support and training to several engineering companies, government sector industries and national laboratories. His key areas are Meshing, Random Vibration Analysis and Impact Analysis. He has Bachelor's degree in Mechanical Engineering from VJIT College, Hyderabad.

TOPICS COVERED

The session started with a brief introduction to the speaker's organization, Altair Engineering. The steps involved in solving the Fatigue problem, steps involved in meshing using Hypermesh, and tetra mesh optimization are taught. Different considerations in solving a real industry related problems using Hypermesh are discussed. Procedure for solving a structural problem right from the beginning of meshing using Hypermesh to Fatigue Life estimation using stress life approach is demonstrated in real time. The same process was repeated a second time using a second approach (Strain life) for fatigue life estimation. A third problem of Fatigue optimization of a Torque control arm is also solved in real time so the participants could follow the step by step process of solving a problem in Hypermesh. In the last part of the session easy to use software for optimization of structure, OptiStruct is introduced.

Thursday, March 13 AN

Topic: Basic Concepts of FEM

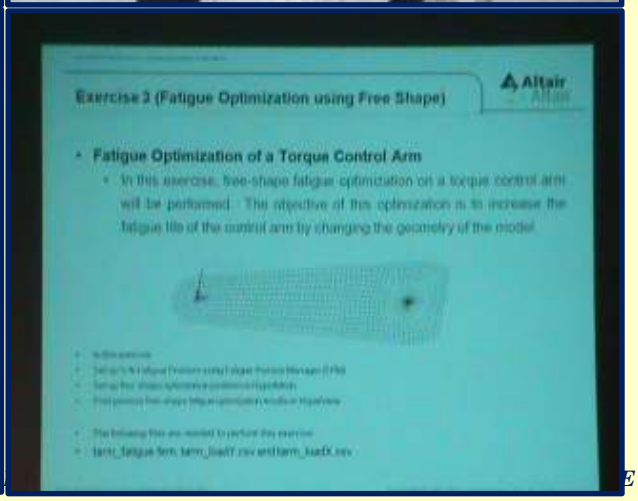
Resource Person

Dr. H. V. Lakshminarayana, Professor, Dayananda Sagar College of Engineering, Bangalore

Dr. Lakshminarayana is an eminent scholar in the area of Finite Element Modeling. He is well known for his rich contributions in the area. His past affiliations include University Visveswaraya College of Engineering, Bangalore; National Aerospace Laboratories, Bangalore; Wright Patterson Air Force Base, Ohio, USA; and University of Montreal, Canada. He has decades of experience in Computer Aided Engineering working at Indian as well Foreign Research Laboratories and Universities. He received awards for his teaching and research activities. In addition to numerous research papers, he authored several text books and chapters on Finite Element Modeling. He obtained his B.E. degree from Bangalore University and M.E and Ph.D degrees from Indian Institute of Science (IISc), Bangalore.

TOPICS COVERED

The session was conducted as an interaction event between the speaker and the participants. The discussion started with a general commentary on the current state of science and technology and enabling discoveries and developments over the years which lead to the present day comforts and conveniences. Then a thought provoking high level discourse was presented on Finite Element Methods (FEM), with regards to history and origin of the idea of FEM, land mark inventions that contributed to the success of the FEM, and the fundamental idea behind solving structural problems using FEM. The discussion was aimed at improving the general awareness of the participants regarding FEM and giving them an in depth insight into the steps involved in FEM. One case study of nonlinear finite element analysis to predict and prevent leakage in a steam turbine exhaust casing is presented. The lecture was also loaded with advice on various aspects of career planning, advancing and problem solving to the participants.


Exercise 3 (Fatigue Optimization using Free Shape)
Altair
Fatigue Optimization of a Torque Control Arm
In this exercise, free-shape fatigue optimization on a torque control arm will be performed. The objective of this optimization is to increase the fatigue life of the control arm by changing the geometry of the model.

Friday, March 14

Topic: *Fatigue and Fracture Mechanics : Case Studies*

Resource Person

Dr. Dilip Kumar Mahanty, Professor, Mukesh Patel School of Technology Management and Engineering, NMIMS University, Mumbai.

Dr. Mahanty has over 20 years of experience in the areas of Engineering, Consulting, Research and Development and Teaching. He has worked in several leading Research and Development organizations and Engineering firms like Bhabha Atomic Research Centre (BARC), Larsen & Toubro (L&T), Tata Consultancy Services (TCS), Lears and Ashok Leyland. His current interests include Non-Linear Analysis with special focus on Fracture Mechanics, Crash Mechanics, Manufacturing Process Simulations, Biomechanical Simulations and Product Design and Analysis. He has B.S in Mechanical Engineering from Birla Institute of Technology, Mesra and Ph.D in Mechanical Engineering from Indian Institute of Technology (IIT), Bombay.

TOPICS COVERED

Morning Session

The first part of the lecture was about fundamentals of Finite Element Analysis (FEA) in which basic concepts of FEA are covered. The second part of the lecture was on Fracture Mechanics which started with a description of history and origin of the theory. Basic terminology of Fracture Mechanics and concepts such as, types of fractures, their characteristics, different criteria for failure are covered in detail. Methods of quantifying the fracture, and the concepts of Crack propagation, Stress intensity factor, Crack tip plasticity, Fracture toughness, Elastic and plastic fracture mechanics, definition of CTOD (Crack tip opening displacement), compact tension and CTOD analysis of ASTM standards are elucidated.

Afternoon Session

Mixed mode fracture is covered in the third part of the lecture. Details of crack kinking, crack patterns, oscillatory cracks, interface cracking, and crack displacement are explained. The last part of the lecture focused on using FEA to estimate crack growth and propagation. All the required basic for solving fracture mechanics problems in FEA such as calculating stress intensity factor are given. Special elements required for the crack tip region are discussed in detail. Results are shown for some selected problems on estimation of crack growth using FEA.

Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

Saturday, March 15

Topic: *Brief Overview and application of life estimation method to lightning protection method*

Resource Person

Mr. S. S. Subramanya Sastry, Deputy General Manager, Infotech Enterprises Ltd., Hyderabad.

Mr. Subramanya Sastry has 26 years of experience in Aerospace domain in the areas of Composite/Metallic airframe design and development, manufacturing, assembly and testing processes. He worked at National Aerospace Laboratories (NAL), Bangalore, on projects like HANSA, LCA and SARAS aircraft programs. He also worked as a principal consultant at Quantech-Wipro in the Engineering Design Services division for clients like Airbus and Boeing. His areas of interest are Composites and Finite Element Analysis (FEA). He authored around 26 technical publications in journals and conferences. He received B.E. in Mechanical Engineering and M.E. in Structural Engineering from University Viswesvaraya College of Engineering. He also pursued M.A. in Sanskrit.

TOPICS COVERED

Morning Session

The topic of the first part of the lecture was 'Life estimation of lightning conducting network of an Aircraft'. The lecture started with an introduction to meteorological phenomenon of lightning which generated quite an interest among the audience. The defense mechanism provided inside an aircraft against the lightning strikes, the MBN (Metallic Bonded Network), is then described. Design requirements for MBN are clearly stated and the results from the case study of a project done by the speaker on the topic are presented. The results also included the Fatigue Life evaluation of MBN strip components. The second part of the lecture was on the topic of benefits, methods and challenges in adapting the composite material technology to the aircraft structures.

