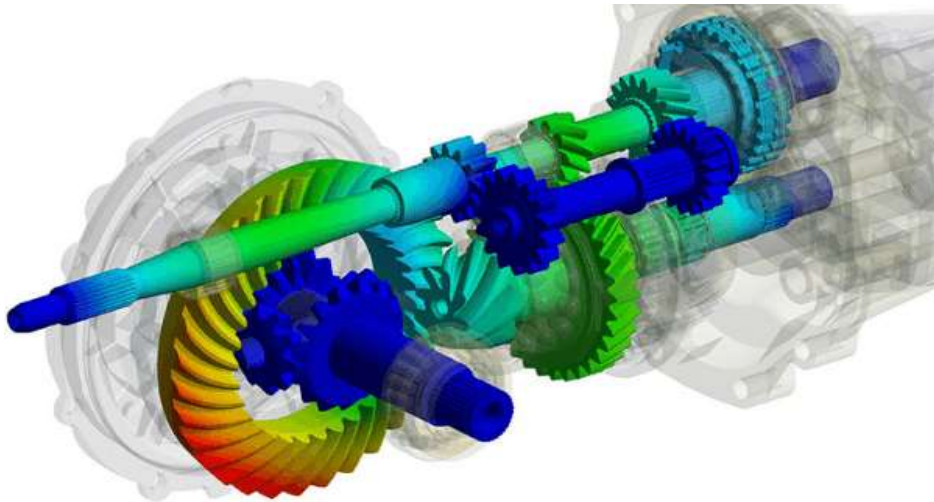*A Certificate Course*

on

FEA using ANSYS mechanical work bench

From 21ˢᵗ February 2022 to 26ᵗʰ February 2022

ORGANIZED BY

DEPARTMENT OF MECHANICAL ENGINEERING

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY,

(Approved by AICTE, Permanently Affiliated to JNT University Kakinada, ACCREDITED BY NAAC and Recognized under 2(f) &12 (b) by UGC New Delhi)

Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113

AVANTHI EDUCATIONAL SOCIETY

Avanthi Educational Society under the Leadership of Sri M. Srinivasa Rao garu as chairman was started in the Year 1991. Within a short span of its establishment, the group has made a remarkable stride in the field of education offering various courses at Under Graduate, Post Graduate, Pharmacy & Engineering levels. This milestone is achieved as the institution carved itself to impart quality and career oriented education, countering the challenges of the modern world through planning, dedication, determination, prompt execution and with the innovative ideas of our advisory board.

Today, Avanthi Educational Society is proud to have a strength of over 16000 students with 15 institutions under its ambit. It is the path of glory towards the success during the last 19 years. The institution has been adjudged many times as the second-best educational institutions in the twin cities and 16th best in all over India through the impartial survey made by the renowned magazine "India Today".

AVANTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

AIET started in the year 1999 and offers various courses at Engineering and PG level. The college is providing with rooms, computer centre, laboratories and seminar hall with audio-visual equipments. Industry Institute interaction is conducted regularly to emphasize on the latest trends in the present market.

It is very near to Narsipatnam. Frequent bus facilities are available both from and to Visakhapatnam and Narsipatnam. Very safe and secure hostel facility is available for Girl students. These are the additional facilities besides excellent academic atmosphere in the college campus.

DEPARTMENT OF MECHANICAL ENGINEERING

Mechanical Engineering department was started in the year 2005 with intake strength of 60 seats, this was increased to 120 students in 2012 and this was increased to 180 students in 2013. The department has well qualified and trained faculty members. It has well equipped laboratories and workshops and includes a CAD/CAM laboratory where students are imparted training in advanced production techniques and design and analysis of machine elements.

The department of Mechanical Engineering has been contributing its humble share of the Mechanical Engineering graduates for national needs. Several of the graduates who have passed out of this department are occupying responsible positions in various Engineering Industries like Hindustan Shipyard Limited, Renault Nissan, Varun Motors, Tata Consultancy Services, HP and IBM and holding responsible positions in the premier educational institutes in and outside India.

