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Webinar Report: CFD Simulation Using ANSYS Fluent

Date: February 27-29, 2024
Venue: Techno India NJR Institute of Technology, Udaipur (Online Mode)
Participants: Mechanical Engineering Second and Third Year Students

Introduction

The Mechanical Engineering Department of Techno India NJR Institute of Technology, Udaipur, organized a three-day online webinar titled **"CFD Simulation Using ANSYS Fluent."** The event was attended by second and third-year Mechanical Engineering students, aimed at enhancing their knowledge of computational fluid dynamics (CFD) and simulation techniques.

Objective

The primary objective of this webinar was to introduce students to the fundamental concepts of CFD and familiarize them with the ANSYS Fluent software, a leading tool in the field of fluid flow and heat transfer simulations. The program covered the complete workflow of CFD simulations, including geometry creation, meshing, setting up simulations, and analyzing results.

Webinar Overview

The webinar was conducted over three days and covered a wide range of topics related to CFD simulation:

- **Day 1 (February 27, 2024):**
  The session began with an introduction to CFD and the ANSYS Fluent software interface. Students were guided through the basics of using ANSYS Workbench and its features. The day concluded with hands-on practice in geometry creation using the ANSYS Design Modeler and an introduction to meshing techniques.

Day 2 (February 28, 2024):
The focus shifted to setting up simulations and running 2D and 3D fluid flow and heat transfer simulations. Students learned how to define boundary conditions, choose appropriate turbulence models, and set up cases for accurate results.

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Day 3 (February 29, 2024):
The final day covered advanced topics such as multiphase flow modeling and user-defined functions (UDFs). The sessions included practical exercises on setting up complex simulations, and participants were assessed on their understanding of the topics.

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Key Takeaways

- Participants gained a thorough understanding of the CFD simulation process, from pre-processing to post-processing.
- Students acquired hands-on experience with ANSYS Fluent and learned how to model real-world engineering problems using the software.
- The webinar emphasized practical skills alongside theoretical knowledge, preparing students for advanced courses and industry applications.

Conclusion

The webinar was highly beneficial for the participants, providing them with essential skills in CFD and ANSYS Fluent, which are crucial for both academic and professional growth. The interactive sessions and practical demonstrations were well-received, and students expressed a keen interest in applying the knowledge gained to their projects and research.

Certification

All participants who met the attendance and assessment requirements received an e-certificate of completion.

ORGANIZING COMMITTEE

Chief Patron — **Thiru. G. Muniasamy**
Correspondent,
Sakthi Polytechnic College
Sakthi Nagar – 638315

Patron — **Dr. N. Thangavelu**
Principal,
Sakthi Polytechnic College
Sakthi Nagar – 638315

Coordinator — **Dr. A. Shyam**
Lecturer,
Department of Mechanical Engineering,
Sakthi Polytechnic College,
Sakthi Nagar – 638315

Co-Coordinator — **Mr. P. Kanagaraj**
Lecturer,
Department of Mechanical Engineering,
Sakthi Polytechnic College,
Sakthi Nagar – 638315

WHO CAN ATTEND

- Academicians
- Research scholars
- UG/PG students

ABOUT THE INSTITUTION

Sakthi Polytechnic College is functioning under the aegis of Sakthi Foundation Trust. Padma Bhushan Dr.N.Mahalingam, the famous industrialist and educationalist was the promoter and president of the foundation. The main objective of this institution is to impart quality technical education to the rural students. The institution is managed by a Governing Council with Dr M.Manickam Executive as Chairman. Representatives and experts from the fields of education and industry form the members of the Council. The institution has been approved by the All India Council for Technical Education (AICTE). Sakthi Polytechnic College is a Government Aided institution offering eight diploma programmes Recently five diploma programmes were accredited by NBA.

ABOUT THE DEPARTMENT

The Mechanical Engineering Department is a NBA accredited programme came in to existence in the year 1981 which is one of the oldest among the other diploma courses in Sakthi Polytechnic College. The department has achieved great success in engineering with extensive development of its students. Mechanical engineering is an important branch that requires a lot of practical and theoretical research. To achieve this, we have a highly qualified faculty team and well-maintained laboratories and workshops. Since its establishment, the Mechanical Engineering Department has maintained a steady growth in all areas of its activity and has played a key role in creating a vibrant and positive academic environment within the college.

SAKTHI POLYTECHNIC COLLEGE
SAKTHI NAGAR – 638315

Department of Mechanical Engineering

Organizing

Online Three Day Faculty Development Programme (FDP) on "CFD SIMULATION USING ANSYS FLUENT"

27-02-2024 to 29-02-2024

Important Dates:

Last Date of Submission	**: 20.02.2024**
Intimation of Selection	**: 22.02.2024**

REGISTRATION FORM

- Name : .....
- Gender : .....
- Qualification : .....
- Designation : .....
- Department : .....
- Institution : .....
- Address for Communication:. . . . . .
  . . . . . .
  . . . . . PIN. . . . . .
- E-mail : .....
- Phone (Off.) : .....
- Mobile No. : .....

Declaration

I declare that all the details furnished above are true to the best of my knowledge and I agree to abide by the rules and regulations governing the conduct of programme.

Date: Signature of the Applicant

Sponsorship certificate

Dr./Mr/Mrs/Ms .....
is an employee of our Institute and is hereby sponsored by us. He/She will be permitted to attend the online FDP, if selected.

REGISTRATION DETAILS

- Maximum of 100 participants are permitted to attend.
- WhatsApp and meeting link will be intimated through E-mail.
- Registration fee of Rs.150/- (Non-Refundable, Pay using UPI ID or Scan QR Code given below).
- Submit the payment screenshot and transaction details using the registration link.

UPI ID & QR CODE

- UPI ID: **sakthipolytechnic@sbi**
- Name: **Sakthi Polytechnic College**

CERTIFICATION

The e-Certificate will be provided to the participants those who are securing minimum attendance and assessment marks.

LINK FOR REGISTRATION FORM

Click the link below for registration

https://forms.gle/qxSdFy34nnFzM9LF6

PROGRAM OVERVIEW

- Introduction to CFD and ANSYS Fluent.
- ANSYS Workbench Interface.
- Geometry Creation using ANSYS Design Modeler
- ANSYS Meshing, Mesh Quality Parameters.
- Setting Up the CFD Simulation in ANSYS Fluent
- Turbulence Modeling
- 2D and 3D - Fluid Flow Simulations.
- 2D and 3D - Heat Transfer Simulations.
- Multiphase flow & User Defined Functions (UDF).

PROGRAM SCHEDULE

DAY 1 (27.02.2024)

- **Session #1** (10 am to 12 pm) : Introduction to CFD, ANSYS Workbench & ANSYS Fluent.
- **Session #2** (02 pm to 04 pm) : Geometry Creation using ANSYS Design Modeler, ANSYS Meshing Mesh Quality Parameters.

DAY 2 (28.02.2024)

- **Session #1** (10 am to 12 pm) : Setting Up the CFD Simulation.
- **Session #2** (02 pm to 04 pm) : 2D & 3D Fluid Flow and Heat Transfer Simulation.

DAY 3 (29.02.2024)

- **Session #1** (10 am to 12 pm) : 3D Fluid Flow and Heat Transfer Simulation, Multiphase flow & UDF.
- **Session #2** (02 pm to 04 pm) : Multiphase flow


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