LAKIREDDY BALIREDDY COLLEGE OF ENGINEERING
(Autonomous since 2010)
L. B. Reddy Nagar, Mylavaram – 521 230, N.T.R. District, Andhra Pradesh, India
Affiliated to JNTUK, Kakinada & Approved by AICTE New Delhi, Accredited by NAAC with 'A' grade
Accredited by NBA under Tier – I, An ISO 21001:2018, 500001:2018, 14001:2015 Certified Institution
Estd.: 1998
DEPARTMENT OF AEROSPACE ENGINEERING

One -week Faculty Development Programme (FDP) on "LS-DYNA and HYPERMESH for Structural and Crash Analysis"

Date: 22-05-2024

Title	**One -week Faculty Development Programme (FDP) on "LS-DYNA and HYPERMESH for Structural and Crash Analysis"**	
Faculty Coordinator	**Mr. S. Indrasena Reddy** Sr. Assistant Professor Dept of Aerospace Engineering	**Mr. Nazumuddin Shaik** Sr. Assistant Professor Dept of Aerospace Engineering
No. of Participants	75	
Event Type:	**Online-FDP**	
Resource Persons	**Mr. B. R. M. V. Krishna** Simulation Engineer Mayinkrish Ventures PVT LTD, Hyderabad. **Mr. Raj Mahendra** Engineer, Mayinkrish Ventures PVT LTD, Hyderabad	
Program Schedule	13-05-2024 to 18-05-2024	

The Department of Aerospace Engineering organized a One-Week Online Faculty Development Programme (FDP) on **"LS-DYNA and HYPERMESH for Structural and Crash Analysis"** was conducted from 13-05-24 to 18-05-24. The programme was organized with the objective of enhancing the knowledge and technical skills of faculty members, researchers, and industry professionals in the areas of finite element modeling, structural analysis, and crashworthiness simulations using advanced engineering software tools.

The FDP aimed to provide participants with both theoretical understanding and practical exposure to industry-standard simulation tools widely used in automotive, aerospace, defense, and manufacturing sectors.

Objectives of the FDP

- To introduce participants to the fundamentals of Finite Element Analysis (FEA).
- To provide hands-on training in HYPERMESH for geometry cleanup, meshing, and model preparation.
- To familiarize participants with LS-DYNA solver capabilities for explicit dynamic analysis.
- To develop competency in structural and crash analysis simulations.
- To understand material modeling, contact definitions, boundary conditions, and result interpretation.
- To bridge the gap between academic learning and industrial simulation practices.

Programme Highlights

The FDP covered a comprehensive set of topics through expert lectures, software demonstrations, and hands-on sessions. The key areas addressed during the programme included:

Day 1: Introduction to Finite Element Analysis and HyperMesh

- Fundamentals of FEA.
- Overview of preprocessing techniques.
- HyperMesh user interface and workflow.
- Geometry import and cleanup procedures.

Day 2: Meshing Techniques in HyperMesh

- One-dimensional, two-dimensional, and three-dimensional meshing.
- Quality criteria and mesh optimization.
- Component and property creation.
- Model verification techniques.

Day 3: Introduction to LS-DYNA

- Explicit dynamics fundamentals.
- LS-DYNA architecture and solver environment.
- Material models and element formulations.
- Boundary conditions and load applications.

Day 4: Structural Analysis Applications

- Linear and nonlinear structural analysis.
- Static and dynamic loading conditions.
- Contact modeling and constraint definitions.
- Simulation setup and execution.

Day 5: Crash Analysis and Impact Simulations

- Crashworthiness concepts.
- Vehicle and component impact simulations.
- Energy absorption mechanisms.
- Failure prediction methodologies.

Day 6: Post-Processing and Result Interpretation

- LS-PrePost environment.
- Stress, strain, displacement, and energy plots.
- Industrial case studies from automotive and aerospace sectors.
- Discussion on current trends in simulation-driven design.
- Participant interactions and query sessions.
- Feedback collection and programme assessment.