ABOUT WORKSHOP

This course is in an **example-based format** for Finite Element Analysis, including various examples for **1D Truss, 2D Truss, 3D Truss, 2D plane stress, 2D plane strain, and 3D solid** elements. In each example, first, **key formulations are provided** to summary the theories. Next, you will be clearly instructed to **write your FEM codes, ANSYS scripts**. Every line of code will be clearly explained. After that, detailed instructions to **extract results (displacements, stress, strain)** from ANSYS and your FEM codes are provided. From there, you will learn how to make comprehensive comparisons between your FEM results and ANSYS to verify your codes and understanding. This will be the best way to prove your understanding and knowledge.

Also, by practicing the examples, you can achieve very good or advanced coding skills in MATLAB and scripting in ANSYS.

TOPICS TO BE COVERED

- Key Formulations in FEA: Truss elements (1D, 2D, 3D), 2D plate (plane strain, plane stress) and 3D Solid elements.
- Practical coding skills in MATLAB for FEA of 1D, 2D, and 3D structures
- Mesh control, multi-step analysis, harmonic analysis
- Advanced skills in writing APDL scripts for Finite Element Analyses
- Basic geometry control, assigning conditions and processing the results
- Basic contact formulations, modal analysis for all FEA examples are available for freely download and modify for future study

For Registration, please contact Mr. S.Ganesh , Assistant Professor, Department of Mechanical Engineering.

CHIEF PATRON	PATRON	CHAIRMAN
Smt .M.Gnaneswari	Dr. C P V N J Mohan Rao	Sri. V. Harikiran
President ,	Principal,	Head of the Department
Avanthi Educational Society	Avanthi Institute Of Engineering And Technology	Mechanical Engineering

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Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113

DEPARTMENT OF MECHANICAL ENGINEERING

CIRCULAR

Date: 17/02/2022

      We are happy to inform you that, department of Mechanical Engineering, AIET is organizing a six day certificate course on "FEA using ANSYS mechanical work bench" from 21st February, 2022 to 26th February, 2022 in physical mode for all 2nd B. Tech students of mechanical. Interested candidates are directed to enrol above course on or before 20/2/2022. For further details contact Course Coordinator Mr. S. Ganesh, Assistant Professor, Mechanical Engineering.

Resource Person Details:

        Sri G. Karthik,

        Design Engineer,

        Canter CADD.

V. Harikiran

HOD of Mechanical Engineering Department

Copy to: Principal, AIET

Head of the Department
Department of Mechanical Engg.
Avanthi Institute of Engg. & Tech.,
Makavarapalem, Visakhapatnam - 531113.

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Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113

DEPARTMENT OF MECHANICAL ENGINEERING

A Six-day workshop on

FEA Using ANSYS mechanical work bench

From 26th February 2022 to 26th February 2022

Syllabus of the Workshop:

Chapter-1

• Introduction about the workshop and ANSYS Fundamentals, Various types of tools in ANSYS and their applications

Chapter-2

• ANSYS Mechanical for Finite Element Analysis, 1D, 2D and 3D Elements with examples of ANSYS Elements

Chapter-3

• Introduction to the ANSYS GUI, Enlisting different FEM methods and detailed explanation and their structural analysis

Chapter-4

• Introduction to Non-Linear Analysis, Coupling & Constraint Equations, Boundary conditions, Basic contact formulations

Chapter-5

• Material Properties, Material Library, specifying properties, assigning conditions and processing the results, types of Loads, Applying loads

Chapter-6

• Static Structural Analysis & Thermal Analysis

EXPECTED OUTCOMES

• To understand how to create a 2D in ANSYS
• Mesh control, Multi-step analysis and diagnostics
• Create a 2D model using Material Library.
• Modal analysis and Harmonic analysis
• Analysis of Loads under Static and Thermal Analysis.

COORDINATOR

HOD

Head of the Department
Department of Mechanical Engg.
Avanthi Institute of Engg. & Tech.,
Makavarapalem, Visakhapatnam - 531113.

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DEPARTMENT OF MECHANICAL ENGINEERING

FEA Using ANSYS mechanical work bench

From 21ˢᵗ   February 2022 to 26ᵗʰ February 2022

Schedule

DAY - 1 (21.02.2022)

09:00AM-09:30AM - Inaugural Session & addressing the Guests

09:30AM-11:00AM – Introduction about the workshop and ANSYS Fundamentals

11:00AM-11:15AM – Tea Break

11:15AM-1:15PM – usage of various types of tools in ANSYS and their applications and create, save various types of ANSYS documents.

