**ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY**
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**A+, Accredited by NAAC & NBA (ECE & CSE)**
Shobhavana Campus, MIJAR-574225, Moodbidri, D.K., Karnataka
Ph: 08258-262725; Mob:722262724,7026262725,mail:principalaiet08@gmail.com

Date -07/06/24

To

IQAC Chairman

AIET, Mijar

Respected Sir

**Sub: Requesting for permission conduct a Research Methodology Seminar**

We are happy to inform you that Department of Mechanical Engineering, is planning to organize a technical Seminar on talk on 10/06/2024 for Mechanical Engineering, students .

The details are mentioned below, kindly request you do the needful.

**Resource Person Details**

**Name:** Mr. Puneet Khangoudra

**Designation:** Manager, BETA-CAE systems India Pvt. ltd

**Seminar Title :** Session on "Methodological Approaches to Analyzing and Validating Results in EPILYSIS-FEA"

**Venue:** CAMD LAB

**Date/month/year:**10/06/2024

**Mode :** ONLINE

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Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

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Aiet/Mech/AY2022-23/015 Date -07/06/24

# CIRCULAR

Students from the Department of Mechanical Engineering are hereby informed to attend the Technical Seminar by Mr. Puneet Khangoudra, Manager, BETA-CAE systems India Pvt. ltd

**Date: 10/06/2024**

**Title of the Talk:** Session on "Methodological Approaches to Analyzing and Validating Results in EPILYSIS-FEA

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# Technical seminar report
**On**

# "METHODOLOGICAL APPROACHES TO ANALYZING AND VALIDATING RESULTS IN EPILYSIS-FEA"

**Resource Person:** Mr. Puneet Khanagoudra

**Designation:** Chief Technical Engineer, BETA-CAE Systems India

**Date**: **10/06/2024**

The EPILYSIS FEA solver, developed by BETA CAE Systems, is a comprehensive tool designed for Finite Element Analysis (FEA), integrating decades of expertise from the CAE community. This solver addresses various engineering disciplines, including Structural, Noise, Vibration, Harshness (NVH), and Optimization, making it a versatile option for various industries It is known for its robustness, versatility, and high performance in solving various types of finite element problems.

Its Core Features includes following aspects

**Solver Capabilities:**

Linear and Nonlinear Analysis: EPILYSIS can perform both linear static and dynamic analysis as well as nonlinear analysis involving large deformations, plasticity, and hyperelastic materials.

**Thermal Analysis:** It supports both steady-state and transient thermal analysis.

Coupled Field Analysis: EPILYSIS can handle problems that involve multiple physical phenomena simultaneously, such as thermo-mechanical coupling.

**Element Types:**

EPILYSIS offers a variety of element types including 1D, 2D, and 3D elements. This includes beam, shell, solid, and hybrid elements, allowing for detailed modeling of different structures and materials.

**Solver Algorithms:**

Direct Solvers: These include methods like LU decomposition, which provide exact solutions to the system of equations but can be computationally expensive for very large problems.

Iterative Solvers: These are used for larger problems where direct solvers are not feasible. They include methods like Conjugate Gradient (CG) and Generalized Minimal Residual (GMRES) methods.

**Mesh Generation:**

EPILYSIS includes advanced meshing capabilities that support both automatic and manual mesh generation. It handles structured and unstructured meshes and offers refinement options to ensure accurate results.

**Pre-Processing and Post-Processing:**

The pre-processing phase involves setting up the model, defining material properties, boundary conditions, and loads. EPILYSIS provides a user-friendly interface for these tasks.

For post-processing, EPILYSIS can visualize results using contour plots, deformed shape plots, and other graphical representations to interpret the results effectively.

**Scalability and Performance:**

Parallel Computing: EPILYSIS is optimized for parallel processing, leveraging multi-core processors and distributed computing environments to handle large-scale simulations efficiently.

Optimization Techniques: The solver employs various optimization techniques to reduce computational time and memory usage, making it suitable for high-performance computing scenarios.


**User Interface and Integration:**

Graphical User Interface (GUI): EPILYSIS provides a comprehensive GUI for ease of use. This includes tools for model setup, meshing, and result analysis.

APIs and Scripting: For advanced users, EPILYSIS offers APIs and scripting capabilities to automate tasks and integrate with other software tools.

**Applications of EPILYSIS FEA are as follows**

EPILYSIS is used in various fields including:

Structural Engineering: For analysing stresses, strains, and displacements in structures such as bridges, buildings, and machinery.

