

# KPR Institute of Engineering and Technology

Avinashi Road, Arasur, Coimbatore.

Phone: 0422-2635600 Web: kpriet.ac.in Social: kpriet.ac.in/social **CH025** 

NBA Accredited (CSE, ECE, EEE,

(Autonomous, NAAC "A") EXPLORING DYNAMICS OF FLUIDS: COMPUTATIONAL TOOLS AND TECHNIQUES FOR CHEMICAL ENGINEERS

MECH, CIVIL)

Event No	CH025
Organizing Department	Chemical Engineering
Date	21/03/2023
Time	03:00 PM to 04:00 PM
Event Type	Expert Talk
Event Level	Dept. Level
Venue	Thanam Hall
Total Participants	52
Faculty - Internal	2
Students - Internal	50

## **Related SDG**



## **Resource Persons**

SI	Туре	Name	Designation	Company	Email	Phone
1	Resource Person	Balasubramanian S	Professor and Head	KPR Institute of Engineering and Technology, Coimbatore	balasubramanian.s@kpriet.ac.in	xxxxxxxxx

## Involved Staffs

SI	Name	Role
1	Bharathi Ganesan R	Coordinator

### Outcome

Students are motivated to use CFD tools like Comsol, Fluent and openFOAM. Students were also asked to use the high performance computing lab after classes.

### **Event Summary**

The event started with the event coordinator Bharathi Ganesan welcomed the gathered students and introduced about the resource person Dr. S. Balasubramanian, Professor and Head to the gathering. After the introduction, Dr. Balasubramanian started the overview of the lecture and the importance of computational tools in enhancing the job placement skill and value of a Chemical Engineer. Then the difference between fluid statics and dynamics was explained with emphasis on the complexity added due to movement of fluid. The list of equations to solve such as conservation of mass, momentum and energy were also discussed briefly. Applications in the field of mechanical pump design, aerospace, vehicle design, chemical engineering agitators and heat exchanger baffle arrangement were presented. Then various case studies were discussed individually. The case of a freely falling sphere that causes dynamic drag and wake behind it was discussed to highlight their application in packed and fluidized bed catalytic converters. This case was extended to rising bodies that create beautiful patterns as they rise up. For various operating conditions, the patterns were shown as colourful contour images. Then the case of solving heat energy with temperature as a scalar variable was highlighted as an application in the sterilization in food industry. With these cases, the lecture came to an end and the floor was opened for questions. Student Umamaheswari asked about energy balance for dyring of calcium carbonate using the computational tools, which was clarified by Dr. Balasubramanian. The lecture came to an end. The series will continue next on DWSIM and openFOAM. Feedback was collected anonymously through online Google forms.





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