1:15PM-02:15PM - Lunch Break

02:15PM-04:00PM - Explanation about Differentiate and switch between a selection of Materials and Properties. Perform various tasks concerning design parameters and geometry selection

DAY – 2 (22.02.2022)

09:00AM-09:30AM - ANSYS Mechanical for Finite Element Analysis

09:30AM-11:00AM – FEA and ANSYS Mechanical Static structural analysis, developing a complete analysis model

11:00AM-11:15AM – Tea Break

11:15AM-1:15PM – Explanation of 1D, 2D and 3D Elements with examples of ANSYS Elements

1:15PM-02:15PM - Lunch Break

02:15PM-04:00PM - Enlisting different FEM methods and detailed explanation of any one, Introduction to the ANSYS GUI

DAY – 3 (23.02.2022)

09:00AM-09:30AM - Introduction to Non-Linear Analysis

09:30AM-11:00AM – Using the Toolbar & Creating Abbreviations

11:00AM-11:15AM – Tea Break

11:15AM-1:15PM – Coupling & Constraint Equations

1:15PM-02:15PM - Lunch Break

02:15PM-04:00PM - Beam Modelling and Practice Session

DAY – 4 (24.02.2022)

09:00AM-09:30AM – Basic geometry control, Import& export for developing a complete analysis model

09:30AM-11:00AM – An Overview of ANSYS designing

11:00AM-11:15AM – Tea Break

11:15AM-1:15PM – Working with Boolean operations

1:15PM-02:15PM - Lunch Break

02:15PM-04:00PM - Working Plane, importing of 3D models, The ANSYS Mesh Tool, Smart sizing, Meshing m. Free Meshing

DAY – 5 (25.02.2022)

09:00AM-09:30AM - Material Properties

09:30AM-11:00AM – Material Library, Specifying properties

11:00AM-11:15AM – Tea Break

11:15AM-1:15PM – Boundary Conditions, types of Loads, Applying loads

1:15PM-02:15PM - Lunch Break

02:15PM-04:00PM - Solvers a. Types of Solvers, b. Solver Setup, c. Load Step Options, d. Solving Multiple Load Steps

DAY – 6 (26.02.2022)

09:00AM-09:30AM – Assigning conditions and validate results

09:30AM-11:00AM – Modal Analysis - Workshops, Exercises and Case Studies

11:00AM-11:15AM – Tea Break

11:15AM-1:15PM – Processing the results.

1:15PM-02:15PM - Lunch Break

02:15PM-04:00PM - Workshops, Exercises and Case Studies and Practice Session, Valedictory Session.

COORDINATOR

HOD

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY,

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DEPARTMENT OF MECHANICAL ENGINEERING