Afternoon Session

The afternoon session was conducted as an interactive session where the speaker talked to the students on how to approach a problem in order to successfully arrive at a solution. There was a healthy discussion on different example problems and how they could be addressed using Finite Element Methods.

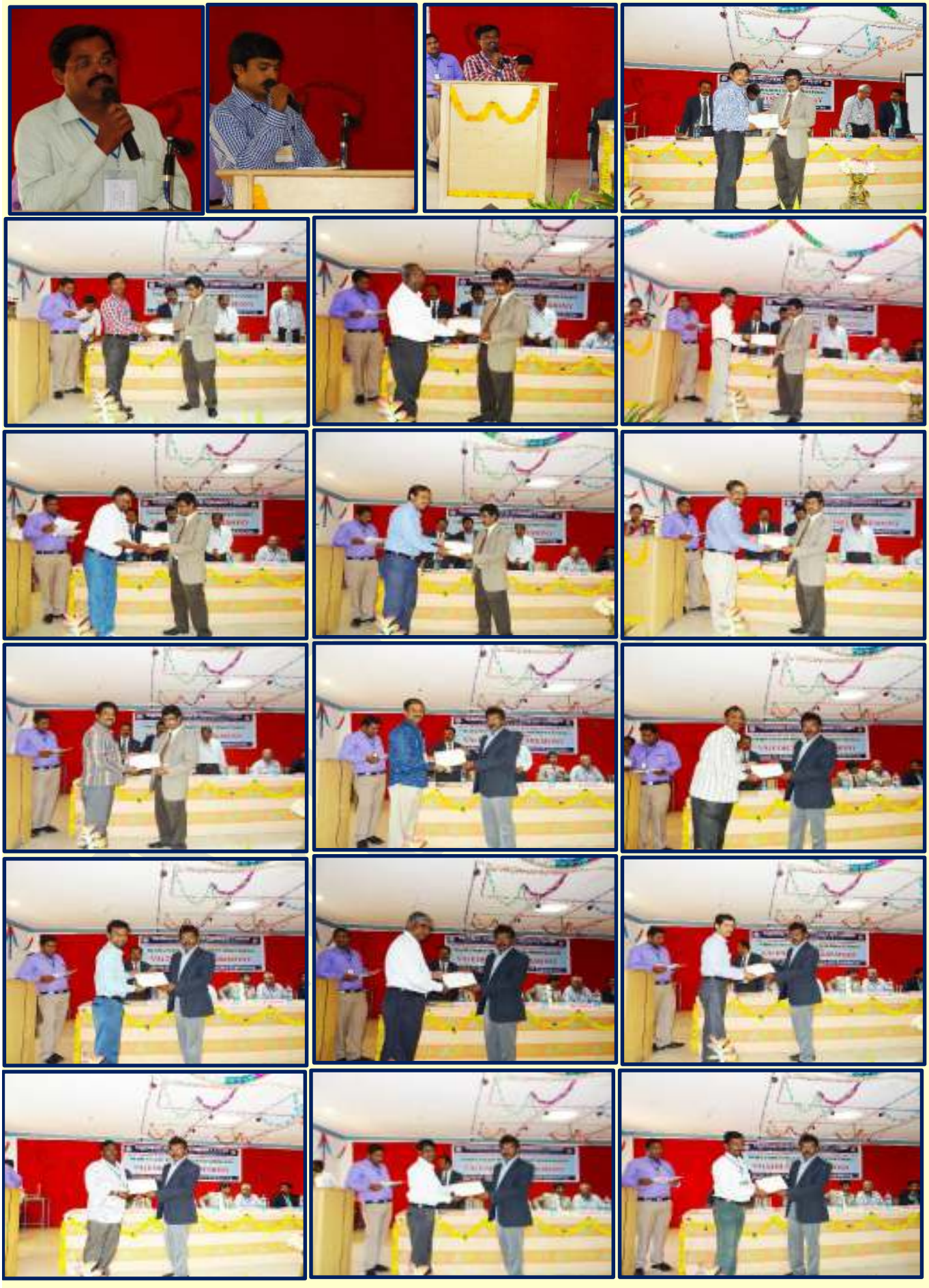
Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

Saturday, March 15

VALEDICTORY FUNCTION

The valedictory function for the whole Faculty Development Program (FDP) was conducted on Saturday, 15th of March after the second session of the day's technical program. The speaker of the technical program, Sri S.S.Subramanya Shastry, Deputy General Manager, Infotech Enterprises Ltd., Hyderabad was asked to be the chief guest for the valedictory function. Dr. Harinath Gowd, Convener of the program, Dr. C. Yuvaraj, chief coordinator of the program and HOD of Department of Mechanical Engineering, and Dr. K. Sreenivasa Reddy, chief convener of the program and Principal were in attendance. Dr. Harinath Gowd addressed the gathering and gave details about conducting the faculty development program. Dr. S.S. Suryanarayana Pakalapati, Professor of Mechanical Engineering, gave a brief summary of the speakers of the daily technical programs, topics covered on each day of the program and the overall learning outcomes of the program. The participants were asked to give open feedback of the program from the dais. Up to four participants came forward and gave highly positive feedback about the way the program was conducted, the quality of the technical sessions, the level of their learning from the program and the hospitality of the MITS faculty, staff and students. Certificates for participation in the program were distributed to the candidates by the chief guest, Sri S.S.Subramanya Shastry, the Principal Dr.K. Sreenivasa Reddy, DR. C. Yuvaraj and Dr. Harinath Gowd. The valedictory program ended with a vote of thanks presented by Sri V. Vamsidhar, Associate Professor of Mechanical Engineering Department.

Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE



Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

LEARNING OUTCOMES FROM THE TECHNICAL SESSIONS

The lectures offered in the technical sessions complimented each other very well and when combined, they came out to be an excellent jump start for engineering faculty who are looking to expand their research or teaching portfolio into the area of fatigue and fracture mechanics. Some of the topics, especially the fundamentals, were repeated in several of the lectures which helped in strengthening the participants' knowledge of basics in this area. On the other hand, different speakers put more emphasis on different niche aspects of the area so the participants could gather information of wide range of applications of the theory presented.

Several speakers highly stressed the importance of sticking to the fundamentals when approaching a problem. Speakers tried to impart to the participants their wisdom on how to tackle complex research and design challenges by breaking them up into multiple small problems. Some speakers gave the participants advice on how to generate research ideas, secure funding from external agencies and successfully conduct the projects. It was emphasized repeatedly by several speakers that for a successful career in research one should acquire knowledge in multiple disciplines of science and engineering and be willing to learn new things continuously throughout one's careers

Participants are exposed to at least four different commercial software tools for Finite Element Modeling. Expert users of each of the tools showed the participants the step by step process of solving structural modeling problems using their respective software. Participants had the benefit of being able to compare and contrast among different tools in terms of their capabilities and ease of use. Participants could readily assess which tool is more suitable for their current or future needs.