Learning Outcomes

- Understand the workflow of finite element modeling using HyperMesh.
- Create high-quality meshes suitable for structural and crash simulations.
- Set up and execute LS-DYNA analyses effectively.
- Interpret simulation results for engineering decision-making.
- Apply crashworthiness concepts in product development.
- Integrate simulation tools into teaching, research, and consultancy activities.

Participant Feedback

The participants expressed positive feedback regarding the content, delivery, and practical orientation of the programme. The hands-on exercises and industrial case studies were particularly appreciated for providing real-world exposure. Participants found the sessions informative, interactive, and beneficial for their academic and research activities.

Conclusion

The One-Week Online Faculty Development Programme on “LS-DYNA and HyperMesh for Structural and Crash Analysis” successfully achieved its intended objectives by providing participants with a strong foundation in advanced finite element modeling and crash simulation techniques. The programme enhanced the technical competence of the participants and encouraged the adoption of modern simulation tools in teaching, research, and industrial applications. Such initiatives contribute significantly to faculty skill development and promote industry-oriented learning in engineering education.

FDP Brochure

ABOUT THE INSTITUTE

The Lakireddy Bali Reddy College of Engineering (LBRCE) was established in the year 1998 by Lakireddy Bali Reddy Charitable Trust, whose architect is Er. Lakireddy Bali Reddy garu. The institute is established with the sole aim of providing high quality educational opportunities in the field of science, engineering, technology and management. It is spread over 60 acres of sprawling lush green landscape spotted with orchids and grooves. It is approved by AICTE, affiliated to JNTUK, Kakinada and attained autonomous status in the year 2010. It attained NAAC accreditation status with ‘A’ Grade. The institute is certified by ISO: 9001-2018.

ABOUT THE DEPARTMENT

The Department of Aerospace Engineering was started in the year 2011. The department offers 4 years undergraduate program, B.Tech in Aerospace Engineering. The department has a team of highly qualified, dedicated and motivated faculty and well-equipped laboratories. The department has laboratories, classrooms, faculty rooms, sophisticated lab equipment’s and well-versed library. The department has a wide range of teaching activities.

ABOUT THE PROGRAMME

This One-Week Faculty Development Programme (FDP) on **“LS-DYNA and HYPERMESH for Structural and Crash Analysis”** was organized with the objective of enhancing the technical knowledge and practical skills of faculty members, researchers, and academicians in the field of Computer-Aided Engineering (CAE). The programme focused on providing hands-on training in advanced finite element modeling, structural analysis, and crash simulation techniques widely used in automotive, aerospace, and manufacturing industries.

Programme Objectives:

- Provide participants with a comprehensive understanding of FEA concepts and their applications in structural and crash simulations.
- familiarize faculty members and researchers with the modeling and meshing capabilities of Hyper Mesh for preparing high-quality finite element models.
- To introduce the fundamentals and advanced features of LS-DYNA for nonlinear, dynamic, impact, and crash analyses.
- To bridge the gap between academic curriculum and industrial practices by exposing participants to real-world engineering simulation workflows.

ELIGIBILITY

The programme is open to all Faculty Members, Research Scholars and M.Tech/M.E students of AICTE approved Engineering colleges and Industry personnel working in the concerned/allied areas of Engineering.

Registration Link:
https://forms.gle/wtkw5hU6uUFTi7f88

RESOURCE PERSONS

Mr. B. R. M. V. Krishna, Simulation Engineer
Mayinkrish Ventures PVT LTD, Hyderabad.
Mr. Raj Mahendra
Engineer, Mayinkrish Ventures PVT LTD, Hyderabad

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13-05-2024 to 18-05-2024

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Mr. S. Indrasena Reddy
Sr. Assistant Professor
Mr. Nazumuddin Shaik
Sr. Assistant Professor
Dept of Aerospace Engineering

Organized by:

DEPARTMENT OF AEROSPACE ENGINEERING
(Accredited by NBA under Tier-I)
LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING(AUTONOMOUS),
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