FEA Using ANSYS mechanical work bench

From 21-02-2022 to 26-02-2022

STUDENTS ATTENDANCE LISTS

S.NO	Roll Number	Name of the student	21.02.2022	22.02.2022	23.02.2022	24.02.2022	25.02.2022	26.02.2022
1	20811A0301	ADARI CHANDRA SEKHAR	✓	✓	✓	✓	✓	✓
2	20811A0302	ADARI SAI TEJA	✓	✓	✓	✓	✓	✓
3	20811A0303	AMME SAMIL SURAJ	✓	✓	✓	✗	✓	✓
4	20811A0304	APPANA LAXMANA KUMAR	✓	✓	✓	✓	✓	✓
5	20811A0305	ARJILLI MAHESH	✓	✓	✓	✓	✓	✓
6	20811A0306	BANDANGI DHANUNJAYA NAIDU	✓	✓	✓	✓	✓	✓
7	20811A0307	BODDETI PAVAN KUMAR	✓	✓	✓	✓	✓	✓
8	20811A0308	BURE HEMASUNDARA RAO	✓	✓	✓	✓	✓	✓
9	20811A0309	CHADALAVA ROHITH	✗	✓	✓	✓	✓	✓
10	20811A0310	CHEEDI SAI KRISHNA	✓	✓	✓	✓	✓	
11	20811A0311	DUNGALA SRINIVAS	✓	✓	✓	✓	✓	✗
12	20811A0312	GORLI VENKATA RAMA KRISHNA	✓	✓	✓	✓	✓	✓
13	20811A0313	JAJULA POORNA CHANDRA	✓	✓	✓	✓	✓	✓
14	20811A0314	JERRIPOTHULA PAVAN KUMAR	✓	✓	✓	✓	✓	✓
15	20811A0315	KAMIREDDI RAJESH	✓	✗	✓	✓	✓	✓
16	20811A0316	KANDREDDY DILEEP	✓	✓	✓	✓	✓	✓
17	20811A0317	KARIMI DILIP KUMAR	✓	✓	✓	✓	✗	✓
18	20811A0318	KARRI KALI VARA PRASAD	✓	✓	✓	✓	✓	✓
19	20811A0319	KASETTY VENKATESH	✓	✓	✓	✓	✓	✓
20	20811A0320	MADDU DEVARA SURYA RAJA PRASAD	✓	✓	✓	✓	✓	✓
21	20811A0321	MAJJI GOPI KRISHNA	✓	✓	✓	✓	✓	✓
22	20811A0322	MAJJI SHANMUK VENKATA SATYANARAYANA	✓	✓	✗	✓	✓	✓
23	20811A0323	MOGILI GANESH	✓	✓	✓	✓	✓	✓
24	20811A0324	MOGILI SUDHEER KUMAR	✓	✓	✓	✓	✓	✓
25	20811A0326	NAKKA VENU	✓	✓	✓	✓	✓	✓
26	20811A0327	NAMBARU DEVI SIVA SHANKAR PRASAD	✓	✓	✓	✓	✓	✓

	20811A0328	NAVEEN PRASAD BALLA	✓	✓	✓	✓	✓	✓
28	20811A0329	NOTLA SURESH	✓	✓	✓	✓	✓	✓
29	20811A0330	PAGOTI JAGADEESH	✗	✓	✓	✓	✓	✓
30	20811A0331	PATCHIPULUSU GANESH	✓	✓	✓	✓	✓	✓
31	20811A0332	POTHALA KIRAN KUMAR	✓	✓	✓	✓	✓	✓
32	20811A0333	YARRA RAVINDRA	✓	✓	✓	✓	✓	✓
33	20811A0334	RUTTALA PAVAN	✓	✓	✓	✓	✓	✓
34	20811A0335	SALAPU CHAITANYA SAI	✓	✓	✓	✗	✓	✓
35	20811A0336	SHAIK SAMEER	✓	✓	✓	✓	✓	✓
36	20811A0337	SINGAMPALLI MANIKANTA	✓	✓	✓	✓	✓	✓
37	20811A0338	SIYADRI SATYASAI	✓	✓	✓	✓	✓	✓
38	20811A0339	SURYA PRAKASH REDDY	✓	✓	✓	✓	✓	✓
39	20811A0340	THOTA VENKATA BALA SUBRAMANYAM	✓	✓	✓	✓	✓	✓
40	20811A0341	THYHADI NEERAJ	✓	✗	✓	✓	✓	✓
41	20811A0342	VATTURI VIJAYA ADITYA ROHITH	✓	✓	✓	✓	✓	✗
42	20811A0343	VAYIBOYINA SRI SIVA RAMA KRISHNA PREMJEE	✓	✓	✓	✓	✓	✓
43	20811A0344	METTA CHARAN KUMAR REDDY	✓	✓	✓	✓	✓	✓
44	20811A0345	VANAMICHETTI SAGAR	✓	✓	✓	✓	✓	✓
45	20811A0346	NAGIREDDY MANIKANTA	✓	✓	✓	✓	✓	✓
46	21815A0301	ADARI AJAY	✓	✓	✓	✓	✓	✓
47	21815A0302	ALLA SHANMUKH	✓	✓	✓	✓	✓	✓
48	21815A0303	**ALUGOLU GANESH**	✓	✓	✓	✓	✓	✓
49	21815A0304	YENNETI LAXMI NARAYANA	✓	✓	✓	✓	✓	✓
50	21815A0305	BALIVADA SARAN	✓	✓	✓	✗	✓	✓
51	21815A0306	**BAMMIDI OMSAI**	✓	✓	✓	✓	✓	✓
52	21815A0307	CHAVAKULA SAI MANIKANTA	✓	✓	✓	✓	✓	✓
53	21815A0308	**CHEEDA CHAITANYA KUMAR**	✓	✓	✓	✓	✓	✓
54	21815A0309	CHENNUPATI DEEPTHANUSH	✓	✓	✓	✓	✓	✓
55	21815A0310	DUKKA SAI VAMSI	✓	✓	✓	✓	✓	✓
56	21815A0311	ESAKA RAJ KUMAR	✓	✓	✓	✓	✓	✓
57	21815A0312	GADI RATNA KAMAL	✓	✓	✓	✓	✓	✗
58	21815A0313	GADUTHURI GOWTHAM RAJU	✓	✓	✓	✓	✓	✓
59	21815A0314	**GANDU VEERA MANIKANTA**	✓	✓	✓	✓	✓	✓
60	21815A0315	GEDDADA JYOTHI KRISHNA PRADEEP	✓	✓	✓	✓	✓	✓
61	21815A0316	GONDESI MANI KUMAR	✗	✓	✓	✓	✓	✓
62	21815A0317	**GORLI SIVAJI**	✓	✓	✓	✓	✓	✓
63	21815A0318	**GULLA VIVEK**	✓	✓	✓	✓	✓	✓