Automotive Industry: To simulate crash tests, fatigue analysis, and vehicle performance.

**Advantages**

Accuracy and Reliability: EPILYSIS is known for its high accuracy in solving complex problems, which is crucial for critical engineering applications.

Versatility: It supports a wide range of analyses and element types, making it suitable for diverse engineering problems.

Efficiency: The solver's advanced algorithms and parallel processing capabilities ensure that it performs well even with large-scale models.

In summary, EPILYSIS is a powerful FEA solver with a broad range of capabilities designed to handle complex engineering simulations. Its advanced algorithms, user-friendly interfaces, and high-performance features make it a valuable tool for engineers and researchers across various industries. EPILYSIS represents a modern solution in the field of FEA, combining advanced computational techniques with user-friendly interfaces and robust analytical capabilities. Its comprehensive feature set makes it a valuable tool for engineers seeking to enhance their design processes across multiple sectors, from automotive to aerospace and beyond.


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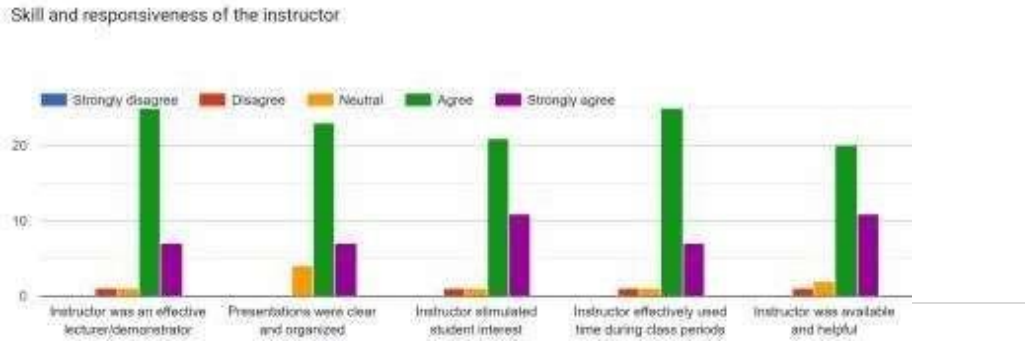
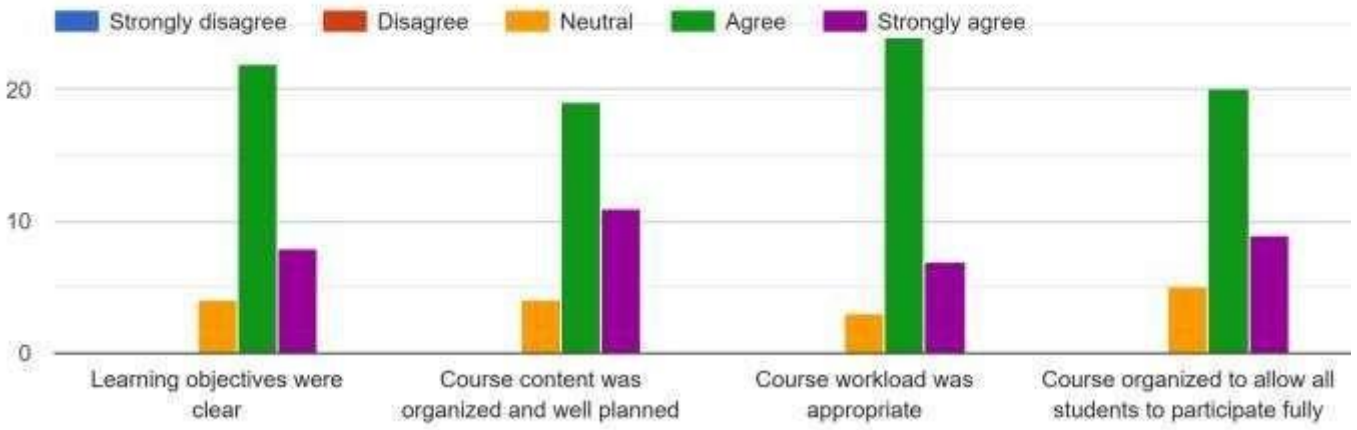
**FEEDBACK:**

# " METHODOLOGICAL APPROACHES TO ANALYZING AND VALIDATING RESULTS IN EPILYSIS-FEA

Please submit feedback regarding the course you have just completed, including feedback on course structure, content, and instructor.

Course content

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