Speakers with academic work experience, during their lectures, touched upon the topic of ideal teaching practices for effective mentoring of students. They shared their experience with the audience on how to effectively connect with the students and get them involved in the learning process. In addition participants had the opportunity to watch highly skilled and experienced teachers deliver lectures. It could be expected that the participants have observed and learned effective teaching methods from this interaction with the experts.

Speakers from industry have shared their experiences of employee recruitment process with the participants. They explained to the participants what the recruiters expect to see in potential employees, what the common mistakes of job seekers are and what the

best strategies to succeed job hunt are. This valuable information could be used by the participants to coach their students and help them secure employment offers.

Another important aspect of the lectures is that experienced speakers gave the participants advice on personality development and how they could further their careers through hard work, dedication and assuming individual responsibility. Speakers narrated anecdotes from their personal experience on how they were faced with problems due to reasons out of their control and how they still managed to overcome such hurdles through their own initiative and determination. Some speakers also emphasized the importance of including patriotic ideology into one's work ethics.

Overall the technical sessions of the program offered an all-round training and skill enhancement opportunity to the participants. In addition to learning the science and technology of Fatigue and Fracture Mechanics the participants had ample opportunity to pick up wisdom of the experts in the area, learn research methodologies from them and to grasp their teaching philosophies. Since the learning outcomes of this program, as reckoned by the organizers, cover teaching, research and personality development aspects, all of which are keys to success in an academic career, this program is deemed a highly successful Faculty Development Program.

EENADU 04-03-14

పరిశ్రమలకు అనుగుణంగా

సాంకేతిక విద్యలో మార్పులు రావాలి

జాతీయ సదస్సులో జేఎన్‌టీయూ రిజిస్ట్రార్ డాక్టర్ హేమచంద్రారెడ్డి వెల్లడి

జ్యోతి వెలిగించి కార్యక్రమాన్ని ప్రారంభిస్తున్న డాక్టర్ హేమచంద్రారెడ్డి

ANDHRAJYOTHY 04-03-14

అధ్యాపకులకు కావాలి నిరంతర అధ్యయనం

కురబలకోట: విద్యార్థుల స్థాయికి తగ్గట్లుగా అధ్యాపకులు బోధించగలిగినప్పుడే విషయాల పట్ల అవగాహన కలిగివుండి మెరుగైన ఫలితాలను సాధించవచ్చని జేఎన్‌టీయూ రిజిస్ట్రార్ హేమచంద్రా రెడ్డి పేర్కొన్నారు. అంగళ్లు వద్దనున్న మిట్స్ ఇంజనీరింగ్ కళాశాలలో అధ్యాపకులకు శిక్షణాతరగ తులను నిర్వహిస్తున్నారు. ఈ కార్యక్రమానికి ముఖ్యఅతిథిగా పాల్గొన్న ఆయన మాట్లాడుతూ అధ్యాపకులు సబ్జెక్టు మీద పరిపూర్ణమైన జ్ఞానాన్ని పెంపొందించుకుని బోధించాలన్నారు. సాఫ్టెక్ లేజ్ ఆఫ్ ఇండియా డైరెక్టర్ యు.చంద్రశేఖర్ మాట్లాడుతూ కొత్త వాహనాలను ఆధునీకరించే క్రమంలో యంత్రాల తయారీలో వాటి బరువు, నా ణ్యత, ఇంధన పొదుపు అనే అంశాలను మెరు గుపరిచే కొత్త యంత్రాలను ఆవిష్కరించవచ్చన్నారు.

03-03-14

EENADU

నేటి నుంచి మిట్స్‌లో అధ్యాపకుల సదస్సు

కురబలకోట, న్యూస్‌టుడే: మిట్స్ ఇంజనీరింగ్ కళాశాలలో సోమవారం నుంచి 15 రోజులు స్వల్పకాల డవలప్‌మెంట్ ప్రోగ్రాం నిర్వహించనున్నట్లు ఆ కళాశాల ప్రిన్సిపల్ డాక్టర్ శ్రీనివాస్‌రెడ్డి, మెకానికల్ విభాగాధిపతి డాక్టర్ యువరాజ్ ఒక ప్రకటనలో పేర్కొన్నారు. మెకానికల్ విభాగం ఆధ్వర్యంలో 'స్టాటింగ్ అండ్ ప్రాక్టర్ మెకానిక్స్ ఇన్ మైనింగ్ ఎక్విప్‌మెంట్ అనాలిసిస్' అనే అంశంపై జరిగే ఈ కార్యక్రమ ప్రారంభోత్సవానికి జేఎన్‌టీయూ అనంతపురం రిజిస్ట్రార్ ప్రొఫెసర్ హేమచంద్రారెడ్డి ముఖ్య అతిథిగా రానున్నట్లు తెలిపారు. మెకానికల్ విభాగం అధ్యాపకులు కార్యక్రమాన్ని సద్వినియోగం చేసుకోవాలని సూచించారు.

ANDHRAYOTHY

నేడు మిట్స్‌లో వర్క్‌షాపు

కురబలకోట: మండలంలోని అంగళ్లు వద్దనున్న మిట్స్ ఇంజనీరింగ్ కళాశాలలో సోమవారం అధ్యాపకులకు శిక్షణ తరగతులునిర్వహించనున్నట్లు కళాశాల ప్రిన్సిపాల్ డాక్టర్ కె.శ్రీనివాసులురెడ్డి, మెకానికల్ విభాగాధిపతి డాక్టర్ సి.యువరాజ్‌లు తెలిపారు. ఏఐసీటీఈ నిర్వహణతో మెకానికల్ విభాగం ఆధ్వర్యంలో ఈ కార్యక్రమం నిర్వహిస్తారన్నారు. ఈ కార్యక్రమానికి ముఖ్యఅతిథిగా జేఎన్‌టీయూ రిజిస్ట్రార్ హేమచంద్రారెడ్డి పాల్గొంటారని తెలిపారు. ఈ అవకాశాన్ని అధ్యాపకులు సద్వినియోగం చేసుకోవాలని కోరారు.