| S.No	Roll No	Name						
64	21815A0319	JUTTU GANESH						
65	21815A0322	KONETI SATYA SIVA SAI	X	✓	✓	✓	✓	✓
66	21815A0323	KUNCHA SANTOSH	✓	✓	✓	✓	✓	✓
67	21815A0324	KURAKULA GOWTHAM	✓	✓	✓	✓	✓	✓
68	21815A0325	MAMIDI GUNNAYYA BABU	✓	✓	✓	✓	✓	✓
69	21815A0326	MATTAM GOVARDHAN NAIDU	✓	✓	✓	✓	✓	X
70	21815A0327	MUDUNURU BALASAI ADITYA	✓	✓	✓	✓	✓	✓
71	21815A0328	NADIMPALLI VENKATA NARASIMHA RAJU	✓	✓	✓	✓	✓	✓
72	21815A0329	NAKKINA JAYA SAI VINAY	✓	✓	✓	✓	✓	✓
73	21815A0330	NALLA SIDDHU KUMAR	✓	✓	X	✓	✓	✓
74	21815A0331	NAMBALA SITHARAM	✓	✓	✓	✓	✓	✓
75	21815A0332	NANDIPALLI VENKATA SAI VIVEK	✓	✓	✓	✓	✓	✓
76	21815A0333	PALLAM APUROOP SAI	✓	✓	✓	✓	✓	✓
77	21815A0334	PEDAGADI SAI KUMAR	✓	✓	✓	✓	✓	✓
78	21815A0335	PEETHA VENKATESH	✓	✓	✓	✓	✓	✓
79	21815A0336	PENUMARTHI RAJ KUMAR	✓	✓	✓	✓	✓	✓
80	21815A0337	PIRADI DHANARAJU	✓	✓	✓	X	✓	✓
81	21815A0338	POLIMERA PAVAN KUMAR	✓	✓	✓	✓	✓	✓
82	21815A0339	BADRI MAHESWARI	✓	✓	✓	✓	✓	✓
83	21815A0340	SENAPATHI RATHI DEVI	X	✓	✓	✓	✓	✓
84	21815A0341	SUGGU CHAITANYA REDDY	✓	✓	✓	✓	✓	X
85	21815A0342	TAMALAPAKULA JOEL MATHEW	✓	✓	✓	✓	✓	✓
86	21815A0343	TAMARANA GANESH	✓	✓	✓	✓	✓	✓
87	21815A0344	TIPPANA SAI MANIKANTA	✓	✓	✓	✓	✓	✓
88	21815A0345	YARRAMSETTI VAMSI KRISHNA	✓	X	✓	✓	✓	✓
89	21815A0346	YELLAPU KOMAL RAM	✓	✓	✓	✓	✓	✓
90	21815A0355	MATTHURTHI NAVEEN KUMAR	✓	✓	✓	✓	✓	✓
91	21815A0364	VEDURUPARTHI MANOJ	✓	✓	X	✓	✓	✓
92	21815A0365	VINDULA SAI ANANTH LOHITH KUMAR	✓	✓	✓	✓	✓	✓
93	21815A0366	MALLA PRADEEP	✓	✓	✓	✓	✓	✓
94	21815A0367	CHOPPA SHANMUKHA SARAT CHANDRA	✓	✓	✓	✓	X	✓
95	20Q71A0381	KOLAGANI BHANU PRAKASH	✓	✓	✓	✓	✓	✓

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Tamaram, Makavarapalem, Narsipatnam (RD), Visakhapatnam-531113

CERTIFICATE OF PARTICIPATION

This is to certify that Mr/Ms _____of _____
_____ has participated in the Certificate Course entitled
on "FEA Using ANSYS mechanical work bench" during from 21st February 2022 to 26th February 2022 in Department of Mechanical Engineering.

COORDINATOR   HOD   PRINCIPAL

AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
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DEPARTMENT OF MECHANICAL ENGINEERING

A 6-Day Workshop on

FEA Using ANSYS mechanical work bench

21st February 2022 to 26th February 2022
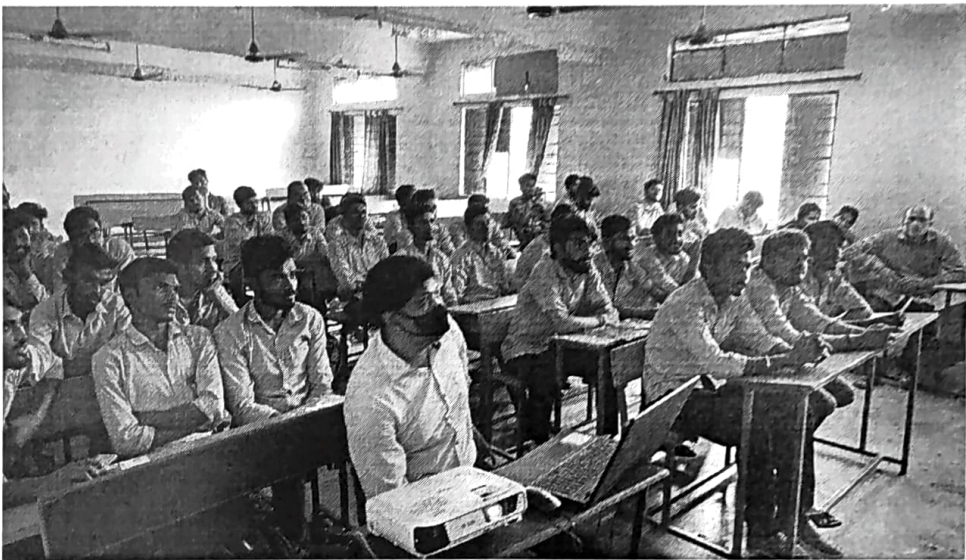
COORDINATOR   **HOD**

Head of the Department
Department of Mechanical Engg.
Avanthi Institute of Engg. & Tech.,
Makavarapalem, Visakhapatnam-531113.

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DEPARTMENT OF MECHANICAL ENGINEERING

Dt: 02/03/2021

BRIEF REPORT

Department of Mechanical Engineering, Avanthi Institute of Engineering and Technology had organized a certificate course on **"FEA Using ANSYS mechanical work bench"** from 21st February 2022 to 26th February 2022

We had Mr. G. Karthik, Design Engineer, from Canter CADD. The speaker to explain each and every detail about ANSYS and its fundamentals. He started off with upcoming need ANSYS mechanical for finite element analysis and the plus points of this technology. One of the major advantage is that it provides high-performance, automated meshing software. He also explained the limitations that it needs large amount of data is required as input for the mesh used in terms of nodal connectivity and other parameters depending on the problem. These are generally used for Biomedical Applications, Plate Dynamics, Industrial and Business Management. Some of the topics are focused during course are thermal analysis, key formulation, practical coding skills, boundary conditions, multi-step analysis, modal analysis, harmonic analysis. Finally he concluded the real time applications of Finite element Analysis and how it is utilized in mechanical related industries.

COORDINATOR

HOD

Head of the Department
Department of Mechanical Engg.
Avanthi Institute of Engg. & Tech.,
Makavarapalem, Visakhapatnam - 531113.