SAKSHI 04-03-14

విజ్ఞాన భాస్కరులు అధ్యాపకులు

కురబలకోట, న్యూస్‌లైన్: అధ్యాపకులు ప్రతిరోజూ ఉదయించే భాస్కరుడిలా ఉండాలని అనంతపురం జేఎన్‌టీయూ రిజిస్ట్రార్ కే.హేమచంద్రారెడ్డి కోరారు. మదనపల్లె సమీపంలోని అంగళ్లు మిట్స్ ఇంజినీరింగ్ కళాశాలలో ఫ్యాకల్టీ డెవలప్‌మెంట్ ప్రోగ్రామ్‌పై రెండు వారాల పాటు జరిగే జాతీయ కార్యక్రమం సోమవారం ప్రారంభమైంది. ఆయన ముఖ్య అతిథిగా హాజరై మాట్లాడారు. ఈరోజు కంటే రేపటి రోజు ఇంకా బాగా పాఠాలు చెప్పగలగాలన్నారు. ఇందుకు నిత్య అధ్యయనం అవసరమన్నారు. విశ్వజ్ఞానాన్ని ఔపోసన పట్టి విజ్ఞాన భాస్కరులు కావాలన్నారు. విద్యార్థుల భవితకు పునాది రాళ్లు కావడంతో పాటు వారిని ప్రభావితం చెయ్యగలిగేలా ఉండాలన్నారు. నేర్చుకోవాలన్న తపన, తృష్ణ లేనిదే జ్ఞానాన్ని సంపాదించలేమన్నారు. పేరు ప్రఖ్యాతలు తెచ్చుకోవాలన్న ఆశ ఉంటే చాలదని, ఆ దిశగా కృషి, పట్టుదల అవసరమన్నారు. గౌరవ అతిథిగా హాజరైన ఇంజినీరింగ్ స్టాఫ్ కాలేజ్ ఆఫ్ ఇండియా హైదరాబాద్ డైరెక్టర్ యు.చంద్రశేఖర్ మాట్లాడుతూ ఒక యంత్ర పనితీరు విఫలమయ్యేదాకా నిరీక్షించకుండా కంప్యూటర్ ద్వారా పరీక్షించి ఫెటిగ్ అభివృద్ధి అయ్యే సమయాన్ని తెలుసుకోవచ్చన్నారు. ఈ కార్యక్రమంలో దేశంలోని వివిధ ఇంజినీరింగ్ కళాశాలల అధ్యాపకులు పాల్గొన్నారు. ప్రిన్సిపాల్ కే.శ్రీనివాసరెడ్డి, విభాగాధిపతి యువరాజ్, కన్వీనర్ హరినాథ్, పీఆర్‌వో మారుతీప్రసాద్ తదితరులు పాల్గొన్నారు

INDIAN EXPRESS 03-03-14

Faculty Dev Meet at MITS from Today

Express News Service

Chittoor: The Madanapalle Institute of Technology and Science (MITS), Department of Mechanical Engineering is holding the All India Council for Technical Education (AICTE), New Delhi-sponsored two-week Faculty Development Programme on 'Fatigue & Fracture Mechanics in Finite Element Analysis' from Monday till March 15.

More than 50 faculty from various engineering colleges in the country will participate in the programme.

Prof K Hemachandra Reddy, registrar, Jawaharlal Nehru Technological University Anantapur (JNTU-A) will be the chief guest and Dr U Chandrasekar, director, Engineering Staff College of India (ESCI), Hyderabad, will be the guest of honour, MITS Madanapalle principal Prof K Sreenivasa Reddy said.

SAKSHI 05-03-14

విమాన ప్రమాదాలను అధిగమించవచ్చు

కురబలకోట, న్యూస్‌లైన్: విమానాల తయారీలో డిజైన్, నిర్మాణం, టెస్టింగ్ సరిచేసుకుంటే చాలా వరకు ప్రమాదాలను అధిగమించవచ్చని బెంగళూరు ఎయిర్ క్రాఫ్ట్ ఇండస్ట్రీస్ చైర్మన్ డాక్టర్ పీకే.దాస్ అన్నారు. మదనపల్లె సమీపంలోని అంగళ్లు మిట్స్ ఇంజనీరింగ్ కళాశాలలో జరుగుతున్న ఫ్యాకల్టీ డెవలప్‌మెంట్ ప్రోగ్రామ్‌లో భాగంగా రెండో రోజు మంగళవారం ఆయన మాట్లాడుతూ విమాన తయారీలో లోపాలు ఉండరాదన్నారు. వాటిని తయారు చేసేటప్పుడు రెక్కలను స్టాటిక్ టెస్ట్ ద్వారా పరీక్షించాలని పేర్కొన్నారు. అది ఎంత శాతంలో బరువును తట్టుకుంటుందో తెల్సుకోవాలన్నారు. 150 శాతం కంటే తక్కువ ఉంటే డిజైన్‌లో లోపమున్నట్లు గుర్తించాలన్నారు. అంతకన్నా ఎక్కువ ఉంటే సరిపోతుందన్నారు. గతంలో జరిగిన జపాన్ విమాన ప్రమాదంలోలోపాలను వివరిస్తూ వాటిని ఎలా అధిగమించాలో తెలియజేశారు. విమానం పైకి ఎగిరినప్పుడు గురుత్వాకర్షణ శక్తి కిందకు లాగుతుందని అన్నారు. దీనికి వ్యతిరేకంగా ఎగరడానికి రెక్కలు సహాయపడతాయని తెలిపారు. విమానంలో లిఫ్ట్ కీలకమన్నారు. రెక్కల కోణాన్ని మార్చడం ద్వారా లిఫ్ట్ బలాన్ని పెంచవచ్చని వివరించారు. లిఫ్ట్ ఎక్కువైతే విమానం పైకి లేస్తుందని, తక్కువైతే కిందకు దిగుతుందని అన్నారు. విమాన టైర్లలో తేలికగా ఉండే హీలియం అనే వాయువును నింపుతారన్నారు.

SAKSHI 03-03-14

మిట్స్‌లో ఫ్యాకల్టీ డెవలప్‌మెంట్ ప్రోగ్రాం

- నేటి నుంచి ప్రారంభం
- అనంత జేఎన్‌టీయూ రిజిస్ట్రార్ రాక

ప్రిన్సిపాల్ కే.శ్రీనివాసరెడ్డి

కురబలకోట, న్యూస్‌లైన్: మదనపల్లె సమీపంలోని అంగళ్లు మిట్స్ ఇంజనీరింగ్ కళాశాలలో సోమవారం నుంచి 13 రోజులపాటు ఫ్యాకల్టీ డెవలప్‌మెంట్‌పై కార్యక్రమాలు నిర్వహించనున్నట్లు ప్రిన్సిపాల్ కే.శ్రీనివాసరెడ్డి, కోఆర్డినేటర్ మారుతీ ప్రసాద్ తెలిపారు. ఆదివారం వారు విలేకరులతో మాట్లాడుతూ మెకానికల్ విభాగం వారితో 'ఫాటిగ్ అండ్ ఫ్రాక్చర్ మెకానిక్స్ ఇన్ ఫైనేట్ ఎలిమెంట్ అనాలసిస్' అనే అంశంపై జరుగుతుందని తెలిపారు. ముఖ్య అతిథిగా అనంతపురం జేఎన్‌టీయూ రిజిస్ట్రార్ ప్రొఫెసర్ కే.హేమచంద్రారెడ్డి హాజరవుతున్నట్లు చెల్లడించారు. బీఈ ఇంజనీరింగ్ స్టాఫ్ కాలేజ్ హైదరాబాదు డైరెక్టర్ యూవంద్ర కేశర్ గౌడ ఆతిథిగా విచ్చేస్తున్నట్లు తెలిపారు. ఏఐసీటీఈ సహకారంతో ఈ కార్యక్రమాన్ని నిర్వహిస్తున్నట్లు పేర్కొన్నారు.

Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

EENADU 08-03-14

లోపాలను అధిగమించడంలో కీలకపాత్ర పోషించాలి

జాతీయస్థాయి అధ్యాపకుల సదస్సులో ఉపన్యసిస్తున్న డాక్టర్ పి.కె.దాస్

EENADU 11-03-14

ఆటోమొబైల్ రంగంలో ఆన్‌సిస్‌దే కీలకపాత్ర

కార్యక్రమంలో ప్రసంగిస్తున్న రిసోర్సు పర్సన్ పంకజ్ కులకర్ణి

VAARTA 11-03-14

అటోమొబైల్ రంగంలో ఆన్‌సిసస్ టూల్‌పై అవగాహన అవశ్యం

కురబలకోట, మార్చి 10 ప్రభాతవార్త:

మెకానికల్ విద్యార్థులు ఆటోమొబైల్ రంగం వైపు దృష్టి సారించాలంటే ఆన్‌సిసస్ టూల్‌పై అవగాహన పెంపుకోవడం వల్ల భవిష్యత్తులో ఉపాధి అవకాశాలు మొండుగా లభిస్తాయని రీసోర్సుపర్సన్ పంకజ్ కులకర్ణి అన్నారు. సోమవారం మండలంలోని మిట్స్ ఇంజనీరింగ్ కళాశాలలో మెకానికల్ విభాగానికి చెందిన మూడవ సంవత్సరం బిటెక్ విద్యార్థులకు ఇంటెడక్టరీ ట్రైనింగ్ ఆన్ ఆన్‌సిస్ డిజైన్ మ్యాడ్యులర్ అనే అంశంపై ట్రైనింగ్ ప్రొగ్రాం నిర్వహించారు. ఈ కార్యక్రమానికి ఇన్నవెంటివ్‌కు చెందిన రీసోర్స్ పర్సన్ పంకజ్‌కులకర్ని విచ్చేశారు. ఆయన మాట్లాడుతూ ఆన్‌సిస్ అనే సాఫ్ట్‌వేర్‌ను ఎలా ఉపయోగించుకోవాలో విద్యార్థులకు వివరించారు. మెకానికల్ విభాగంలో పరికరాలు జీవితకాలం కనుగొనడానికి ఈ ప్రోగ్రామ్ ఉపయోగపడుతుందని తెలిపారు.మెకానికల్ విభాగంలో పలు యంత్రాల విభాగాలు, వాటి సామర్థ్యాన్ని అవగాహన చేసి పెంపొందించటకు ఈ టూల్‌ను ఉపయోగించడం జరుగుతుందని తెలిపారు. ఆటోమొబైల్ రంగంలో దాని ఆకారాన్ని డిజైన్ మరియు అవగాహన చేయుటకు ఎక్కువగా ఉపయోగిస్తారు.ఇలాంటి కార్యక్రమాలు నిర్వహిస్తున్న కళాశాల యజమానాన్ని ఆయన అభినందించారు. ఈకార్యక్రమంలో కళాశాల ప్రిన్సిపాల్ డాక్టర్ కె.శ్రీనివాసరెడ్డి, విభాగాదిపతి డాక్టర్ సి.యువరాజ్, డీమ్ ఆకాడమిక్స్ రాజారెడ్డి, అధ్యాపకులు, విద్యార్థులు పాల్గొన్నారు.

Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

Participants

S.No	Name of the Person	Designation	Address
1	F. ANAND RAJU	HEAD	SIDDARTH INSTITUTE OF ENGINEERING & TECHNOLOGY, PUTTUR
2	V. VISHNU VARDHAN	HEAD	INTELLECTUAL ENGINEERING COLLEGE, ANANTAPUR
3	C. SREEDHAR	HEAD	SRI KRISHNADEVARAYA ENGINEERING COLLEGE, GOOTY, ANANTAPUR DIST
4	D. SREENIVASULA REDDY	HOD	SIR VISHVESWARIAH INSTITUTE OF SCIENCE & TECHNOLOGY,, MADANAPALLE
5	DR.C.YUVARAJ	PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
6	DR. B. JAYACHANDRAIAH	PROFESSOR	SRI KALAHASTEESWARA INSTITUTE OF TECHNOLOGY, SRI KALAHASTI
7	DR.G.HARINATH GOWD	PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
8	DR. P. SURYANARAYANA RAJU	PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
9	DR. B. ESWARA KUMAR	PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
10	Y. HARI PRASADA REDDY	PROFESSOR	SRI VENKATESA PERUMAL COLLEGE OF ENGINEERING & TECHNOLOGY, PUTTUR
11	S.N. ANANDA	Assoc..PROFESSOR	EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY, BANGALORE
12	DR. S. RAJANNA	Assoc..PROFESSOR	GOVERNMENT ENGINEERING COLLEGE, KUSHALNAGAR.
13	DR. SHIVARUDRAIAH	Assoc..PROFESSOR	VISVESVARAYA COLLEGE OF ENGINEERING, BANGALORE
14	DR. H.N. VIDYASAGAR	Assoc..PROFESSOR	UNIVERSITY VISVESVARAYA COLLEGE OF ENGINEERING, BANGALORE
15	P. RAYUDU	Assoc..PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
16	D. SUDHAKARA	Assoc..PROFESSOR	SIDDARTHA INSTITUTE OF SCIENCE & TECHNOLOGY, PUTTUR
17	P. CHANDRA SEKHAR	Assoc..PROFESSOR	NARAYANADRI INSTITUTE OF SCIENCE & TECHNOLOGY, RAJAMPET
18	DR. E. VENUGOPAL GOUD	Assoc..PROFESSOR	G. PULLAREDDY ENGINEERING COLLEGE, KURNOOL
19	B. S. PRAVEEN KUMAR	Asst PROFESSOR	GOVERNMENT ENGINEERING COLLEGE, MANDYA
20	B. PHANI KRISHNA	Asst PROFESSOR	CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY, PRODDATUR, YSR DIST
21	M. JAYAPAL REDDY	Asst PROFESSOR	VIGNANA BHARATHI INSTITUTE OF TECHNOLOGY, VIDYANAGAR, PRODDATUR
22	B. SUBRAMANYAM	Asst PROFESSOR	JNTU, HYDERABAD
23	D. MALLIKARJUNA REDDY	Asst PROFESSOR	SIDDARTH INSTITUTE OF ENGINEERING & TECHNOLOGY, PUTTUR
24	G. NARENDRANATH	Asst PROFESSOR	SIDDARTH INSTITUTE OF ENGINEERING & TECHNOLOGY, PUTTUR
25	T.H. VENKATA NAGARJUNA	Asst PROFESSOR	SHRI SHIRDISAI INSTITUTE OF SCIENCE & ENGINEERING, ANANTAPUR
26	N. SREEDHAR	Asst PROFESSOR	SIDDARTHA INSTITUTE OF SCIENCE & TECHNOLOGY, PUTTUR
27	S. PRAVEEN KUMAR	Asst PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
28	BEZAWADA SREENIVASULU	Asst PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE

29	K. MANIKANTESH	Asst PROFESSOR	PBR VISVODAYA INSTITUTE OF TECHNOLOGY & SCIENCE, KAVALI
30	A. SRINIVAS	Asst PROFESSOR	NARAYANADRI INSTITUTE OF SCIENCE & TECHNOLOGY, RAJAMPET
31	M. SRINIVASA REDDY	Asst PROFESSOR	ATMAKUR ENGINEERING COLLEGE, SPSP NELLORE
32	M. VAMSI KRISHNA	Asst PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
33	M. GUNASEKHAR REDDY	Asst PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
34	S.K. ABDUL MUNAF	Asst PROFESSOR	VVIT, NAMBUR, GUNTUR
35	K. GOVARDHANA REDDY	Asst PROFESSOR	SIR. C.V. RAMAN INSTITUTE OF TECHNOLOGY & SCIENCE, TADIPATRI
36	K. REDDI PRASAD	Asst PROFESSOR	SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, CHITTOOR
37	J. REDDAIAH	Asst PROFESSOR	ADITYA COLLEGE OF ENGINEERING, MADANAPALLE
38	M. ARUN KUMAR REDDY	Asst PROFESSOR	ADITYA COLLEGE OF ENGINEERING, MADANAPALLE
39	G. GURU MAHESH	Asst PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
40	M. RAJASEKHAR REDDY	Asst PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
41	M. RAMANARASIMHA REDDY	Asst PROFESSOR	SIR VISHVESWARIAH INSTITUTE OF SCIENCE & TECHNOLOGY,, MADANAPALLE
42	R. JEELAN	Asst PROFESSOR	GOLDEN VALLEY INTEGRATED CAMPUS, ANGALLU, MADANAPALLE - 517325
43	G. RAMANJULU	Asst PROFESSOR	GOLDEN VALLEY INTEGRATED CAMPUS, ANGALLU, MADANAPALLE - 517325
44	M. SUBBA RAO	Asst PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
45	S. KAREEMULLA	Asst PROFESSOR	MADANAPALLE INSTITUTE OF TECHNOLGOY & SCIENCE, MADANAPALLE
46	M. SOWJANYA	Asst PROFESSOR	MOTHER THERESA INSTITUTE OF ENGINEERING & TECHNOLOGY, PALAMANERU
47	S. MOULALI	Asst PROFESSOR	MOTHER THERESA INSTITUTE OF ENGINEERING & TECHNOLOGY, PALAMANERU
48	N. CHANDRA SEKHAR REDDY	SENIOR LECTURER	GOVERNMENT POLYTECHNIC, ANANTAPUR
49	N.M. MUTHU KUMAR	SENIOR LECTURER	GOVERNMENT POLYTECHNIC, PILLARIPATTU, NAGARI, CHITTOOR DIST-
50	N. VENUGOPAL REDDY	SENIOR LECTURER	GOVERNMENT POLYTECHNIC, JAMMALAMADUGU, YSR KADAPA DIST.
51	G. KIRANMAI	LECTURER	GOVERNMENT POLYTECHNIC, RAYADURG
52	SRI.Y. REDDY SEKHAR	LECTURER	GMR POLYTECHNIC COLLEGE, MADANAPALLE
53	YANDI SANKARA	LECTURER	GMR POLYTECHNIC, SRISAILAM, KURNOOL -
54	MARAM SURESH BABU	LECTURER	GMR POLYTECHNIC COLLEGE, MADANAPALLE
55	N. VENKATESWARA RAO	RESEARCH SCHOLAR	GITAM UNIVERSITY, VISAKHAPATNAM
56	BONAM RAMBABU	RESEARCH SCHOLAR	GITAM UNIVERSITY, VISAKHAPATNAM

PROGRAM SCHEDULE

Date	Speaker	Topic
3/3/14	Sri Janakiramulu Design Chief, Infotech, Hyderabad	Aircraft Design- Fracture and Fatigue
4/3/14	Dr. P.K.Dash Chairman Bangalore Aircraft Industries Pvt. Ltd, Bangalore	Understanding Fatigue and Damage Tolerance Design of Aircraft Structures
5/3/12	Dr. Ganapathi, Head, Mahendra Satyam	Fracture, Fatigue and Damage Tolerance
6/3/14	Dr. C.S.Ramesh, Professor, PESIT, Bangalore	Concepts of FEM and case studies
7/3/14	Dr. K. Ramajeyathilagam Professor, Hindusthan University	Prediction of Tearing and Rupture of structures under impact loading using finite element method
8/3/14	No lecture was scheduled on Saturday and the participants are taken on a sightseeing trip to nearby tourist attractions	
10/3/14 FN	Mr. Pankaj P Kulkarni Engineer - Structures wing, Innovent	Specific Finite Element Method (FEM) software to solve problems in fatigue
10/3/14 AN	Mr. Ramesh Venkatesan Director, Kaizenat Technologies,	Case studies on LS-Dyna like automotive crash simulations, pressurization testing for fuel tanks.
11/3/14 AN	Rodriguez Arthurs S A Polytech Solutions, Bangalore	Hands on Training using ANSYS software
12/3/14 FN	Mr. Shiva Kumar, Manager, Siemens	Durability Analysis using Siemens CAE Products
12/3/14 AN	Mr. Jayaprakash A.J. Project Manager: EIS – Aerospace Tata Consultancy Services	Importance of the stress analysis in Aerospace Engineering applications
13/3/14 FN	Mr. Guda Karthik , Technical Support Mgr, Altair Engineering	Hypermesh - Practical insight in fatigue and fracture Mechanics: A tool based approach
13/3/14 AN	Dr. H. V. Lakshminarayana Professor, Dayananda Sagar College of Engineering, Bangalore	Basic Concepts of FEM
14/3/1/4	Dr. Dilip K Mahanthy Professor, Mukesh Patel STME	Fatigue and Fracture Mechanics : Case Studies
15/3/14	Sri Subramanya Shastry DGM,Infotech,Hyderabad	Brief Overview and application of life estimation method to lightning protection method

BROCHURE

REGISTRATION FORM

AICTE Sponsored Two Week Faculty Development Programme On

Fatigue & Fracture Mechanics in Finite Element Analysis

3rd to 15th March 2014

(A soft copy of the registration form must be mailed to fdp@mits.ac.in)

Name:
Designation:
Address of the Communication:

Phone No:
E-mail :

This is to certify that Sri/Smt:.....
.....is permitted to attend faculty development program on Fatigue & fracture mechanics in finite element analysis to be held during 3rd - 15th March 2014 at MITS, Madanapalle.

Accommodation required: YES/NO
DD particulars:
(If applicable)

Signature of the applicant:
Station:
Date :

Signature of the Head of the Institution with seal

About the College:

Madanapalle Institute of Technology and Science (MITS) was established in 1998 in the picturesque and pleasant environs of Madanapalle and is ideally located on a sprawling 30 acre campus. It has a resort like atmosphere, which is refreshing and exhilarating at the same time. The campus comprises of aesthetically designed buildings that are networked by Wi-Fi technology. This institution is established with the modern workshops and labs, computer and internet facilities, seminar halls, well equipped library and sports facilities that provide an excellent learning environment for the students. MITS Offers Diploma, UG & PG courses in Mechanical, Electrical & electronics, Electronics &communications, Computer Science and Information Technology, MBA & MCA.

MITS, originated under the auspices of Ratakonda Ranga Reddy Educational Academy under the proactive leadership of Sri **N. Vijaya Bhaskar Choudary, M.Com(Ph.D)**, Secretary & Correspondent and Sri **N. Krishna Kumar, M.S.(USA)**, president of the academy. MITS enjoys constant support and patronage of NRIs with distinguished academic traditions and vast experience in Engineering and Technology. The management spares no effort to develop the institution as one of the best centers of academic excellence. MITS, selected for TEQIP-II as one among the Top 25 private Engineering Institutions in the country.

About the Department:

The Department of Mechanical Engineering is accredited by NBA and was established at the inception of the college and the course offers a deep insight into the discipline and enables promising engineers to acquire skills required to succeed both individually as well as in industry. Keeping in view of the technological advancement, the department is fortified by the most qualified and experienced faculty. The department is well equipped with modern laboratories and offers three year Diploma, four year B.Tech and two year M.Tech Programmes in Machine Design and Advanced Manufacturing Systems.

Location of the College:

MITS is located at Angallu, which is 10 kms away from Madanapalle and it is 120 kms from Tirupathi, 125 kms from Bangalore, 250 kms from Chennai and 130 kms from Vellore.

Chief Patron
Sri. N. Vijaya Bhaskar Choudary, M.Com., (Ph.D)
Secretary & Correspondent

Patron
Sri. N. Krishna Kumar, M.S (USA)
Chairman

Chief Co-Ordinator
Dr. K. Sreenivasa Reddy, M.E., Ph.D.
Principal

Co-Ordinator
Dr. C. Yuvaraj, M.E., Ph.D.
Professor & Head

Convener
Dr. G. Harinath Gowd, M.Tech., Ph.D.
Professor

Organizing Committee:

Dr. P. Suryanarayana Raju, M.S., Ph.D
Dr. B. Eswar Kumar, M.E., Ph.D.
Mr. G. Sadasiva Prasad, M.Tech., (Ph.D.), Assoc. Prof.
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Mr. M. Gunasekhar Reddy, M.E., Asst. Prof.
Mr. G. Guru Mahesh, M.Tech., Asst.Prof.
Mr. V. Ajay, M.Tech., Asst.Prof.
Mr. S. Akbar Basha, M.Tech., Asst.Prof.
Mr. S. Shamrao Vali, M.Tech., Asst. Prof.
Mr. M. Raja Sekhar Reddy, M.Tech., Asst.Prof.
Mr. M. Subba Rao, M.Tech., Asst.Prof.
Mr. Mano Ranjit, M.Tech., Asst.Prof.
Mr. S.Karunarulu, M.Tech., Asst.Prof.

FOR MORE DETAILS, FEEL FREE TO CONTACT:
Co-Ordinator
Dr. C. YUVARAJ
Professor & Head,
Department of Mechanical Engineering
Madanapalle Institute of Technology & Science,
Madanapalle, Chittoor (District), Andhra Pradesh. Pin: 517325.
Mobile: +91 9160820782, +91-9441598044

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Co-Ordinator
Dr. C. YUVARAJ
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Organized by
DEPARTMENT OF MECHANICAL ENGINEERING

Madanapalle Institute of Technology & Science

(Approved by AICTE, New Delhi.
Affiliated to JNTUA, Anantapuram, Accredited By NBA)

Post box No. 14, Angallu, Madanapalle- 517325
Chittoor (District), Andhra Pradesh.

Ph: +91-8571-280255, 280766 (Extn: 126)
Fax: 08571-280433
Mobile: +91 9160820782, +91-9441598044

www.mits.ac.in

INTRODUCTION TO COURSE:

Fatigue failure occurs when a material is subjected to repeated loading and unloading cycles. The level of stresses present to cause failure may be well below values considered safe for a single static load application. The critical fatigue initiation is usually at a much localized site and may be a result of additional factors such as stress concentration due to component shape, surface finish or corrosion pitting. Hence it has got the necessity of knowing about the fatigue and fracture analysis of rotating parts by the mechanical engineers.

OBJECTIVE OF FDP:

The objective of this course is to break down the fatigue analysis process in to clearly define steps, given an overview of the physics involved and show how to successfully implement practical solutions using finite element analysis to the faculty members.

COURSE OUTLINE:

- Finite element analysis overview
- Introduction to fatigue analysis
- Introduction to fracture mechanics
- High cycle and low cycle fatigue methods
- FEA application of fatigue analysis
- Notch effects in high cycle fatigue
- Notch effects in low cycle fatigue
- Loading history definition
- Multiaxial fatigue
- Vibration fatigue
- Hands on session
- Fatigue in composites
- Practical applications

IMPORTANT DATES

Last Date for Registration: 23rd Feb 2014.
Intimation to Selected Candidates : 25th Feb 2014.

WHO SHOULD ATTEND

Faculty from various AICTE approved Engineering and Polytechnic colleges / Institutions and working professionals from Industries / R&D and other organizations.

REGISTRATION:

The Faculty development programme is offered to a limited number of participants on first come first serve basis. Selected members will be paid TA on the production of second class train/bus ticket through the shortest route from the place of work to Madanapalle and back.

a) No registration fee for the faculty from AICTE approved Institutions.

b) Participants from Industries / Utilities / R&D / other organizations: Rs.1,500/- (which includes registration fee, course kit and hospitality). The registration fee must be paid in the form of DD drawn in favor of "Principal, MITS", Payable at Madanapalle.

ACCOMMODATION:

Free boarding and Lodging will be provided for the faculty of all AICTE approved institutions. Maximum number of participants limited to 50.

HOW TO APPLY:

Registration form in the attached format duly recommended / sponsored by the authority concerned, along with the DD (if applicable) should reach the coordinator on or before 23-02-2014. A soft copy of the registration form must be mailed to fdp@mits.ac.in

RESOURCE PERSONS

Dr. U. Chandrasekhar

Director, ESCI, Hyderabad.
He also serves the council of the Institution of Engineers and National Design & Research Forum. He served as Additional Director at a Ministry of Defence R&D organisation called Gas Turbine Research Establishment for three decades and involved in design, analysis and testing of aero gas turbine engines. He set up the first-ever Rapid Prototyping laboratory in the country. He led a group of scientists at Moscow in a critical phase of in aero engine testing. For his research efforts, he received commendation medal from the Scientific Advisor to the Defence Minister.

Dr. Janakiramulu
Design Chief, Infotech Enterprises Ltd., Hyderabad.
(Former Additional General Manager, BHEL)
Specialist in Design of Aircraft System.

Dr. K. S. Raghavan
Discipline Chief, Structures , Infotech Enterprises Ltd., Hyderabad (Former GM, BHEL)
Specialization : Finite Element Technology, Stress and Vibration analysis of structures.

Dr. K. Ramajeyathilagam,
Sr. Professor Hindustan University, Chennai.
(Former Principal Consultant , Infotech Enterprises, Hyderabad)
Specialist in shock and vibration, Shock testing, Non-linear dynamic analysis for impact, drop and explosion loads, prediction of inelastic failure modes, analysis of metallic and composite aircraft structures and interiors. Projects executed include structural analysis of various mechanical systems, ship and submerged bodies and Aircraft wing components.

Dr. Dilip K Mahanty
Professor, Mechanical Engineering, Mukesh Patel School of Technology Management & Engineering, NMIMS University, Mumbai. (Worked with BARC, L & T, TCS, Lears, Ashok Leyland)
Specialist in Non-Linear Analysis with special focus on Fracture Mechanics, Crash Mechanics, Manufacturing Process Simulations in the areas of Forming and Bio-Mechanical Simulations with FEM, Product Design & Analysis.

Dr. Kumar. K
Manager - Engineering, Infosys, Bangalore.
(Formerly worked with NREC, Vermont State, USA, Germineschor Lloyds and Garad Hassan Ind Pvt Ltd)
Expert in structural design, product development, simulation of turbo machinery, aero engine, wind turbine and heavy engineering components using FEA.

Dr. Ganapathi Manickam

Head –Design Validations, in (Aerospace domain), Mahindra Satyam.
Formerly with DRDO & General Electric Co., Expert in Finite Elements; Computational Mechanics; Stability of Structures; Vibration & Aero-elasticity; Non-linear Structural Mechanics; Material Modeling; Advanced Composites; Smart & Functionally Grafted materials; Active Vibration Control, Micro-Nano Mechanics of Composites.

Mr. Nitin S. Gokhale

CEO, Finite to Infinite, Pune
17 years experience at CAE group of Mahindra & Mahindra, Tractor Division.
Extensive experience to softwares like IDEAS, HyperMesh, Nastran, ANSYS, Optistruct and FEMFAT. He has published book on Practical Finite Element Analysis.

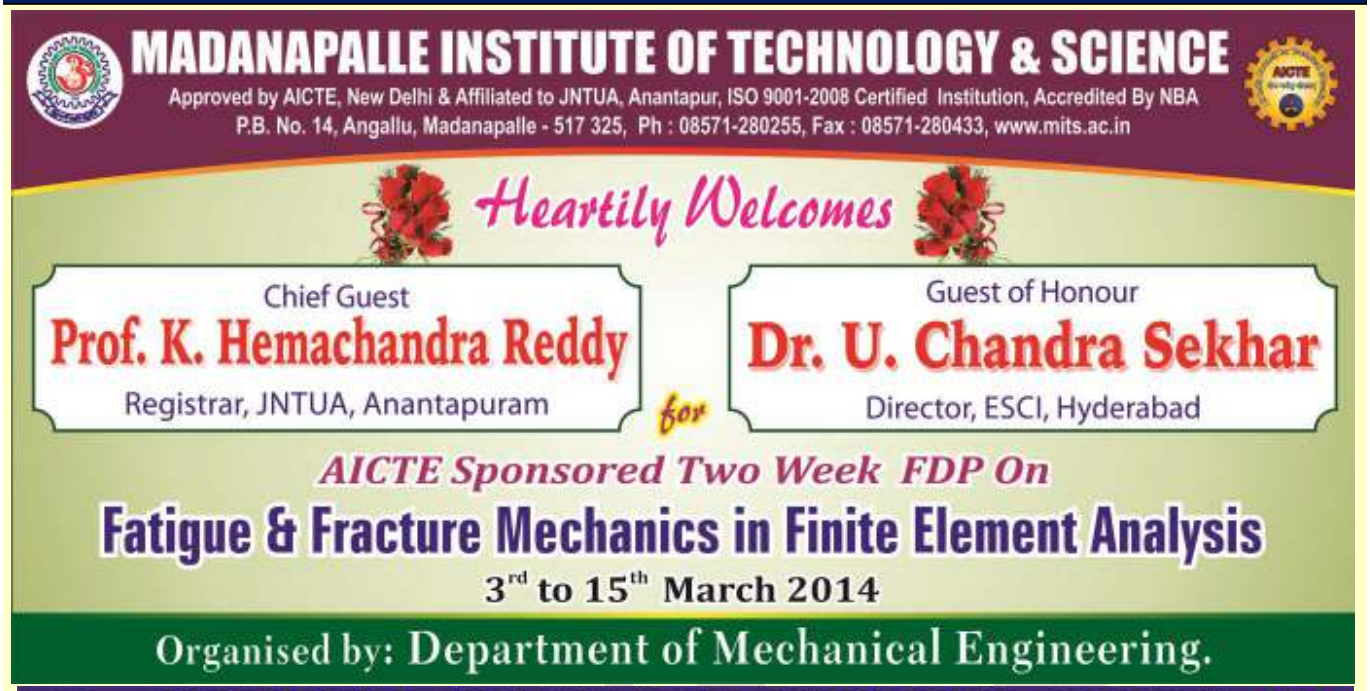
Mr. Subramanya Sastry SS., FIE., FIPE.

Deputy General Manager,
Infotech Enterprises Ltd. Hyderabad.
(Formerly with Quantech-Wipro as a Principal Consultant 26 years of experience in Aerospace domain in the areas of Composites/Metallic airframe design and development, manufacturing, assembly and testing processes in National Aerospace Laboratories, Bangalore in HANSA, LCA and SARAS aircraft programs – indigenized Civil and Military aircraft design and development programs.

Dr. M.Sivasankar

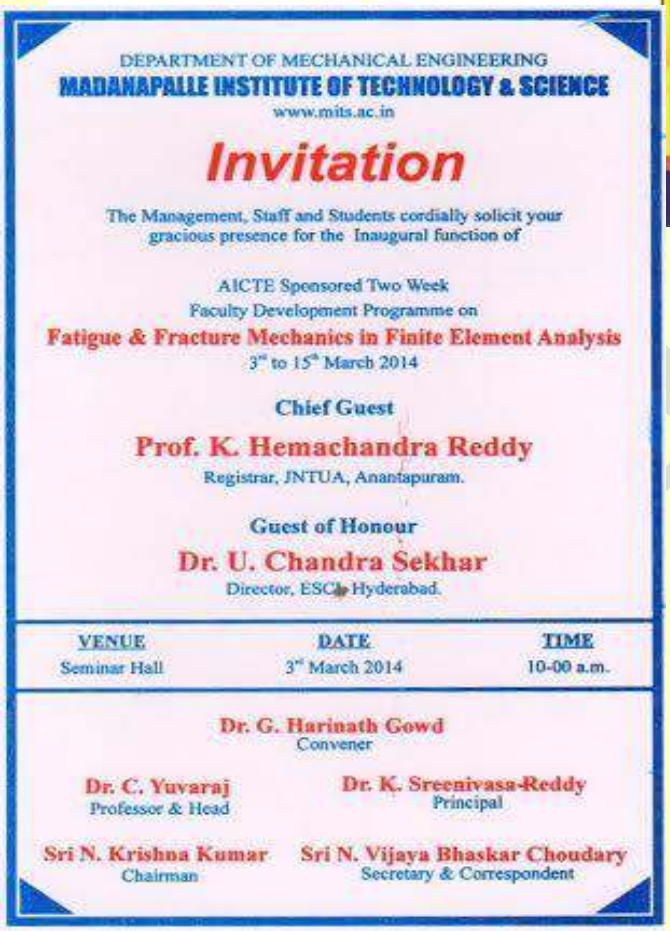
Professor in SKP Engineering College, Tiruvannamalai. Formerly worked with Wipro Technologies, Bangalore as a Senior Project Engineer Expert in ANSYS software, Specialist Biomechanics.

BANNERS



Dr K.SREENIVASA REDDY, PRINCIPAL, MITS,MADANAPALLE

ID, BADGE & INVITATION



CERTIFICATES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